FINAL REGISTRATION REPORT

**Part B**

**Section 3**

**Efficacy Data and Information**

Concise summary

Product code: MIEDZIAN 50 WP

Product name(s): **MIEDZIAN 50 WP,**

~~**COBRESAL 50 WP, DALION 50 WP, SPATOR 50 WP**~~

Chemical active substance:

**Copper as copper oxychloride**, 500g /kg

Central Zone

Zonal Rapporteur Member State: **Poland**

CORE ASSESSMENT

(re-authorization according art. 43 and art. 51, Reg. 1107/2009)

Applicant: **Synthos Agro Sp. z o.o.**

Submission date: **07/2020**

MS Finalisation date: 02/2022; **08/2022 03/2023**

# Version history

| When | What |
|---|---|
| 07/2020 | Renewal of registration of plant protection product according art. 43, Reg. 1107/2009 |
| 03/2021 | Addition the information on product GAP approved under first evaluation and under extension to minor uses for the Miedzian 50 WP |
| 02/2022 | GAP revision |
| 02/2022 | ZRMs evaluated updated dRR by Applicant in 02/2022. |
| 08/2022 | The Final RR |
| 03/2023 | Final version after correction on GAP |

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# 3 Efficacy Data and Information (including Value Data) on the Plant Protection Product (KCP 6)

**Transformation of the dRR (applicant version) into the RR (zRMS version)**

| |
|---|
| The process chosen by the zRMS to transform the dRR into a RR should be explained. Options are to rewrite the document (with track change or not) or to use commenting boxes such as the following: |

| | |
|---|---|
| Comments of zRMS: | Comments of zRMS are in commenting boxes at the end of each chapter. The text of dRR was generally not changed or rewritten (small changes in the document are in grey). |

## 3.1 Summary and conclusions of zRMS on Section 3: Efficacy (KCP 6)

**Abstract**

| |
|---|
| Comments of zRMS: Overall summaries are not necessary here. It was provided at the end of each chapter of the dRR. |

## 3.1.1 Intended uses

### 3.1.1.1 GAP evaluated and approved under first evaluation (2013) and under extension to minor uses for the Miedzian 50 WP (2016)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Use-No. [e]** | **Member state(s)** | **Crop and/ or situation**<br><br>**(crop destination / purpose of crop)** | **F, Fn, Fpn G, Gn, Gpn or I** | **Pests or Group of pests controlled**<br><br>(additionally: developmental stages of the pest or pest group) | **Application** | | | | **Application rate** | | | **PHI** (days) | **Remarks:**<br><br>e.g. g safener/synergist per ha [f] |
| | | | | | Method / Kind | Timing / Growth stage of crop & season | Max. number a) per use b) per crop/ season | Min. interval between applications (days) | kg product / ha a) max. rate per appl. b) max. total rate per crop/season | g kg as/ha<br><br>a) max. rate per appl. b) max. total rate per crop/season | Water L/ha<br><br>min / max | | |
| **Zonal uses (field or outdoor uses, certain types of protected crops)** | | | | | | | | | | | | | |
| 1 | PL | Apple, pear | F | *Venturia inaequalis, Venturia pirina* | spraying | BBCH 00-07 | 1-2 | 7-10 days | 1,5 | 0,75 | 500-750 | 7 | |
| 2 | PL | Apple, pear | F | *Ervinia amylovora* | spraying | BBCH 60-71 | 1-2 | 7-10 days | 0,75-1,5 | 0,375-0,75 | 500-750 | 7 | |
| 3 | PL | Cherry, sweet cherry | F | *Pseudomonas syringae* | spraying | BBCH 51-61<br>BBCH 65-71<br>BBCH 72-73 | 1-3 | 7-10 dni | 1,5-3,0 | 0,75 -1,5 | 500 - 750 | 7 | |
| 4 | PL | Peach | F | *Taphrina deformans* | spraying | BBCH 00-03 | 1 | - | 7,0 | 3,5 | 700 | Not applicable | |
| ~~5~~ | ~~PL~~ | ~~Sugar beet~~ | ~~F~~ | ~~*Cercospora beticola*~~ | ~~spraying~~ | ~~BBCH 39~~ | ~~1-3~~ | ~~7-14~~ | ~~5,0~~ | ~~2,5~~ | ~~200-400~~ | ~~7~~ | **The crop was deleted in 2014 due to lack of residue trials** |
| 6 | PL | Cucumber | F | *Pseudomonas syringa*<br>*Pseudoperonospora cubensis* | spraying | BBCH 62-78 | 2-3 | 7-10 days | 3,0 | 1,5 | 700 | 7 | |
| 7 | PL | Tomato (field) | F | *Phytophtora infestans*<br>*Pseudomonas syringae* | spraying | BBCH 51-85 | 3 | 7-10 days | 3,0 | 1,5 | 700 | 7 | |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Use-No. [e]** | **Member state(s)** | **Crop and/ or situation**<br><br>**(crop destination / purpose of crop)** | **F, Fn, Fpn G, Gn, Gpn or I** | **Pests or Group of pests controlled**<br><br>(additionally: developmental stages of the pest or pest group) | **Application** | | | | **Application rate** | | | **PHI** (days) | **Remarks:**<br><br>e.g. g safener/synergist per ha [f] |
| | | | | | Method / Kind | Timing / Growth stage of crop & season | Max. number a) per use b) per crop/ season | Min. interval between applications (days) | kg product / ha a) max. rate per appl. b) max. total rate per crop/season | g kg as/ha<br><br>a) max. rate per appl. b) max. total rate per crop/season | Water L/ha<br><br>min / max | | |
| 8 | PL | Tomato (indoor) | I | *Phytophtora infestans*<br>*Pseudomonas phaseolicola* | spraying | BBCH 56-88 | 3 | 7-10 days | 6,0 | 3,0 | 1500-2000 | 7 | |
| 9 | PL | French bean | F | *Botrytis cinerea*<br>*Colletotrichum lindemuthianum* | spraying | BBCH 65-69 | 2 | 7 days | 3,0 | 1,5 | 600-800 | 7 | |
| **Minor uses according to Article 51 (zonal uses)** | | | | | | | | | | | | | |
| 10 | PL | Grape | F | *Plasmopara viticola* | spraying | I. BBCH 13-17<br>II. BBCH 71-73<br>III. BBCH 73-77 | 3 | 10 days | 2,5 | 1,25 | 500-900 | 7 | |
| 11 | PL | Black currant | F | *Drepanopeziza ribis*<br>*Cronartium ribicola*<br>*Mycosphaerella ribis* | spraying | BBCH 59 - 81 | 3 | 10 days | 3,0 | 1,5 | 700 | 7 | |
| 12 | PL | Walnut | F | *Gnomonia leptostyla*, *Xantomonas campestris pv. Juglandis* | spraying | Before flowering | 2 | 10-14 days | 3,0 | 1,5 | 800-1000 | Not applicable | |
| 13 | PL | Huzelnut | F | *Monilia coryli* | spraying | Before flowering | 2 | 10-14 days | 3,0 | 1,5 | 800-1000 | Not applicable | |
| 14 | PL | *Goniolimon tataricum* | F | *Peronospora statices* | spraying | Rosettes with 15-18 leaves | 3 | 7 days | 2,0 | 1,0 | 1000 | Not applicable | |

### 3.1.1.2 Acceptability of intended uses (and respective fall-back GAPs, if applicable) - re-authorization according art. 43, Reg. 1107/2009

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Use-No. * | Member state(s) | Crop and/ or situation (crop destination / purpose of crop) | F, Fn, Fnp G, Gn, Gnp or I ** | Pests or Group of pests controlled (additionally: develop-mental stages of the pest or pest group) | Application | | | | Application rate | | | PHI (days) | Remarks: e.g. g safener/ synergist per ha, other dose rate expression, dose range (min-max) | zRMS Conclusion (efficacy) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Method / Kind | Timing / Growth stage of crop & season | Max. number a) per use b) per crop/ season | Min. interval between applications (days) | kg or L product / ha a) max. rate per appl. b) max. total rate per crop/season | g or kg as/ha a) max. rate per appl. b) max. total rate per crop/season | Water L/ha min / max | | | |
| **Zonal uses (field or outdoor uses, certain types of protected crops)** | | | | | | | | | | | | | | |
| 1 | PL | Apple, pear | Fpn | *Venturia inaequalis*<br>*Erwinia amylovora* | spraying | BBCH 00-07<br>BBCH 60-71 | a)2<br>b)4 | 7-10 | a)1,5<br>b)6,0 | a) 0,75kg Cu/ha<br>b) 3kg Cu/ha | 500-750 | ~~7~~<br>14 | | Acceptable |
| 2 | PL | Cherry, sweet cherry | Frn | *Pseudomonas syringae* | Spraying | BBCH 51-61<br><br>BBCH 65-73 | 1<br><br>2 | 7-10 | a) 3<br>b)3<br><br>a)1,5<br>b)3 | a) 1,5 kg Cu/ha<br>b)1,5 kg Cu/ha<br><br>a)0,75kg Cu/ha,<br>b) 1,5 kg Cu/ha | 500-750 | 14 | | Acceptable |
| ~~3~~ | ~~PL~~ | ~~Peach~~ | ~~Fpn~~ | ~~*Taphrina deformans*~~ | ~~Spraying~~ | ~~BBCH 00-03~~ | ~~1~~ | ~~-~~ | ~~3,0~~ | ~~1,5 kg Cu/ha~~ | ~~700~~ | ~~n.a.~~ | | Not accepta-ble. Only according to Article 51 can be regis-tered. |
| **Minor uses according to Article 51 (zonal uses)** | | | | | | | | | | | | | | |
| ~~2~~ 3 | PL | Quince | Fpn | *Venturia inaequalis*<br>*Erwinia amylovora* | spraying | BBCH 00-07<br>BBCH 60-71 | a)2<br>b)4 | 7-10 | a)1,5<br>b)6,0 | a) 0,75kg Cu/ha<br>b) 3kg Cu/ha | 500-750 | 7 | | Acceptable |
| ~~3~~ 4 | PL | Medlar | Fpn | *Venturia inaequalis*<br>*Erwinia amylovora* | spraying | BBCH 00-07<br>BBCH 60-71 | a)2<br>b)4 | 7-10 | a)1,5<br>b)6,0 | a) 0,75kg Cu/ha<br>b) 3kg Cu/ha | 500-750 | 7 | | Acceptable |
| ~~4~~ 5 | ~~PL~~ | ~~Cherry, sweet cherry~~ | ~~Fpn~~ | ~~*Pseudomonas syringae*~~ | ~~Spraying~~ | ~~BBCH 51-61~~<br><br>~~BBCH 65-73~~ | ~~1~~<br><br>~~2~~ | ~~7-10~~ | ~~a) 3~~<br>~~b)3~~<br><br>~~a)1,5~~<br>~~b)3~~ | ~~a) 1,5 kg Cu/ha~~<br>~~b)1,5 kg Cu/ha~~<br><br>~~a)0,75kg Cu/ha,~~<br>~~b) 1,5 kg Cu/ha~~ | ~~500-750~~ | ~~14~~ | | |
| ~~5~~ 6 | PL | Apricot | Fpn | *Pseudomonas syringae* | Spraying | BBCH 51-61 | 1 | - | a) 3<br>b)3 | a)1,5 kg Cu/ha<br>b)1,5 kg Cu/ha | 500-750 | Not applicable | | Acceptable |
| ~~6~~ 7 | PL | Plum | Fpn | *Pseudomonas syringae* | Spraying | BBCH 51-61 | 1 | - | a) 3<br>b)3 | a)1,5 kg Cu/ha<br>b)1,5 kg Cu/ha | 500-750 | Not applicable | | Acceptable |
| ~~7~~ 8 | PL | Peach | Fpn | *Taphrina deformans* | Spraying | BBCH 00-03 | 1 | - | a)3 | a)1,5 kg Cu/ha | 700 | Not | | Acceptable |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Use-No. *** | **Member state(s)** | **Crop and/ or situation** (crop destination / purpose of crop) | **F, Fn, Fnp G, Gn, Gnp or I **** | **Pests or Group of pests controlled** (additionally: develop-mental stages of the pest or pest group) | **Application** | | | | **Application rate** | | | **PHI** (days) | **Remarks:** e.g. g safener/ synergist per ha, other dose rate expression, dose range (min-max) | **zRMS Conclusion (efficacy)** |
| | | | | | Method / Kind | Timing / Growth stage of crop & season | Max. number a) per use b) per crop/ season | Min. interval between applications (days) | kg or L product / ha a) max. rate per appl. b) max. total rate per crop/season | g or kg as/ha a) max. rate per appl. b) max. total rate per crop/season | Water L/ha min / max | | | |
| | | | | | | | | | b)3 | b)1,5 kg Cu/ha | | applicable | | |
| ~~8~~ 9 | PL | Walnut | Fpn | *Gnomonia leptostyla, Xantomonas campestris pv. Juglandis,* | Spraying | Before flow-ering | 2 | 10-14 | a)3<br>b)6 | a)1,5kg Cu/ha<br>b)3 kg Cu/ha | 800-1000 | Not applicable | | Acceptable |
| ~~9~~ 10 | PL | Hazelnut | Fpn | *Gnomonia leptostyla, Xanthomonas arborico-la pv. corylina* | Spraying | Before flow-ering | 2 | 10-14 | a)3<br>b)6 | a)1,5kg Cu/ha<br>b)3 kg Cu/ha | 800-1000 | Not applicable | | Acceptable |
| ~~10~~ 11 | PL | Tomato (outdoor) | Fpn | *Pseudomonas syringae pv. Tomato, Phytophthora infestans* | Spraying | BBCH 51-85 | 3 | 7-10 | a)2,5<br>b)7,5 | a)1,25kg Cu/ha<br>b)3,75 kg Cu/ha | 700 | 7 | | Acceptable. Tomato outdoor should be accepted as zonal use, not accord-ing to Arti-cle 51 |
| ~~11~~ 12 | PL | Tomato (indoor) | I | *Pseudomonas syringae pv. Tomato, Phytophthora infestans* | Spraying | BBCH 56-88 | 3 | 7-10 | a)2,5<br>b)7,5 | a)1,25kg Cu/ha<br>b)3,75 kg Cu/ha | 1500-2000 | 3 | | Acceptable |
| ~~12~~ 13 | PL | Aubergines (out-door) | Fpn | *Pseudomonas syringae, Phytophthora infestans* | Spraying | BBCH 51-85 | 3 | 7-10 | a)2,5<br>b)7,5 | a)1,25kg Cu/ha<br>b)3,75 kg Cu/ha | 700 | 7 | | Acceptable |
| ~~13~~ 14 | PL | Aubergines (in-door) | I | *Pseudomonas syringae pv. Tomato, Phytophthora infestans* | Spraying | BBCH 56-88 | 3 | 7-10 | a)2,5<br>b)7,5 | a)1,25kg Cu/ha<br>b)3,75 kg Cu/ha | 1500-2000 | 3 | | Acceptable |
| ~~14~~ 15 | PL | Cucumber (out-door) | Fpn | *Pseudomonas syringae pv. Lachrymans, Pseudoperonospora cubensis* | Spraying | BBCH 62-78 | 3 | 7 | a)2,5<br>b)7,5 | a)1,25kg Cu/ha<br>b)3,75 kg Cu/ha | 700 | 7 | | Acceptable. Cucumber outdoor should be accepted as zonal use, not accord-ing to Arti- |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Use-No. *** | **Member state(s)** | **Crop and/ or situation** (crop destination / purpose of crop) | **F, Fn, Fnp G, Gn, Gnp or I **** | **Pests or Group of pests controlled** (additionally: develop-mental stages of the pest or pest group) | **Application** | | | | **Application rate** | | | **PHI** (days) | **Remarks:** e.g. g safener/ synergist per ha, other dose rate expression, dose range (min-max) | **zRMS Conclusion (efficacy)** |
| | | | | | Method / Kind | Timing / Growth stage of crop & season | Max. number a) per use b) per crop/ season | Min. interval between applications (days) | kg or L product / ha a) max. rate per appl. b) max. total rate per crop/season | g or kg as/ha a) max. rate per appl. b) max. total rate per crop/season | Water L/ha min / max | | | |
| | | | | | | | | | | | | | | cle 51 |
| ~~15~~ 16 | PL | Cucumber (in-door) | I | *Pseudomonas syringae pv. Lachrymans, Pseudoperonospora cubensis* | Spraying | BBCH 10-89 | 4 | 7 | a)1,6 b)6,4 | a)0,8 kg Cu/ha b) 3,2 kg Cu/ha | 500-1500 | 3 | | Acceptable |
| ~~16~~ 17 | PL | Gherkins | Fpn | *Pseudomonas syringae pv. Lachrymans, Pseudoperonospora cubensis* | Spraying | BBCH 62-78 | 3 | 7 | a)2,5 b)7,5 | a) 1,25kg Cu/ha b)3,75 kg Cu/ha | 700 | 7 | | Acceptable |
| ~~17~~ 18 | PL | Courgette | Fpn | *Pseudomonas syringae pv. Lachrymans, Pseudoperonospora cubensis* | Spraying | BBCH 62-78 | 3 | 7 | a)2,5 b)7,5 | a) 1,25kg Cu/ha b)3,75 kg Cu/ha | 700 | 7 | | Acceptable |
| ~~18~~ 19 | PL | Melon (indoor) | I | *Pseudoperonospora cubensis Alternaria spp Colleto-trichum orbiculare Bacterial diseases* | Spraying | BBCH 10-89 | 3 | 7 | a)2,5 b)7,5 | a) 1,25kg Cu/ha b) 3,75 kg Cu/ha | 500-1500 | 7 | | Acceptable |
| ~~19~~ 20 | PL | Pumpkins (indoor) | I | Pseudoperonospora cubensis *Alternaria spp Colleto-trichum orbiculare Bacterial diseases* | Spraying | BBCH 10-89 | 3 | 7 | a)2,5 b)7,5 | a) 1,25kg Cu/ha b)3,75 kg Cu/ha | 500-1500 | 7 | | Acceptable |
| ~~20~~ 21 | PL | Watermelon (indoor) | I | *Pseudoperonospora cubensis Alternaria spp Colleto-trichum orbiculare Bacterial diseases* | Spraying | BBCH 10-89 | 3 | 7 | a)2,5 b)7,5 | a) 1,25kg Cu/ha b)3,75 kg Cu/ha | 500-1500 | 7 | | Acceptable |
| ~~21~~ 22 | PL | French bean, bean with pods | Fpn | *Pseudomonas syringae pv. Phaseolicola, Colletotrichum linde-muthianum,* | Spraying | BBCH 65-69 | 2 | 7 | a)3 b)6 | a)1,5kg Cu/ha b)3 kg Cu/ha | 600-800 | 7 | | Acceptable. French bean should be accepted as |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Use-No. *** | **Member state(s)** | **Crop and/ or situation** (crop destination / purpose of crop) | **F, Fn, Fnp G, Gn, Gnp or I **** | **Pests or Group of pests controlled** (additionally: develop-mental stages of the pest or pest group) | **Application** | | | | **Application rate** | | | **PHI** (days) | **Remarks:** e.g. g safener/ synergist per ha, other dose rate expression, dose range (min-max) | **zRMS Conclusion (efficacy)** |
| | | | | | Method / Kind | Timing / Growth stage of crop & season | Max. number a) per use b) per crop/ season | Min. interval between applications (days) | kg or L product / ha a) max. rate per appl. b) max. total rate per crop/season | g or kg as/ha a) max. rate per appl. b) max. total rate per crop/season | Water L/ha min / max | | | |
| | | | | *Botritis cinerea* | | | | | | | | | | zonal use, not accord-ing to Arti-cle 51 |
| ~~22~~ 23 | PL | Peas with pods | Fpn | *Pseudomonas syringae pv. Phaseolicola, Colletotrichum linde-muthianum, Botritis cinerea* | Spraying | BBCH 65-69 | 2 | 7 | a)3 b)6 | a)1,5kg Cu/ha b)3 kg Cu/ha | 600-800 | 7 | | Acceptable |
| ~~23~~ 24 | PL | Grape (table, wine) | Fpn | *Plasmopara viticola* | Spraying | BBCH 13-17, 17-73, 73-77 | 3 | 10-14 | a)2,5 b)7,5 | a)1,25kg Cu/ha b)3,75 kg Cu/ha | 500-900 | 21 | | Acceptable |
| ~~24~~ 25 | PL | Currant | Fpn | *Drepanopeziza ribis, Mycosphaerella ribis* *Cronartium ribicola,* | Spraying | BBCH 59-65 BBCH 59 -81 | 2 | 10 | a)2.4 b)4.8 | a)1,2kg Cu/ha b)2.4kg Cu/ha | 700 | 7 | | Acceptable |

* Use number(s) in accordance with the list of all intended GAPs in Part B, Section 0 should be given in column 1.

** F: professional field use, Fn: non-professional field use, Fpn: professional and non-professional field use, G: professional greenhouse use, Gn: non-professional greenhouse use, Gpn: professional and non-professional greenhouse use, I: indoor application

Column 15: zRMS conclusion.

| | |
|---|---|
| A | Acceptable |
| R | Acceptable with further restriction |
| C | To be confirmed by cMS |
| N | Not acceptable / evaluation not possible |
| n.r. | Not relevant for section 3 |

## 3.2 Efficacy data (KCP 6)

### Introduction

Applicant applies for authorization for the marketing of plant protection product Miedzian 50 WP pursuant to article 33 of the Regulation of the European Parliament and the Council in a number 1107/2009 of 21 October 2009. For now, Applicant would like to renewal under Article 43 and registered new minor uses according to Article 51 of Miedzian 50 WP.
DRR this core assessment. The application shall be in Poland. The applicant points out Poland as a country rapporteur Requested. The formulation of this product is wettable powder (WP).
This document describes the acceptable use conditions required for the registration of Miedzian 50 WP containing as a.i copper oxychloride (500g Cu/kg).
Copper oxychloride is the common name for dicopper (II) chloride trihydroxide (IUPAC).

This documentation is being written for renewal of product Miedzian 50 WP. Miedzian 50 WP was used for many years for the control such pathogen as *Venturia inaequalis, Venturia pyrina, Erwinia amylovora, Pseudomonas syringae, Taphrina deformans, Gnomonia leptostyla, Xantomonas campestris pv. Juglandis, Xanthomonas arboricola pv. Corylina, Pseudomonas syringae pv. Tomato, Phytophthora infestans, Pseudomonas syringae pv. Lachrymans, Perenospora cubensis, Alternaria spp, Colletotrichum spp , Bacterial diseases, Plasmopara viticola, Drepanopeziza ribis, Cronartium ribicola, Mycosphaerella ribis* and *Peronospora ssp.*

### Description of active substances

Copper oxychloride is not a new substance. Copper oxychloride is the common name for dicopper (II) chloride trihydroxide (IUPAC). CAS number for copper oxychloride is 1332-40-7.

### Mode of action

Copper oxychloride belong to Group Y, and have multisite activity. It interferes with several of the (fungus) vital life functions. For this reason resistance is less likely to develop. Copper oxychloride is a protectant fungicide/bactericide which prevents infection on plants. Its mode of action is by interfering with the enzyme system of spores and mycelium, a process which is usually irreversible. It forms a chemical barrier against fungal attack and is a foliar fungicide with preventative action.

**Table 3.2-1: Details of the active substances**

| Active substance | Copper oxychloride |
|---|---|
| Concentration (Unit: g/kg or g/L...) | 500 g Cu/kg |
| Chemical group | Inorganic compound |
| Mode of action | Multi-site activity |
| Biological action | preventive |
| Group of pesticides | fungicide |

### Description of the plant protection product

Miedzian 50 WP is a wettable powder (WP) containing 500 g Cu/kg copper oxychloride.

**Table 3.2-2: Simplified table of currently registered uses and requested uses for the product code.**

| Uses | | Member State | Currently registered rate(s) | Requested rate(s) | Comments / Other relevant details on GAPs |
|---|---|---|---|---|---|
| **Crop(s)** | **Target(s)** | | | | |
| Apple | *Venturia inaequalis, Erwinia amylovora* | PL | 1,5 kg/ha | 1,5 kg/ha | |
| Pear | *Venturia pyrina, Erwinia amylovora* | PL | 1,5 kg/ha<br>0,75- 1,5 kg/ka | 1,5 kg/ha | |
| Quince | *Venturia inaequalis, Erwinia amylovora* | PL | - | 1,5 kg/ha | |
| Medlar | *Venturia inaequalis, Erwinia amylovora* | PL | - | 1,5 kg/ha | |
| Cherry, sweet cherry | *Pseudomonas syringae* | PL | 1,5-3 kg/ha | 1,5-3 kg/ha | |
| Apricot | *Pseudomonas syringae* | PL | - | 3 kg/ha | |
| Plum | *Pseudomonas syringae* | PL | - | 3 kg/ha | |
| Peach | *Taphrina deformans* | PL | 7 kg/ha | 3 kg/ha | |
| Walnut | *Gnomonia leptostyla, Xantomonas campestris pv. Juglandis,* | PL | 2-3 kg/ha | 2-3 kg/ha | |
| Hazelnut | *Gnomonia leptostyla, Xanthomonas arboricola pv. corylina* | PL | 2-3 kg/ha | 2-3 kg/ha | |
| Tomato (outdoor) | *Pseudomonas syringae pv. Tomato, Phytophthora infestans* | PL | 2,5-3 kg/ha | 2,5 kg/ha | |
| Tomato (indoor) | *Pseudomonas syringae pv. Tomato, Phytophthora infestans* | PL | 3 kg/ha | 2,5 kg/ha | |
| Aubergines (outdoor) | *Pseudomonas syringae, Phytophthora infestans* | PL | - | 2,5 kg/ha | |
| Aubergines (indoor) | *Pseudomonas syringae, Phytophthora infestans* | PL | - | 2,5 kg/ha | |
| Cucumber (indoor) | *Pseudomonas syringae pv. Lachrymans, Pseudoperonospora cubensis* | PL | - | 1,6 kg/ha | |
| Cucumber (outdoor) | *Pseudomonas syringae pv. Lachrymans, Pseudoperonospora cubensis* | PL | 2,5-3 kg/ha | 2,5 kg/ha | |
| Gherkins | *Pseudomonas syringae pv. Lachrymans, Pseudoperonospora cubensis* | PL | - | 2,5 kg/ha | |
| Courgette | *Pseudomonas syringae* | PL | - | 2,5 kg/ha | |

| Uses | | Member State | Currently registered rate(s) | Requested rate(s) | Comments / Other relevant details on GAPs |
|---|---|---|---|---|---|
| **Crop(s)** | **Target(s)** | | | | |
| | *pv. Lachrymans, Pseudoperonospora cubensis* | | | | |
| Melon (indoor) | *Pseudoperonospora cubensis , Alternaria spp Colletotrichum spp Bacterial diseases* | PL | - | 2,5 kg/ha | |
| Pumpkins (indoor) | *Pseudoperonospora cubensis , Alternaria spp Colletotrichum spp Bacterial diseases* | PL | - | 2,5 kg/ha | |
| Watermelon (indoor) | *Pseudoperonospora cubensis Alternaria spp Colletotrichum spp Bacterial diseases* | PL | - | 2,5 kg/ha | |
| French bean | *Pseudomonas syringae pv. Phaseolicola, Colletotrichum lindemuthianum, Botritis cinerea* | PL | 3 kg/ha | 3 kg/ha | |
| Bean with pods | *Pseudomonas syringae pv. Phaseolicola, Colletotrichum lindemuthianum, Botritis cinerea* | PL | - | 3 kg/ha | |
| Peas with pods | *Pseudomonas syringae pv. Phaseolicola, Colletotrichum lindemuthianum, Botritis cinerea* | PL | - | 3 kg/ha | |
| Grape (table, wine) | *Plasmopara viticola* | PL | 2,5 kg/ha | 2,5 kg/ha | |
| Currant | *Drepanopeziza ribis, Cronartium ribicola, Mycosphaerella ribis* | PL | 3 kg/ha | 2,4 kg/ha | |

Further details are in the table “All intended uses” in Part B - Section 0.

**Description of the target pests**

**Table 3.2-3: Glossary of pests mentioned in the dossier.**

| EPPO code | Scientific name | Common name* |
|---|---|---|
| VENTIN | *Venturia inaequalis* | Parch jabłoni |
| VENTPI | *Venturia pyrina* | Parch gruszy |

| EPPO code | Scientific name | Common name* |
|---|---|---|
| ERWIAM | *Erwinia amylovora* | Zaraza ogniowa |
| PSDMSY | *Pseudomonas syringae* | Rak bakteryjny drzew pestkowych |
| TAPHDE | *Taphrina deformans* | Kędzierzawość liści brzoskwini |
| GNOMLE | *Gnomonia leptostyla* | Antraknoza |
| XANTJU | *Xantomonas campestris pv. Juglandis* | Bakteryjna zgorzel |
| XANTCY | *Xanthomonas arboricola pv. corylina* | Bakteryjna zgorzel |
| PSDMTM | *Pseudomonas syringae pv. Tomato* | Baktryjna cętkowatość |
| PHYTIN | *Phytophthora infestans* | Zaraza ziemniaka |
| PSDMLA | *Pseudomonas syringae pv. Lachrymans* | Bakteryjna kanciasta plamistość |
| PSPECU | *Pseudoperonospora cubensis* | Mączniak rzekomy dyniowatych |
| ALTEST | *Alternaria spp* | alternarioza |
| COLLLA | *Colletotrichum orbiculare* | antraknoza |
| PSDMPH | *Pseudomonas syringae pv. Phaseolicola* | Bakterioza obwódkowa fasoli |
| COLLLD | *Colletotrichum lindemuthianum* | Antraknoza fasoli |
| BOTRICI | *Botritis cinerea* | Szara pleśń |
| PLASVI | *Plasmopara viticola* | Mączniak rzekomy winorośli |
| DREPRI | *Drepanopeziza ribis* | Antraknoza porzeczki |
| CORONRI | *Cronartium ribicola* | Rdza wejmutkowo-porzeczkowa |
| MYCORI | *Mycosphaerella ribis* | Biała plamistość liści |

* optional

**Table 3.2-4: Major / minor status of intended uses (for all cMS and zRMS).**

| Crop and/or situation | Crop status | | Pests or group of pests controlled | Pest status | |
|---|---|---|---|---|---|
| | Major | minor | | Major | minor |
| Apple | PL | - | *Venturia inaequalis* | PL | - |
| | | | *Erwinia amylovora* | PL | - |
| Pear | - | PL | *Venturia pyrina* | PL | - |
| | | | *Erwinia amylovora* | PL | - |
| Quince | - | PL | *Venturia inaequalis* | PL | - |
| | | | *Erwinia amylovora* | PL | - |
| Medlar | - | PL | *Venturia inaequalis* | PL | - |
| | | | *Erwinia amylovora* | PL | - |
| Cherry | - | PL | *Pseudomonas syringae* | PL | - |
| Sweet cherry | - | PL | *Pseudomonas syringae* | PL | - |
| Apricot | - | PL | *Pseudomonas syringae* | PL | - |

| Crop and/or situation | Crop status | | Pests or group of pests controlled | Pest status | |
|---|---|---|---|---|---|
| | Major | minor | | Major | minor |
| Plum | - | PL | *Pseudomonas syringae* | PL | - |
| Peach | - | PL | *Taphrina deformans* | PL | - |
| Walnut | - | PL | *Gnomonia leptostyla* | PL | - |
| | | | *Xantomonas campestris pv. Juglandis* | PL | - |
| Hazelnut | - | PL | *Gnomonia leptostyla,* | PL | - |
| | | | *Xanthomonas arboricola pv. corylina* | PL | - |
| Tomato (outdoor) | - | PL | *Pseudomonas syringae pv. Tomato,* | PL | - |
| | | | *Phytophthora infestans* | PL | - |
| Tomato (indoor) | - | PL | *Pseudomonas syringae pv. Tomato,* | PL | - |
| | | | *Phytophthora infestans* | PL | - |
| Aubergines | - | PL | *Pseudomonas syringae* | PL | - |
| | | | *Phytophthora infestans* | PL | - |
| Cucumber (indoor) | - | PL | *Pseudomonas syringae pv. Lachrymans* | PL | - |
| | | | *Pseudoperonospora cubensis* | PL | - |
| Cucumber (outdoor) | - | PL | *Pseudomonas syringae pv. Lachrymans* | PL | - |
| | | | *Pseudoperonospora cubensis* | PL | - |
| Gherkins | - | PL | *Pseudomonas syringae pv. Lachrymans* | PL | - |
| | | | *Pseudoperonospora cubensis* | PL | - |
| Courgette | - | PL | *Pseudomonas syringae pv. Lachrymans* | PL | - |
| | | | *Pseudoperonospora cubensis* | PL | - |
| Melon (indoor) | - | PL | *Pseudoperonospora cubensis* | PL | - |
| | | | *Alternaria spp* | PL | - |
| | | | *Colletotrichum orbiculare* | PL | - |
| | | | *Bacterial diseases* | PL | - |
| Pumpkins (indoor) | - | PL | *Pseudoperonospora cubensis* | PL | - |
| | | | *Alternaria spp* | PL | - |
| | | | *Colletotrichum orbiculare* | PL | - |

| Crop and/or situation | Crop status | | Pests or group of pests controlled | Pest status | |
|---|---|---|---|---|---|
| | Major | minor | | Major | minor |
| | | | *Bacterial diseases* | PL | - |
| Watermelon (indoor) | - | PL | *Pseudoperonospora cubensis* | PL | - |
| | | | *Alternaria spp* | PL | - |
| | | | *Colletotrichum orbiculare* | PL | - |
| | | | *Bacterial diseases* | PL | - |
| French bean | - | PL | *Pseudomonas syringae pv. Phaseolicola,* | PL | - |
| | | | *Colletotrichum lindemuthianum,* | PL | - |
| | | | *Botritis cinerea* | PL | - |
| Grape (table, wine) | - | PL | *Plasmopara viticola* | PL | - |
| Currant | - | PL | *Drepanopeziza ribis* | PL | - |
| | | | *Cronartium ribicola* | PL | - |
| | | | *Mycosphaerella ribis* | PL | - |

**Compliance with the Uniform Principles**

Assessment was performed according to EPPO guidelines.

**Information on trials submitted (3.1 Efficacy data)**

**Table 3.2-5: Presentation of trials (efficacy trials, preliminary trials...)**

| Crop(s) * | Target(s)* | Country | Years | Type of trial** | Number of trials (number of valid trials) | | GEP, non-GEP, official*** | Comments (any other relevant information) |
|---|---|---|---|---|---|---|---|---|
| | | | | | Poland | - | | |
| Apple | *Venturia inaequalis* | PL | 2006 | E | 4 | - | GEP | |
| | | | 2019 | MED + E | 4 | - | GEP | |
| | TOTAL | - | | - | 8 | - | - | |
| | *Erwinia amylovora* | PL | 2006 | MED+E | 2 | - | GEP | |
| | | PL | 2019 | MED+E | 2 | - | GEP | |
| TOTAL | - | - | | - | 12 | - | - | |
| Pear | *Venturia pyrina* | PL | 2006 | E | 2 | - | GEP | |
| | TOTAL | - | | - | 2 | - | - | |
| | *Erwinia amylovora* | PL | 2006 | MED+E | 2 | - | GEP | |

| Crop(s) * | Target(s)* | Country | Years | Type of trial** | Number of trials (number of valid trials) | | GEP, non-GEP, official*** | Comments (any other relevant information) |
|---|---|---|---|---|---|---|---|---|
| | | | | | Poland | - | | |
| TOTAL | - | - | | - | 4 | - | - | |
| Cherry | *Pseudomonas syringae* | PL | 2004 | MED+E | 2 | - | GEP | |
| | | | 2006 | MED+E | 1 | - | GEP | |
| TOTAL | - | - | | - | 3 | - | - | |
| Tomato (outdoor) | *Pseudomonas syringae pv. Tomato,* | PL | 2006 | MED+E | 2 | - | GEP | |
| | TOTAL | - | | - | 2 | - | - | |
| | *Phytophthora infestans* | PL | 2006 | MED+E | 2 | - | GEP | |
| TOTAL | - | - | | - | 4 | - | - | |
| Cucumber (outdoor) | *Pseudomonas syringae pv. Lachrymans* | PL | 2006 | MED+E | 2 | - | GEP | |
| | TOTAL | - | | - | 2 | - | - | |
| | *Pseudoperonospora cubensis* | PL | 2006 | MED+E | 2 | - | GEP | |
| TOTAL | - | - | | - | 4 | - | - | |
| French bean | *Pseudomonas syringae pv. Phaseolicola,* | PL | 2006 | MED+E | 2 | - | GEP | |
| | TOTAL | - | | - | 2 | - | - | |
| | *Colletotrichum lindemuthianum,* | PL | 2006 | MED+E | 2 | - | GEP | |
| | TOTAL | - | | - | 2 | - | - | |
| | *Botritis cinerea* | PL | 2006 | MED+E | 2 | - | GEP | |
| TOTAL | - | - | | - | 6 | - | - | |

* According to the GAP table. Timing of the application(s) can be added if relevant (e.g. Pre-mergence vs post-emergence, spring vs autumn).
** P = preliminary trial, MED = minimum effective dose, E = efficacy trial.
*** GEP: Good Experimental Practices. Official: carried out by a national official organisation.

**Table 3.2-6: Presentation of reference standards used in trials (efficacy trials, preliminary trials...)**

| Crop(s) | Reference standard | Country(ies) where the product is registered (1) | Authorization number | Active substance(s) | Formulation | | Registered application rate(3) | Application rate in trials (per treatment) | Remark(4) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Type(2) | Concentration of a.s. | | | |
| Apple, pear | Champion 50 WP | PL | Zezwolenie MRiRW nr R-181/2018 z dnia 14.12.2018 r. | copper hydroxide | WP | 500 g/kg | 1 kg/ha | 0,75 kg/ha, 1,5kg/ha, 3 kg/ha | |
| | Cuproflow | PL | Zezwolenie MRiRW Nr R | copper | SC | 375g/L | 1,5-2 l/ha | 1,5 l/ha | |

| Crop(s) | Reference standard | Country(ies) where the product is registered (1) | Authorization number | Active substance(s) | Formulation | | Registered application rate(3) | Application rate in trials (per treatment) | Remark(4) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Type(2) | Concentration of a.s. | | | |
| | 375 SC | | – 25/2004 z dnia 27.05.2004 r., zmienione decyzją MRiRW Nr R-89/2006 z dnia 07.11.2006 r., zmienione decyzją MRiRW nr R-124 /2008 z dnia 25. 07.2008 r., zmienione decyzją MRiRW nr R- 165/2009 r. z dnia 22.10.2009 r., decyzją MRiRW nr R-11/2010d z dnia 20.01.2010 r., decyzją MRiRW nr R-32/2011d z dnia 27.01.2011 r. oraz decyzją MRiRW nr R - 298/2012d z dnia 09.11.2012 r. | oxychloride | | | | | |
| | Miedzian Extra 350 SC | PL | Zezwolenie MRiRW nr R - 135/2015 z dnia 03.09 2015 zmienione decyzją MRIRW nr R - 3/2017d z dnia 04.01.2017 r. | copper oxychloride | SC | 350g/L | 1,5l/ha | 1,5l/ha | |
| | Kocide 101 WP | PL | Zezwolenie MRiGŻ Nr 236/97 z dnia 22.11.1997r. Zmienione decyzja MRiRW Nr R - 554/2003p z dnia 25.09.2003r. oraz decyzją MRiRW Nr R - 248/2004o z dnia 18.05.2004 r. | copper hydroxide | WP | 500 g/kg | 1,5 kg/ha | 0,75 kg/ha, 1,5kg/ha, 3 kg/ha | |
| | Nordox 75 WG | PL | Zezwolenie MRiRW nr R - 173/2015 z dnia 20.10.2015 r., zmienione decyzji MRiRW nr R - 537/2016d z dnia 22.11.2016 r. | copper oxide | WG | 750g/kg | 1kg/ha | 1kg/ha | |
| | Cuproflow 377,5 SC | PL | Zezwolenie MRiRW nr R - 139/2015 z dnia 16.09.2015 r. | copper oxychloride | SC | 377,5g/L | 2l/ha | 2l/ha | |
| Pear | Miedzian Extra 350 SC | PL | Zezwolenie MRiRW nr R - 135/2015 z dnia 03.09 2015 zmienione decyzją MRIRW nr R - 3/2017d z dnia 04.01.2017 r. | copper oxychloride | SC | 350g/L | 1,5l/ha | 1,5l/ha | |
| | Champion 50 WP | PL | Zezwolenie MRiRW nr R-181/2018 z dnia 14.12.2018 r. | copper hydroxide | WP | 500 g/kg | 1 kg/ha | 0,75 kg/ha, 1,5kg/ha, 3 kg/ha | |
| | Cuproflow 375 SC | PL | Zezwolenie MRiRW nr R-25/2004 z dnia 27.05.2004 r. zmienione ostatecznie decyzją MRiRW nr R-298/2012d z dnia 09.11.2012 r. | copper oxychloride | SC | 375g/L | 1,5-2 l/ha | 1,5l/ha, 2l/ha | |
| | Kocide 101 WP | PL | Zezwolenie MRiGŻ Nr 236/97 z dnia 22.11.1997r. Zmienione decyzja MRiRW Nr R - 554/2003p | copper hydroxide | WP | 500 g/kg | 1,5kg/ha | 0,75 kg/ha, 1,5kg/ha, 3 kg/ha | |

| Crop(s) | Reference standard | Country(ies) where the product is registered (1) | Authorization number | Active substance(s) | Formulation | | Registered application rate(3) | Application rate in trials (per treatment) | Remark(4) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Type(2) | Concentration of a.s. | | | |
| | | | z dnia 25.09.2003r. oraz decyzją MRiRW Nr R - 248/2004o z dnia 18.05.2004 r. | | | | | | |
| Cherry | Nordox 75 WG | PL | Zezwolenie MRiRW nr R - 173/2015 z dnia 20.10.2015 r., zmienione decyzji MRiRW nr R - 537/2016d z dnia 22.11.2016 r. | copper oxychloride | WG | 750 g/kg | 1-2kg/ha, | 1kg/ha, 2 kg/ha | |
| | Champion 50 WP | PL | Zezwolenie MRiRW nr R-181/2018 z dnia 14.12.2018 r | copper hydroxide | WP | 500 g/kg | 1,5 kg/ha, 3 kg/ha | 1,5 kg/ha, 3kg/ha | |
| | Funguran-OH 50 WP | PL | Zezwolenie MRiRW nr R - 189/2014 z dnia 12.09.2014 r. zmienione decyzją MRiRW nr R - 239/2016d z dnia 05.05.2016 r. | copper hydroxide | WP | 767,7 g/kg | 1-1,5 kg/ha | 1,5 kg/ha, 3 kg/ha | |
| | Miedzian Extra 350 SC | PL | Zezwolenie MRiRW nr R - 135/2015 z dnia 03.09 2015 zmienione decyzją MRIRW nr R - 3/2017d z dnia 04.01.2017 r. | copper oxychloride | SC | 350g/L | 1,5-3 l/ha | 1,5 l/ha, 3l/ha | |
| Tomato (outdoor) | Miedzian 50 WG | PL | Zezwolenie MRiRW nr R-58/2009 z dnia 04.05.2009 r. zmienione decyzją MRiRW nr R-203/2010d z dnia 20.07.2010 r. | copper oxychloride | WG | 500g/kg | 2,5 kg/ha | 2,5 kg/ha | |
| Cucumber (outdoor) | Miedzian 50 WG | PL | Zezwolenie MRiRW nr R-58/2009 z dnia 04.05.2009 r. zmienione decyzją MRiRW nr R-203/2010d z dnia 20.07.2010 r. | copper oxychloride | WG | 500 g/kg | 2,5 kg/ha | 2,5 kg/ha | |
| French bean | Miedzian 50 WG | PL | Zezwolenie MRiRW nr R-58/2009 z dnia 04.05.2009 r. zmienione decyzją MRiRW nr R-203/2010d z dnia 20.07.2010 r. | copper oxychloride | WG | 500 g/kg | 3 kg/ha | 3 kg/ha | |

(1) only on use(s) applied for (with the test product).
(2) e.g. WP (wettable powder), EC (emulsifiable concentrate), etc.
(3) dose(s) / dose range authorized on that use in the country.
(4) Other relevant information (e.g. uses, number of applications, spray volume, method of application, etc.).

| | |
|---|---|
| Comments of zRMS: | All necessary information's were provided above by Applicant. This document summarises the information related to the efficacy of the plant protection product – Miedzian 50 WP.<br><br>Miedzian 50 WP (product code: Miedzian 50 WP) containing copper oxychloride, 500 g/kg (as Cu). The formulation of this product is a wettable powder (WP). All necessary information's about tested plant protection products, active substances, studied pests, reference products, etc. are correctly presented in this drr by Applicant.<br><br>Miedzian 50 WP is an effective, selective fungicide for the control of downy mil- |

| | |
|---|---|
| | dew of grapevine, late blight of solanaceous crops as well as scab of pome fruits. Copper oxychloride is an effective component in the solution for sustainable resistance strategies.<br><br>In Poland 27 plant protection products containing copper are already registered. **The data presented in this dossier fully support the renewal under Article 43 of Miedzian 50 WP for the control of pests included in GAP table and label project. Because the approvals for both Cobresal 50 WP, Dalion 50 WP and Spator 50 WP. did not include their labels in the and their names were crossed out on the cover pages of the dossiers Miedzian 50 WP.** |

### 3.2.1 Preliminary tests (KCP 6.1)

Preliminary studies have not been conducted because the active substance (copper oxychloride) is known and has long been used in the protection of plants. The effect of the active substances is well known and sufficient large scale efficacy trials are available to evaluate the effectiveness of Miedzian 50 WP. Therefore preliminary tests are not described and not required. This documentation is being written for renewal of product Miedzian 50 WP. Miedzian 50 WP was used for many years in orchards and vegetable plantations for the control of: *Venturia inaequalis, Venturia pyrina, Erwinia amylovora, Pseudomonas syringae, Taphrina deformans, Gnomonia leptostyla, Xantomonas campestris pv. Juglandis, Xanthomonas arboricola pv. Corylina, Pseudomonas syringae pv. Tomato, Phytophthora infestans, Pseudomonas syringae pv. Lachrymans, Perenospora cubensis, Alternaria spp, Colletotrichum spp , Bacterial diseases, Plasmopara viticola, Drepanopeziza ribis, Cronartium ribicola, Mycosphaerella ribis* and *Peronospora ssp.*

| | |
|---|---|
| Comments of zRMS: | Products containing Copper compounds, including copper oxychloride, have been registered for many years (over 28) and the efficacy of the active ingredient has been widely researched and is well known. Therefore, no preliminary screening tests are required in the opinion of Evaluator.<br>**Also, in accordance with the Article 43 of Regulation (EC) No 1107/2009, the already submitted data will not be re-evaluated because the conclusions of previous assessments are still considered valid in the case of no significant change of the GAP table.** |

### 3.2.2 Minimum effective dose tests (KCP 6.2)

No results of preliminary screening tests are here. The efficacy of reduced rates of Miedzian 50 WP for control of pathogens in apple, pear, cherry, tomato (outdoor and indoor), cucumber (outdoor) and french beans orchards was investigated in field tests carried out between years 2004 and 2019. In the appropriate researches of efficacy were tested several doses and to register was chosen the lowest effective. All researches were conducted according to EPPO standard PP 1/225 *'Minimum effective dose'.*

**APPLE/VENTIN**

4 field trials were established in order to determine the minimum effective dose for the control of the apple /VENTIN. Miedzian 50 WP was tested at 0,9 kg/ha, 1,2kg/ha and 1,5kg/ha in apple for the control of VENTIN. The rates reflect the proposed label rate 60% and 80% of the full recommended rate of Miedzian 50 WP in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

**APPLE/ ERWIAM**

4 field trials were established in order to determine the minimum effective dose for the control of the apple /ERWIAM. Miedzian 50 WP was tested at 0,75 kg/ha, 0,9 kg/ha, 1,2kg/ha and 1,5kg/ha in apple for the control of ERWIAM. The rates reflect the proposed label rate 50% ,60% and 80% of the full recommended rate of Miedzian 50 WP in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

**PEAR/ ERWIAM**

2 field trials were established in order to determine the minimum effective dose for the control of the pear /ERWIAM. Miedzian 50 WP was tested at 0,75 kg/ha and 1,5kg/ha in pear for the control of ERWIAM. The rates reflect the proposed label rate 50% and 100% of the full recommended rate of Miedzian 50 WP in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

**TOMATO (outdoor)/ PSDMTM**

2 field trials were established in order to determine the minimum effective dose for the control of the tomato (outdoor) /PSDMTM. Miedzian 50 WP was tested at 2,5kg/ha, 3 kg/ha and 6kg/ha in tomato (outdoor) for the control of PSDMTM. The rates reflect the proposed label rate 40%, 50% and 100% of the full recommended rate of Miedzian 50 WP in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

**TOMATO (outdoor)/ PHYTIN**

2 field trials were established in order to determine the minimum effective dose for the control of the tomato (outdoor) /PHYTIN. Miedzian 50 WP was tested at 2,5kg/ha, 3 kg/ha and 6kg/ha in tomato (outdoor) for the control of PHYTIN. The rates reflect the proposed label rate 40%, 50% and 100% of the full recommended rate of Miedzian 50 WP in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

**CUCUMBER (outdoor)/ PSDMLA**

2 field trials were established in order to determine the minimum effective dose for the control of the cucumber (outdoor) /PSDMLA. Miedzian 50 WP was tested at 2,5kg/ha, 3 kg/ha and 6kg/ha in cucumber (outdoor) for the control of PSDMLA. The rates reflect the proposed label rate 40%, 50% and 100% of the full recommended rate of Miedzian 50 WP in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

**CUCUMBER (outdoor)/ PSPECU**

2 field trials were established in order to determine the minimum effective dose for the control of the cucumber (outdoor) /PSPECU. Miedzian 50 WP was tested at 2,5kg/ha, 3 kg/ha and 6kg/ha in cucumber (outdoor) for the control of PSPECU. The rates reflect the proposed label rate 40%, 50% and 100% of the full recommended rate of Miedzian 50 WP in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

**FRENCH BEAN/ PSDMPH**

2 field trials were established in order to determine the minimum effective dose for the control of the french bean/PSDMPH. Miedzian 50 WP was tested at 2,5kg/ha, 3 kg/ha and 6kg/ha in french bean for the control of PSDMPH. The rates reflect the proposed label rate 40%, 50% and 100% of the full recommended rate of Miedzian 50 WP in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

**FRENCH BEAN/ COLLLD**

2 field trials were established in order to determine the minimum effective dose for the control of the french bean/COLLLD. Miedzian 50 WP was tested at 2,5kg/ha, 3 kg/ha and 6kg/ha in french bean for the control of COLLD. The rates reflect the proposed label rate 40%, 50% and 100% of the full recommended rate of Miedzian 50 WP in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

**FRENCH BEAN/ BOTRICI**

2 field trials were established in order to determine the minimum effective dose for the control of the french bean/BOTRICI. Miedzian 50 WP was tested at 2,5kg/ha, 3 kg/ha and 6kg/ha in french bean for the control of BOTRICI. The rates reflect the proposed label rate 40%, 50% and 100% of the full recommended rate of Miedzian 50 WP in accordance with the EPPO standard PP 1/225 '*Minimum effective dose'*.

| | |
|---|---|
| Comments of zRMS: | In order to provide information to establish the minimum effective dose, some of the trials conducted to demonstrate efficacy should include at least two lower dose(s) than recommended dose. In the appropriate researches of efficacy were tested differ doses and to register was chosen the lowest effective, which is in accordance to EPPO 1/225 (2). During field tests Applicant used different doses of fungicide Miedzian 50 WP containing copper oxychloride. So, in the appropriate researches of efficacy were tested differ doses and to register was chosen the lowest effective, which is in accordance to EPPO 1/225 (2). What is more, fungicides products containing active ingredient – copper oxychloride have been allowed to use for many years. Also, in the literature of crop protection vast amounts of information can be found on efficacy of the plant protection products containing copper oxychloride.<br><br>**However, in accordance with the Article 43 of Regulation (EC) No 1107/2009, the already submitted data will not be re-evaluated because the conclusions of previous assessments are still considered valid in the case of no significant change of the GAP table.** |

## 3.2.3 Efficacy tests (KCP 6.2)

The applicant submitted 37 reports (in total) showing the results in research into product efficacy carried out between 2004 and 20019 in apple trees (12 trials), pear (4 trials), cherry (3 trials), tomato (outdoor) (4 trials), tomato (indoor) (4 trials), cucumber (outdoor) (4 trials) and french bean (6 trials).

**List of these reports is contained in** Appendix 1.

The efficacy trials were designed, conducted and reported according to the following EPPO guidelines:
PP 1/152(4) Design and analysis of efficacy evaluation trials
PP 1/181(4) Conduct and reporting of efficacy evaluation trials including good experimental practice
PP 1/135(4) Phytotoxicity assessment
PP 1/225(2) Minimum effective dose

**APPLE/VENTIN**

**Trial: OR/17/2006/1/I**

| | | |
|---|---|---|
| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/5(3) |

| | | |
|---|---|---|
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 4,5m x 3,0m |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Apple |
| | Varieties per crop | Jonagold |
| | Sowing period | 1987 |
| **Application** | Crop stage (BBCH)* at application | BBCH 51-55 |
| | Number of applications<br>Intervals between applications | 3 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves ( 6-stage bonitation scale) and fruits (3-stage bonitation scale) |
| | Assessment dates | Leaves: 30.05.2006, 12.07.2006; fruits: 12.07.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | loamy soil |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Orchard, Dąbrowice (near Skierniewice)/ prov. mazowieckie (Poland) |

* BBCH for weeds, pre-emergence, preventive / curative application, insect stage…

The biological effectiveness of Miedzian 50 WP in controlling apple scab was assessed on the basis of analysis of infected leaves and fruits. Observations were carried out on 200 leaves in each of the four replicates (trial of 800 leaves - 4 repetitions of 200) twice a season and on 100 fruits in each of the 4 replicates (sample of 400 fruits - 4 replicates of 100). The degree of leaf and fruit infestation was assessed using a 6-point bonitation scale (0 - no disease symptoms, 5 - over 75% of the area occupied by the fungus for leaves and over 30% for fruit).
The effectiveness of the Miedzian 50 WP fungicide applied at a dose of 1,5 kg/ha was very high. In protecting leaves against scab, it exceeded 97 and 96%, respectively in the first and second assessment dates, and amounted to 92.3% in fruit protection. The size of the surface of the leaves and fruits occupied by the fungus on trees protected by the Miedzian 50 WP fungicide and standard fungicides did not differ significantly.
The effectiveness of the standard fungicides used, Champion 50 WP and Cuproflow 375 SC, in protecting apple trees against scab was very high. Their effectiveness, both in leaf and fruit protection, was over 90% and did not differ from the effectiveness of the tested fungicide, Miedzian 50 WP.
Atmospheric conditions with frequent rainfall in the first part of the 2006 season (April and May), and the accompanying mass seedings of *Venturia inaequalis* sack spores, caused a strong occurrence of apple scab. In the orchard in Dąbrowice, at the end of May, about 50% of the leaves were infected on unprotected trees of the Jonagold variety, and 40% of the leaves were infested on the plots which were not treated within the time limits for using copper fungicides (the first three spraying), which indicates very much sick pressure at that time.
During the research, neither the leaves nor the fruit of the Jonagold variety were found to show any symptoms of phytotoxic effects of the tested preparation Miedzian 50 WP.
No visual impact of the test agent on non-target organisms was found during visual observations.
Fungicide Miedzian 50 WP applied at a dose of 1,5 kg/ha showed high efficiency in combating apple scab, in leaf protection over 96% and in fruit protection – 92,3%.

**Trial: OR/17/2006/1/II**

| | | |
|---|---|---|
| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/5(3) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 4,0m x 2,5m |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Apple |
| | Varieties per crop | Idared |
| | Sowing period | 1991 |
| **Application** | Crop stage (BBCH)* at application | BBCH 51-55 |
| | Number of applications<br>Intervals between applications | 3 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves ( 6-stage bonitation scale) and fruits (3-stage bonitation scale) |
| | Assessment dates | Leaves: 13.06.2006, 10.08.2006; fruits: 25.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy loam soil |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Orchard, Miłobądź (near Tczew)/ prov. pomorskie (Poland) |

The biological effectiveness of Miedzian 50 WP in controlling apple scab was assessed on the basis of analysis of infected leaves and fruits. Observations were carried out on 200 leaves in each of the four replicates (trial of 800 leaves - 4 repetitions of 200) twice a season and on 100 fruits in each of the 4 replicates (sample of 400 fruits - 4 replicates of 100). The degree of leaf and fruit infestation was assessed using a 6-point bonitation scale: (0 - no disease symptoms, 5 - over 75% of the area occupied by the fungus for leaves and over 30% for fruit).
The effectiveness of the Miedzian 50 WP fungicide applied at a dose of 1,5 kg/ha in the control of apple scab was very high and amounted to 100% and 99,5% in leaf protection and 98,9% in fruit protection. The effectiveness of this fungicide was the same as that of standard fungicides.
The effectiveness of the standard fungicides used, Miedzian Extra 350 SC, Cuproflow 375 SC and Kocide 101 WP, was very high. Their effectiveness, both in leaf and fruit protection, ranged from 99,4% to 100% and did not differ from the effectiveness of the tested fungicide, Miedzian 50 WP.
Weather conditions, with frequent rainfall in May, were favorable for the development of apple scab. In the orchard in Miłobiedz, leaf infestation on unprotected trees, Idared in the middle of June amounted to 27% and at the beginning of August - 72%. At the end of August, 65% of the fruit was infected on control trees.
During the research, neither the leaves nor the fruit of the Idared variety showed signs of phytotoxic activity of the tested preparation Miedzian 50 WP.
No visual impact of the test agent on non-target organisms was found during visual observations.

Fungicide Miedzian 50 WP applied at a dose of 1,5 kg/ha for the first three treatments showed very high efficiency in combating apple scab, over 95%.

**Trial: OR/17/2006/1/III**

| | | |
|---|---|---|
| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/5(3) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 3,5m x 1,1m |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Apple |
| | Varieties per crop | Ligol |
| | Sowing period | 2001 |
| **Application** | Crop stage (BBCH)* at application | BBCH 53-56 |
| | Number of applications<br>Intervals between applications | 3 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves ( 6-stage bonitation scale) and fruits (3-stage bonitation scale) |
| | Assessment dates | Leaves: 30.05.2006, 30.07.2006; fruits: 30.06.2006, 07.09.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | loamy soil |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Orchard, Cielądz (near Rawa Mazowiecka)/ prov. łódzkie (Poland) |

The biological effectiveness of Miedzian 50 WP in controlling apple scab was assessed on the basis of analysis of infected leaves and fruits. Observations were carried out on 200 leaves in each of the four replicates (trial of 800 leaves - 4 replicates of 200) and on 100 fruits in each of the 4 replicates (sample of 400 fruits - 4 replicates of 100). The degree of leaf and fruit infestation was assessed using a 6-point bonitation scale (0 - no disease symptoms, 5 - over 75% of the area occupied by the fungus for leaves and 30% for fruit).
The effectiveness of the Miedzian 50 WP fungicide applied at a dose of 1,5 kg/ha was very high, 89% and 97,4% in leaf protection against scab, and 96.3% and 98,6% in fruit protection. The effectiveness of the tested preparation was the same as the standard fungicides: Miedzian Extra 350 SC, Cuproflow 375 SC and Champion 50 WP. On the trees sprayed with the tested preparation and standard fungicides, no significant differences were found in the size of the leaf and fruit area occupied by the fungus.
The effectiveness of standard fungicides Miedzian Extra 350 SC, Cuproflow 375 SC and Champion 50 WP in combating apple scab was high and amounted to 89% to 98% in leaf protection and 94% to 99% in fruit protection.
Weather conditions with a lot of rainfall in the first part of the 2006 season, as well as the relatively early sowing of sack spores of *Venturia inaequalis*, the culprit of apple scab, caused a strong onset of the disease. At the end of May, leaf infestation on unprotected trees in the orchard in Cielądz was over 75%, and

fruit infection at the end of June - 95%.
During the research, neither the leaves nor the fruit of the Ligol variety were found to show any phytotoxic effects of the tested Miedzian 50 WP preparation.
No visual impact of the test agent on non-target organisms was found during visual observations.
Fungicide Miedzian 50 WP applied at a dose of 1,5 kg/ha for the first three treatment has shown high effectiveness in combating apple scab.

**Trial: OR/17/2006/1/IV**

| | | |
|---|---|---|
| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/5(3) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 3m x 0,8m |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Apple |
| | Varieties per crop | Jonica |
| | Sowing period | 1991 |
| **Application** | Crop stage (BBCH)* at application | BBCH 09-55 |
| | Number of applications<br>Intervals between applications | 3 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves ( 6-stage bonitation scale) and fruits (3-stage bonitation scale) |
| | Assessment dates | Leaves: 24.05.2006, 18.08.2006; fruits: 08.09.2006, |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | loamy soil |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Orchard, Dąbkowice (near Kutno)/ prov. łódzkie (Poland) |

The biological effectiveness of Miedzian 50 WP in controlling apple scab was assessed on the basis of analysis of infected leaves and fruits. Observations were carried out on 200 leaves in each of the four replicates (trial of 800 leaves - 4 repetitions of 200) twice a season and on 100 fruits in each of the 4 replicates (sample of 400 fruits - 4 replicates of 100). The degree of leaf and fruit infestation was assessed using a 6-point bonitation scale: 0 - no disease symptoms, 5 - over 75% of the area occupied by the fungus for leaves and over 30% for fruit.
The effectiveness of the Miedzian 50 WP fungicide applied at a dose of 1,5 kg/ha in the control of apple scab was very high and in the protection of both leaves and fruit was over 99%. The effectiveness of this fungicide was the same as that of standard fungicides.
The effectiveness of the standard fungicides used, Miedzian Extra 350 SC, Cuproflow 375 SC and Kocide 101 WP, was very high. Their effectiveness, in both leaf and fruit protection, was over 99% and did not differ from the effectiveness of the tested fungicide, Miedzian 50 WP.

Weather conditions in the spring (in April and May) were conducive to the development of apple scab. In the orchard in Dąbkowice, leaf infestation on unprotected Jonica cultivars at the end of May was 42%. Small rainfall in June and no rainfall in July inhibited the development of the disease and in mid-August a slight increase in leaf infestation was noted, up to 50%. In contrast, rainfall in August favored fruit infestation, and in early September 55% of infected fruit was recorded on unprotected trees.
During the research, neither the leaves nor the fruit of the Jonica variety were found to show symptoms of phytotoxic effects of the tested preparation Miedzian 50 WP.
No visual impact of the test agent on non-target organisms was found during visual observations.
Fungicide Miedzian 50 WP applied at a dose of 1,5 kg/ha for the first three treatments showed very high effectiveness in combating apple scab.

**Trial: ZF/S/7/2019/2/I**

| | | |
|---|---|---|
| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/5(3) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 4m x 1,6m |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Apple |
| | Varieties per crop | Ligol |
| | Sowing period | 2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 55-56 |
| | Number of applications<br>Intervals between applications | 2 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves ( 6-stage bonitation scale) and fruits (3-stage bonitation scale) |
| | Assessment dates | Leaves: 17.05.2019, 27.06.2019; fruits: 27.06.2019, 30.07.2019 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | loam soil |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Orchard, Rogów/prov. łódzkie (Poland) |

The biological efficacy of Miedzian 50 WP in control of apple scab was evaluated on the basis of infected leaves and fruits. Observations of 200 leaves and 100 fruits in each of four replications were made twice in the season (samples 800 leaves and 400 fruits). For leaves the following grading scale was used: 0- healthy leaf, 1- 0.5% of leaf surface covered by fungus, 2- 3%, 3- 12,5%, 4- 35%, 5- above 75% leaf surface covered by fungus and for fruits 1 - healthy fruit, 2 – 1-3 spots, 3 - >3 spots on fruit.
Fungicide Miedzian 50 WP applied in doses 1,5 kg/ha, 1,2 kg/ha and 0,9 kg/ha efficiently limited severity of apple scab during all evaluations of leaves and fruits. During 1st evaluation of leaves the efficacy amounted from 90.4% to 98.1%, but during 2nd evaluation it amounted from 86.7% to 98.0% depending on the dose and evaluation time. The efficacy was not significantly different between doses of tested

product and standard fungicides Nordox 75 WG and Cuproflow 377,5 SC. During two evaluations of fruits, Miedzian 50 WP limited severity of disease in all doses and its efficacy amounted from 63,2% to 94,7%, depending on a dose and evaluation time and was similar to standard fungicides Nordox 75 WG and Cuproflow 377,5 SC.
Standard fungicides Nordox 75 WG and Cuproflow 377,5 SC limited occurrence of apple scab and the efficacy in protection of leaves amounted from 80,0% to 98,0%, while in protection of fruits from 68.4% to 95,5% depending of the applied fungicide and evaluation time.
In 2019 season, in orchard in Rogów, the symptoms of apple scab on untreated trees cv. 'Ligol' occurred at very low intensity. On untreated trees 5,2% and 1,5% of leaves and 1,9% and 2,2% of fruits were infected, respectively during I and II evaluation.
During the experiment, no symptoms of phytotoxicity both on leaves and fruits after application of Miedzian 50 WP on apple trees of 'Ligol' cv. was noted.
Tested fungicide Miedzian 50 WP did not affect negatively quality and the yield of apple cv. 'Ligol'.
During visual observations no influence of tested product on organisms, which were not the subject of control, was noted.
At a low severity of apple scab, fungicide Miedzian 50 WP in all applied doses limited occurrence of apple scab.
During both evaluations of leaves and fruits the efficacy of Miedzian 50 WP did not significantly differ between doses of tested product and was similar to standard fungicides Nordox 75 WG and Cuproflow 377,5 SC.

**Trial: ZF/S/7/2019/2/II**

| | | |
|---|---|---|
| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/5(3) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 4m x 2m |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Apple |
| | Varieties per crop | Jonagored |
| | Sowing period | 2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 53-54 |
| | Number of applications<br>Intervals between applications | 2 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves ( 6-stage bonitation scale) and fruits (3-stage bonitation scale) |
| | Assessment dates | Leaves: 17.05.2019, 27.06.2019; fruits: 27.06.2019, 30.07.2019 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | loam soil |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Orchard, Rogów/prov. łódzkie (Poland) |

The biological efficacy of Miedzian 50 WP in control of apple scab was evaluated on the basis of infected leaves and fruits. Observations of 200 leaves and 100 fruits in each of four replications were made twice in the season (samples 800 leaves and 400 fruits). For leaves the following grading scale was used: 0- healthy leaf, 1- 0,5% of leaf surface covered by fungus, 2- 3%, 3- 12,5%, 4- 35%, 5- above 75% leaf surface covered by fungus and for fruits 1 - healthy fruit, 2 – 1-3 spots, 3 - >3 spots on fruit.
Fungicide Miedzian 50 WP applied in doses 1.5 kg, 1.2 kg and 0.9 kg/ha efficiently limited severity of apple scab during all evaluations of leaves and fruits. During 1st evaluation of leaves the efficacy for all doses amounted 98,4%, but during 2nd evaluation it amounted from 90,0% to 100% depending on the dose and evaluation time. The efficacy was not significantly different between doses of tested product and standard fungicides Nordox 75 WG and Cuproflow 377,5 SC. During second evaluations of fruits, Miedzian 50 WP limited severity of disease in all doses and its efficacy amounted from 98,6% to 100%, depending on a dose and evaluation time and was similar to standard fungicides Nordox 75 WG and Cuproflow 377,5 SC.
Standard fungicides Nordox 75 WG and Cuproflow 377,5 SC limited occurrence of apple scab and the efficacy in protection of leaves amounted from 66,7% to 100%, while in protection of fruits 100% regardless of the applied fungicide and evaluation time.
In 2019 season, in orchard in Rogów, the symptoms of apple scab on untreated trees cv. 'Jonagored' occurred at very low intensity. On untreated trees 5,2% and 1,5% of leaves and 1,9% and 2,2% of fruits were infected, respectively during I and II evaluation.
During the experiment, no symptoms of phytotoxicity both on leaves and fruits after application of Miedzian 50 WP on apple trees of ‘Jonagored’ cv. was noted.
Tested fungicide Miedzian 50 WP did not affect negatively quality and the yield of apple cv. ‘Jonagored’.
During visual observations no influence of tested product on organisms, which were not the subject of control, was noted.
At a low severity of apple scab, fungicide Miedzian 50 WP in all applied doses limited occurrence of apple scab.
During both evaluations of leaves and fruits the efficacy of Miedzian 50 WP did not significantly differ between doses of tested product and was similar to standard fungicides Nordox 75 WG and Cuproflow 377,5 SC.

**Trial: ZF/S/7/2019/2/III**

| | | |
|---|---|---|
| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/5(3) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 3,5m x 1m |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Apple |
| | Varieties per crop | Ligol |
| | Sowing period | 2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 55-56 |
| | Number of applications<br>Intervals between applications | 2 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves ( 6-stage bonitation scale) and fruits (3-stage |

| | | |
|---|---|---|
| | | bonitation scale) |
| | Assessment dates | Leaves: 20.05.2019, 26.06.2019; fruits: 26.06.2019, 31.07.2019 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | loam soil |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Orchard, Grzymkowice (near Biała Rawska)/prov. łódzkie (Poland) |

The biological efficacy of Miedzian 50 WP in control of apple scab was evaluated on the basis of infected leaves and fruits. Observations of 200 leaves and 100 fruits in each of four replications were made twice in the season (samples 800 leaves and 400 fruits). For leaves the following grading scale was used: 0- healthy leaf, 1- 0,5% of leaf surface covered by fungus, 2- 3%, 3- 12,5%, 4- 35%, 5- above 75% leaf surface covered by fungus and for fruits 1 - healthy fruit, 2 – 1-3 spots, 3 - >3 spots on fruit.
Fungicide Miedzian 50 WP applied in doses 1,5 kg, 1,2 kg and 0,9 kg/ha efficiently limited severity of apple scab during all evaluations of leaves and fruits. During 1st evaluation of leaves the efficacy amounted from 87,0% to 98,1%, but during 2nd evaluation it amounted from 73,3% to 98,0% depending on the dose and evaluation time. The efficacy was not significantly different between doses of tested product and standard fungicides Nordox 75 WG and Cuproflow 377,5 SC. During two evaluations of fruits, Miedzian 50 WP limited severity of disease in all doses and its efficacy amounted from 90,0% to 100%, depending on a dose and evaluation time and was similar to standard fungicides Nordox 75 WG and Cuproflow 377,5 SC.
Standard fungicides Nordox 75 WG and Cuproflow 377,5 SC limited occurrence of apple scab and the efficacy in protection of leaves amounted from 90,7% to 98,0%, while in protection of fruits from 94,7% to 100% depending of the applied fungicide and evaluation time.
In 2019 season, in orchard in Grzymkowice near Biała Rawska, the symptoms of apple scab on untreated trees cv. 'Ligol' occurred at very low intensity. On untreated trees 5,4% and 1,5% of leaves and 1,9% and 1,0% of fruits were infected, respectively during I and II evaluation.
During the experiment, no symptoms of phytotoxicity both on leaves and fruits after application of Miedzian 50 WP on apple trees of 'Ligol' cv. was noted.
Tested fungicide Miedzian 50 WP did not affect negatively quality and the yield of apple cv. 'Ligol'. During visual observations no influence of tested product on organisms, which were not the subject of control, was noted.
At a low severity of apple scab, fungicide Miedzian 50 WP in all applied doses limited occurrence of apple scab.
During both evaluations of leaves and fruits the efficacy of Miedzian 50 WP did not significantly differ between doses of tested product and was similar to standard fungicides Nordox 75 WG and Cuproflow 377,5 SC.

**Trial: ZF/S/7/2019/2/IV**

| | | |
|---|---|---|
| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/5(3) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 3,5m x 1m |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Apple |
| | Varieties per crop | Jonagold Decosta |
| | Sowing period | 2006 |

| | | |
|---|---|---|
| **Application** | Crop stage (BBCH)* at application | BBCH 55-56 |
| | Number of applications Intervals between applications | 2 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves ( 6-stage bonitation scale) and fruits (3-stage bonitation scale) |
| | Assessment dates | Leaves: 20.05.2019, 26.06.2019; fruits: 26.06.2019, 31.07.2019 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | loam soil |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Orchard, Grzymkowice (near Biała Rawska)/prov. łódzkie (Poland) |

The biological efficacy of Miedzian 50 WP in control of apple scab was evaluated on the basis of infected leaves and fruits. Observations of 200 leaves and 100 fruits in each of four replications were made twice in the season (samples 800 leaves and 400 fruits). For leaves the following grading scale was used: 0- healthy leaf, 1- 0,5% of leaf surface covered by fungus, 2- 3%, 3- 12,5%, 4- 35%, 5- above 75% leaf surface covered by fungus and for fruits 1 - healthy fruit, 2 – 1-3 spots, 3 - >3 spots on fruit.
Fungicide Miedzian 50 WP applied in doses 1,5 kg, 1,2 kg and 0,9 kg/ha efficiently limited severity of apple scab during all evaluations of leaves and fruits. During 1st evaluation of leaves the efficacy amounted from 87,7% to 91,2%, but during 2nd evaluation it amounted from 93,8% to 98,1% depending on the dose and evaluation time. The efficacy was not significantly different between doses of tested product and standard fungicides Nordox 75 WG and Cuproflow 377,5 SC. During 1st evaluation of fruits the efficacy amounted from 88,9% to 100% and was not significantly different between doses of tested product and standard fungicides. During the second evaluation of fruits intensity of disease was very low and the evaluation of efficacy tested products was not possible.
Standard fungicides Nordox 75 WG and Cuproflow 377,5 SC limited occurrence of apple scab and the efficacy in protection of leaves amounted from 81,3% to 98,2% depending of the applied fungicide and evaluation time. During 1st evaluation of fruits tested products showed the efficacy: 100% for Nordox 75 WG and 88,9% for Cuproflow 377,5 SC. During the second evaluation infection of fruits was very low and the evaluation of efficacy standard products was not possible.
In 2019 season, in orchard in Grzymkowice near Biała Rawska, the symptoms of apple scab on untreated trees cv. 'Jonagold Decosta' occurred at very low intensity. On untreated trees 5,7% and 1,6% of leaves and 0,9% and 0,3% of fruits were infected, respectively during I and II evaluation.
During the experiment, no symptoms of phytotoxicity both on leaves and fruits after application of Miedzian 50 WP on apple trees of ‘Jonagold Decosta’ cv. was noted.
Tested fungicide Miedzian 50 WP did not affect negatively quality and the yield of apple cv. ‘Jonagold Decosta’.
During visual observations no influence of tested product on organisms, which were not the subject of control, was noted.
At a low severity of apple scab, fungicide Miedzian 50 WP in all applied doses limited occurrence of apple scab.
During both evaluations of leaves and first evaluation of fruits the efficacy of Miedzian 50 WP did not significantly differ between doses of tested product and was similar to standard fungicides Nordox 75 WG and Cuproflow 377,5 SC.
During the second evaluation infection of fruits was very low and the evaluation of efficacy used products was not possible.

**APPLE, PEAR/ ERWIAM**

TRIAL: OR/17/2006/3a

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/166(3) |
| **Experimental design** | Plot design | Independent system |
| | Plot size | 3 trees per replication |
| | Number of replications | 5 |
| **Crop** | Trials per crop | Apple |
| | Varieties per crop | Ligol |
| | Sowing period | Not relevant |
| **Application** | Crop stage (BBCH)* at application | BBCH 39 |
| | Number of applications<br>Intervals between applications | 1 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected shoots |
| | Assessment dates | 13.07.2006, 30.07.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | Not relevant |
| | e.g. Natural / artificial innoculation… | artificial innoculation |
| | e.g. Field / Greenhouse... | Greenhouse |

Research in the greenhouse was carried out on one-year-old apple trees of susceptible Ligol variety, planted in containers and placed in an isolated camera.
Experimental combinations: trees protected by the tested specimen and comparative specimens, and control trees are placed on window sills with appropriate distances between combinations so that the tested specimens do not transfer during spraying to adjacent combinations. Each combination was represented by 15 trees (5 replicates x 3 trees).
The tested preparation was applied to trees in the form of spraying 3 hours before their artificial infection. The preparation was used in doses specified in the recommendations. The dose used was expressed as the concentration (%) in the appropriate volume of water, which corresponded to the recommended dose per hectare in 700 liters of water.
A suspension of a highly virulent strain of E. amylovora with a concentration of 106 bacteria per milliliter was used to artificially infect plants. The bacterial suspension was applied using a sprayer ensuring uniform distribution. To ensure high humidity for 24 hours, infected tops of shoots were covered with a plastic bag.
At each date, the number of shoots with disease symptoms was recorded, and the severity of the disease was assessed by comparing the length of therothed part of the shoot to the total length of the shoot. At each observation date, confirmation was obtained that the assessed signs were caused by *E. amylovora*.
The efficiency of the Miedzian 50 WP fungicide at a dose of 0,75 kg/ha evaluated within 6 days after inoculation was 27,9%; 13 days after inoculation - 32,5%, and at 1,5 kg/ha: 94,6% and 48,0% respectively. Efficiency of the respondent was the same as standard fungicides: Kocide 101 WP at 0,75 and 1,5 kg/ha and Cuproflow 375 SC at 1,5 and 2,0 L/ha.

The effectiveness of Cuproflow 375 SC at a dose of 1,5 L/ha evaluated within 6 days after inoculation was 68,5% and 13 days after inoculation – 64,8%; while at 2,0 L/ha, 82,0 and 67,0%, respectively.
The effectiveness of Kocide 101 WP at 0,75 kg/ha, evaluated within 6 days after inoculation, was 48,6% and 13 days after inoculation – 54,9%; while at the rate of 1,5 kg/ha, respectively: 58,6 and 54,6%.
The severity of fire blight on untreated apple shoots was high and after 6 days after inoculation it was 11,1% of the affected part of the shoot, and after 13 days – 81,0%. It was significantly higher than on shoots treated with the tested fungicide and standard fungicides: Kocide 101 WP at 0,75 and 1,5 kg/ha and Cuproflow 375 SC at 1,5 and 2,0 L/ha.
No phytotoxicity was found after application of the preparation and standard preparations on apple shoots, Ligol variety.
Miedzian 50 WP applied in doses of 0,75 and 1,5 kg/ha significantly reduced the occurrence of fire blight on apple shoots of the Ligol variety.
The tested fungicide Miedzian 50 WP applied in doses of 0,75 and 1,5 kg/ha showed the same effect as the comparative preparations in the prevention of fire blight: Cuproflow at doses 1,5 and 2,0 L/ha and Kocide 101 WP in doses of 0,75 and 1,5 kg/ha.
The tested fungicide Miedzian 50 WP can be recommended in combating fire blight on apple trees up to and including flowering in a dose of 1,5 kg/ha, and after flowering in a dose of 0,75 kg/ha.
The tested fungicide Miedzian 50 WP can be recommended in combating fire blight on pears at a dose of 1,5 kg/ha.

TRIAL: OR/17/2006/3b

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/166(3) |
| **Experimental design** | Plot design | Independent system |
| | Plot size | 10 buds of pear fruit in repetition |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Pear |
| | Varieties per crop | Konferencja |
| | Sowing period | Not relevant |
| **Application** | Crop stage (BBCH)* at application | BBCH 73 |
| | Number of applications<br>Intervals between applications | 1 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected buds ( 5-stage bonitation scale) |
| | Assessment dates | 13.08.2006, 17.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | Not relevant |
| | e.g. Natural / artificial innoculation… | artificial innoculation |
| | e.g. Field / Greenhouse... | Laboratory tests |

Miedzian 50 WP applied in doses of 0,75 and 1,5 kg/ha significantly reduced the occurrence of fire blight on apple shoots of the Ligol variety.

The tested fungicide Miedzian 50 WP applied in doses of 0,75 and 1,5 kg/ha showed the same effect as the comparative preparations in the prevention of fire blight: Cuproflow at doses 1,5 and 2,0 L/ha and Kocide 101 WP in doses of 0,75 and 1,5 kg/ha.
The tested fungicide Miedzian 50 WP can be recommended in combating fire blight on apple trees up to and including flowering in a dose of 1,5 kg/ha, and after flowering in a dose of 0,75 kg/ha.
The tested fungicide Miedzian 50 WP can be recommended in combating fire blight on pears at a dose of 1,5 kg/ha.
Laboratory evaluation of the effectiveness of preparations using pear fruit buds, variety Konferencja.
The tests were carried out in humidity mini cameras at room temperature. Each combination was represented by 40 fruit buds (4 replicates x 10 units).
The dates and methods of application of the test and comparative preparations were the same.
The tested preparation was applied to the buds in the form of spraying shortly before their artificial infection (6 hours). The preparation was used in doses specified in the recommendations. The dose used was expressed as the concentration (%) in the appropriate volume of water, which corresponded to the recommended dose per hectare in 700 liters of water.
A suspension of a highly virulent strain of *Erwinia amylovora* with a concentration of 108 bacteria per milliliter was used to artificially infect the germs. The bacterial suspension was applied using a sprayer ensuring uniform distribution.
Observations were made twice: 3 and 7 days after inoculation. At each time the severity of the disease was assessed according to the bonitation scale: 0 - no symptoms, 1 - trace symptoms, 2 - necrosis and leaks covering about half a bud, 3 - necrosis and leaks covering more than half a bud, 4 - necrosis and leaks covering the entire surface . Re-isolation also confirmed that the assessed signs were caused by *E. amylovora.* The effectiveness of the fungicide Miedzian 50 WP at a dose of 0,75 kg/ha evaluated within 3 days after inoculation was 79,3% and 7 days after inoculation – 42,5%, while at 1,5 kg/ha respectively: 100 and 87,5%. Efficiency of the respondent at a dose of 0,75 and 1,5 kg/ha was the same or higher as the standard fungicides used at the appropriate doses.
The efficacy of Cuproflow 375 SC at a dose of 1,5 L/ha evaluated within 3 days after inoculation was 97,9 and 7 days after inoculation – 62,5%; while at 2,0 L/ha, 100 and 87,5% respectively.
The effectiveness of Champion 50 WP at a dose of 0,75 kg/ha evaluated within 3 days after inoculation was 86,2%, and 7 days – 32,5%; whereas at a dose of 1,5 kg/ha, assessed within 3 days after inoculation was 96,6% and 7 days after inoculation - 85%; at a dose of 3,0 kg/ha: 100 and 97,5%, respectively.
The effectiveness of Kocide 101 at a dose of 0,75 kg/ha evaluated within 3 days after inoculation was 58,6% and 7 days after inoculation – 15,0%; while at 1,5 and 3,0 kg/ha, it was assessed 100% within 3 days after inoculation and 92,5% and 100%, respectively, 7 days after inoculation.
The degree of infection of untreated compounds was high and after 3 days after inoculation it was 1,45 a after 7 days – 4,0. It was significantly higher than the degree of infection of the compounds treated with the tested fungicide and standard fungicides at all doses used.
After application of the tested preparation and standard preparations for pear fruit buds variety Konferencja phytotoxicity was not found.
Miedzian 50 WP applied in the doses of 0,75 and 1,5 kg/ha significantly reduced the occurrence of fire blight on pear fruit buds, variety Konferencja.
The tested fungicide Miedzian 50 WP applied in doses of 0,75 and 1,5 kg/ha showed the same effect or better as the comparative preparations Cuproflow 375 SC in doses 1,5 and 2,0 L/ha in the prevention of fire blight, Champion 50 WP and Kocide 101 WP used in doses of 0,75; 1,5 and 3,0 kg/ha.
The tested fungicide can be used on apples and pears to combat fire blight.

TRIAL: ZF/S/7/2019/3/I/a

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/166(3) |
| **Experimental design** | Plot design | randomly drawn plots |
| | Plot size | from 8 to12 shoots/replication |
| | Number of replications | 5 |

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| **Crop** | Trials per crop | Apple |
| | Varieties per crop | Idared/M.9 |
| | Sowing period | Not relevant |
| **Application** | Crop stage (BBCH)* at application | BBCH 39 |
| | Number of applications<br>Intervals between applications | 1 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected shoots |
| | Assessment dates | 10.10.2019, 16.10.2019, 25.10.2019 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | Not relevant |
| | e.g. Natural / artificial innoculation… | artificial innoculation |
| | e.g. Field / Greenhouse... | greenhouse |

Actively growing shoots (cv. Idared/M.9) were cut off by sterile scissors, and then were sprayed with tested preparation Miedzian 50 WP (doses: 1,5 kg/ha; 1,2 kg/ha or 0,9 kg/ha) or standard fungicide Miedzian Extra 350 SC (dose 1,5 l/ha) by hand sprayer. Inoculation was performed 5 h after treatment by spraying with water suspension of strain Ea 659 of E. amylovora at 107 cfu/ml using a hand sprayer. After inoculation the trees were covered with plastic bags for 24 h to protect bacteria desiccation.
Applied doses of tested product were expressed as a percentage concentration. Each combination was represented by 40-60 shoots in 5 replications.
When the first symptoms on shoots were visible the measurement of total length of shoots and the length of necrotized part of shoots was made. The results were expressed as a length of shoot lesion/total length of shoot x100.
Evaluation of the effectiveness of the Miedzian 50 WP preparation applied to apple shoots of the Idared variety (7, 13 and 22 days after infection) showed a significant reduction in the severity of fire blight, depending on the dose and date of reading, by 65,1% to 100%.
In the first two assessments, the effectiveness of Miedzian 50 WP did not differ from the standard preparation Miedzian Extra 350 SC. However, in the last assessment carried out, the test preparation used at the highest dose of 1,5 kg/ha showed significantly higher effectiveness than the comparator.
The effectiveness of the standard preparation Miedzian Extra 350 SC was 87,1%, 76,4% and 67,3%, in assessments carried out 7, 13 and 22 days after infection, respectively.
In the control combination on apple shoots, 7, 13 and 22 days after inoculation, the degree of shoot infection was 34,8%, 63,6% and 83,0%, respectively.
Miedzian 50 WP at a dose of 1.2 and 1.5 kg/ha showed high, and at a dose of 0,9 kg/ha- average efficacy in protecting apple shoots from fire blight.
Miedzian 50 WP in all applied doses showed a similar (I and II assessment), and at a dose of 1,5 kg/ha (III assessment) significantly higher effectiveness than the standard preparation Miedzian Extra 350 SC.

TRIAL:ZF/S/7/2019/3/I/b

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/166(3) |
| **Experimental** | Plot design | randomly drawn plots |

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| **design** | Plot size | from 71 to 97 flowers/replication |
| | Number of replications | 5 |
| **Crop** | Trials per crop | Apple |
| | Varieties per crop | Idared/M.9 |
| | Sowing period | Not relevant |
| **Application** | Crop stage (BBCH)* at application | BBCH 64-65 |
| | Number of applications<br>Intervals between applications | 2 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected blosom (5-stage bonitation scale) |
| | Assessment dates | 25.07.2019, 29.07.2019 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | Not relevant |
| | e.g. Natural / artificial innoculation… | artificial innoculation |
| | e.g. Field / Greenhouse... | Greenhouse test |

The applications were done 2 times in the following phenological phases BBCH 64 and BBCH 65. The standard product was applied in phases BBCH 62 and BBCH 65. The inoculation was performed by hand sprayer 24 h after last treatment using water suspension of E. amylovora (strain 659) at concentration 107 cfu/ml. After inoculation the trees were covered with plastic bags for 24 h to protect bacteria desiccation.
Applied doses of tested product were expressed as a percentage concentration. Each combination was represented by 355-485 flowers in 5 replications.
The presence of fire blight symptoms on blossoms was determined according to the following scale: 0-apparently healthy flower, 1-necrosis visible on sepals or petals and/or flower bottom, 2-necrosis in whole ovary, 3-necrosis covered at least half the length of peduncle, 4-necrosis covered flower including whole peduncle.
The Miedzian 50 WP preparation, used twice during flowering in the Idared variety, at the doses of 0.9 kg/ha, 1,2 kg/ha and 1,5 kg/ha, reduced disease severity from 42,6% to 74,3%, depending on the dose and evaluation date. There were no statistically significant differences in the effectiveness between the doses of the tested Miedzian 50 WP preparation and in the comparison to standard Miedzian Extra 350 SC preparation.
The effectiveness of the standard preparation Miedzian Extra 350 SC was 65,4% and 26,4%, in assessments carried out 6 and 10 days after infection, respectively.
In the control combination on apple flowers, 6 and 10 days after inoculation, the degree of flower infection was 1,36 and 2,35, respectively, in a 5-point scale.
During observation, a phytotoxic effect of Miedzian 50 WP, 1,5 kg/ha, was found on apple flowers of the Idared variety, on about 5-10% of all crown petals. In the remaining doses no phytotoxic effect of the tested preparation was found.
The Miedzian 50 WP preparation effectively protected apple blossoms against fire blight, regardless of the applied dose. The highest effectiveness in protecting apple flowers of the Idared variety against fire blight was obtained using the Miedzian 50 WP preparation at a dose of 1,5 kg/ha. However at this dose, a slight, phytotoxic effect of the preparation was found on the flowers.

TRIAL:ZF/S/7/2019/3/II/a

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/166(3) |
| **Experimental design** | Plot design | randomly drawn plots |
| | Plot size | from 9 to14 shoots/replication |
| | Number of replications | 5 |
| **Crop** | Trials per crop | Apple |
| | Varieties per crop | Szampion/M.9 |
| | Sowing period | Not relevant |
| **Application** | Crop stage (BBCH)* at application | BBCH 39 |
| | Number of applications<br>Intervals between applications | 1 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected shoots |
| | Assessment dates | 04.10.2019, 12.10.2019, 18.10.2019 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | Not relevant |
| | e.g. Natural / artificial innoculation… | artificial innoculation |
| | e.g. Field / Greenhouse... | greenhouse |

Actively growing shoots (cv. Szampion/M.9) were cut off by sterile scissors, and then were sprayed with tested preparation Miedzian 50 WP (doses: 1,5 kg/ha; 1,2 kg/ha or 0,9 kg/ha) or standard fungicide Miedzian Extra 350 SC (dose 1,5 l/ha) by a hand sprayer. Inoculation was performed 5 h after treatment by spraying with the water suspension of strain Ea 659 of *E. amylovora* at 107 cfu/ml using a hand sprayer. After inoculation the trees were covered with plastic bags for 24 h to protect bacteria desiccation.
Applied doses of tested product were expressed as a percentage concentration.. Each combination was represented by 45-70 shoots in 5 replications.
When the first symptoms on shoots were visible the measurement of total length of shoots and the length of necrotized part of shoots was made. The results were expressed as a length of shoot lesion/total length of shoot x100.
The Miedzian 50 WP preparation, after 6 days from inoculation, showed high effectiveness in the protection of apple shoots (from 81,6% to 95,1%). In the next two assessments, after 14 and 20 days, the tested preparation, in the highest dose (1,5 kg/ha), protected over 94% of shoots, and in lower doses (0,9 and 1,2 kg/ha) the effectiveness of Miedzian 50 WP ranged from 74,6% to 80,8%. At all evaluations, Miedzian 50 WP significantly reduced the severity of fire blight. The effectiveness of Miedzian 50 WP in all doses tested and during all evaluations did not differ significantly from the standard preparation Miedzian Extra 350 SC.
The effectiveness of the standard preparation Miedzian Extra 350 SC was 77,8%, 73,6% and 66,8%, in assessments carried out 6, 14 and 20 days after infection, respectively.
In the control combination on apple shoots, 6, 14 and 20 days after inoculation, the degree of shoot infection was 20,7%, 33,3% and 40,1%, respectively.
No symptoms of phytotoxicity were observed on the shoots and leaves of Szampion apple cultivar after the application of Miedzian 50 WP, at all doses tested.

Miedzian 50 WP in all applied doses effectively protected apple shoots from fire blight. The tested preparation Miedzian 50 WP at a dose of 1,5 kg/ha reduced disease on apple shoots most effectively. The effectiveness of the Miedzian 50 WP preparation at all doses tested (0,9, 1,2 and 1,5 kg/ha) was similar to the standard Miedzian 350 SC preparation, at a dose of 1,5 l/ha.

TRIAL: ZF/S/7/2019/3/II/b

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/166(3) |
| **Experimental design** | Plot design | randomly drawn plots |
| | Plot size | from 102 to 107 flowers/replication |
| | Number of replications | 5 |
| **Crop** | Trials per crop | Apple |
| | Varieties per crop | Szampion/M.9 |
| | Sowing period | Not relevant |
| **Application** | Crop stage (BBCH)* at application | BBCH 64-65 |
| | Number of applications<br>Intervals between applications | 2 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected blosom (5-stage bonitation scale) |
| | Assessment dates | 01.08.2019, 04.08.2019 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | Not relevant |
| | e.g. Natural / artificial innoculation… | artificial innoculation |
| | e.g. Field / Greenhouse... | Greenhouse test |

The applications were done 2 times in the following phenological phases BBCH 64 and BBCH 65. The standard product was applied in phases BBCH 62 and BBCH 65. The inoculation was performed by a hand sprayer 24 h after last treatment using water suspension of E. amylovora (strain 659) at the concentration 107 cfu/ml. After inoculation the trees were covered with plastic bags for 24 h to protect bacteria desiccation.
Applied doses of tested product were expressed as a percentage concentration. Each combination was represented by 510-535 flowers in 5 replications.
The presence of fire blight symptoms on blossoms was determined according to the following scale: 0-apparently healthy flower, 1-necrosis visible on sepals or petals and/or flower bottom, 2-necrosis in whole ovary, 3-necrosis covered at least half the length of peduncle, 4-necrosis covered flower including whole peduncle.
The Miedzian 50 WP preparation, used twice during the flowering, in the doses of 0,9 kg/ha, 1,2 kg/ha and 1,5 kg/ha, limited the disease on apple blossoms of the Szampion variety from 16,3% to 72,3%, depending on the dose and evaluation date. The highest efficiency (72,3% - 1st assessment) and 52,6% - 2nd assessment) was obtained using Miedzian 50 WP at a dose of 1,5 kg/ha. During the first evaluation, carried out 6 days after inoculation, the effectiveness of Miedzian 50 WP at 0,9 and 1,2 kg/ha was significantly lower than that at 1,5 kg/ha and from the standard Miedzian Extra 350 SC in 1,5 l/ha. During the

second evaluation, 9 days after inoculation, the effectiveness of the preparation did not differ significantly depending on the dose used from Miedzian Extra 350 SC.
The effectiveness of the standard Miedzian Extra 350 SC preparation was 59,8% and 47,4%, in the assessments carried out 6 and 9 days after infection, respectively.
In the control combination on apple flowers, 6 and 9 days after inoculation, the degree of flower infection was 1,92 and 2,70, respectively, on a 5-point scale.
During observation, a phytotoxic effect of Miedzian 50 WP, 1,5 kg/ha, was found on apple flowers of the Idared variety, on about 5-10% of all crown petals. In the remaining doses no phytotoxic effect of the tested preparation was found.
The Miedzian 50 WP preparation most effectively protected apple blossoms against fire blight applied at a dose of 1,5 kg/ha. However, at a dose of 1,5 kg/ha, on the apple flowers of the Szampion variety, a slight, phytotoxic effect of the tested preparation was found.

**PEAR/ VENTPI**

TRIAL:OR/17/2006/2/I

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/5 (3) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 4,0m x 2m |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Pear |
| | Varieties per crop | Faworytka |
| | Sowing period | 2001 |
| **Application** | Crop stage (BBCH)* at application | BBCH 53-65 |
| | Number of applications<br>Intervals between applications | 4 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves ( 6-stage bonitation scale) and fruits (3-stage bonitation scale) |
| | Assessment dates | Leaves: 20.06.2006; fruits: 28.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | Sandy mugwort soil |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Orchard, Józefów (near Rogów)/prov. łódzkie (Poland) |

The biological effectiveness of Miedzian 50 WP in combating scab is assessed on the basis of analysis of infected leaves and fruit. Observations were carried out on 200 leaves in each of the four replicates (trial of 800 leaves - 4 replicates of 200) and on 100 fruits in each of the 4 replicates (sample of 400 fruits - 4 replicates of 100). The degree of leaf and fruit infestation was assessed using a 6-point bonitation scale (0 - no disease symptoms, 5 - over 75% of the area occupied by the fungus for leaves and 30% for fruit).
The effectiveness of the Miedzian 50 WP fungicide applied at a dose of 1,5 kg/ha in controlling scab was good at 100% in leaf protection and 82,8% in fruit protection. The effectiveness of the preparation in

protecting leaves against infestation was the same as in standard fungicides, while in fruit protection it was significantly lower than the standard preparations Miedzian Extra 350 SC, Champion 50 WP and Cuproflow 375 SC. On the trees sprayed with the tested preparation and standard fungicides, there were no significant differences in the size of the leaf and fruit area occupied by the fungus.
The effectiveness of the standard fungicides Champion 50 WP and Cuproflow 375 SC was high and in the protection of leaves and fruits against scab of pears was 100%. However, the effectiveness of the fungicide Miedzian Extra 350 SC in leaf protection was 100%, but in fruit protection it was significantly lower and amounted to 95,1%.
In the 2006 season, scab on pear leaves was low, whereas on fruit it was medium. In the orchard in Józefów, on unprotected trees of susceptible cultivar Faworytka, 3% of leaves and 31% of fruits were infected.
During the research, neither the leaves nor the fruit of the Faworytka cultivar were found to show any symptoms of phytotoxic effects of the tested preparation Miedzian 50 WP.
No visual impact of the test agent on non-target organisms was found during visual observations.
Fungicide Miedzian 50 WP applied at a dose of 1,5 kg/ha for the first four treatments has shown good effectiveness in controlling scab.

TRIAL:OR/17/2006/2/II

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/5(3) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 4m x 2,5m |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Pear |
| | Varieties per crop | Faworytka |
| | Sowing period | 1988 |
| **Application** | Crop stage (BBCH)* at application | BBCH 9-56 |
| | Number of applications<br>Intervals between applications | 3 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves ( 6-stage bonitation scale) and fruits (3-stage bonitation scale) |
| | Assessment dates | Leaves: 13.06.2006, 16.08.2006; fruits: 10.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy loam soil |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Orchard, Miłobądź (near Tczew)/prov. pomorskie (Poland) |

The biological effectiveness of Miedzian 50 WP in combating scab is assessed on the basis of analysis of infected leaves and fruit. Observations were carried out on 200 leaves in each of the four replicates (trial of 800 leaves - 4 repetitions of 200) twice a season and on 100 fruits in each of the 4 replicates (sample of 400 fruits - 4 replicates of 100). The degree of leaf and fruit infestation was assessed using a 6-point

bonitation scale: (0 - no disease symptoms, 5 - over 75% of the area occupied by the fungus for leaves and over 30% for fruit).
The effectiveness of the Miedzian 50 WP fungicide applied at a dose of 1,5 kg/ha in controlling scab was good at 100% and 81,1% in leaf protection and very good at 98% in fruit protection. The effectiveness of this fungicide was the same as for standard fungicides, including Miedzian 50 WP at a higher dose – 3,0 kg/ha.
The effectiveness of the standard fungicides used, Miedzian 50 WP at a dose of 3,0 kg/ha, Cuproflow 375 SC and Kocide 101 WP, was high in controlling scab. Their effectiveness in leaf protection ranged from 88,4% to 100% and in fruit protection it was even higher and ranged from 96,6% to 97,9%. The effectiveness of standard fungicides was the same as that of the tested Copper Miedzian 50 WP applied at a reduced dose, 1,5 kg/ha.
Weather conditions, with frequent rainfall in May, June and August, were conducive to the development of scab. In the orchard in Miłobiedz, leaf infestation on unprotected pears of Faworytek cultivar was 10% in mid-June and 54% in mid-August. Pear fruit was particularly affected. Just before harvest, as much as 70% of fruit was infected on unprotected pears.
During the research, no symptoms of phytotoxic effects of the tested Miedzian 50 WP preparation were found on the leaves or fruits of pear variety Faworytka.
No visual impact of the test agent on non-target organisms was found during visual observations.
Fungicide Miedzian 50 WP used in a reduced dose – 1,5 kg/ha, for the first three treatments, showed good effectiveness in leaf protection (81,1% and 100%) and very high efficiency in protecting pear fruit against pear scab (98% ). The effectiveness of the tested agent was the same as for standard fungicides, including Copper 50 WP applied at a higher dose - 3,0 kg/ha.

**CHERRY/ PSDMSY**

TRIAL:OR/10/a/2004/2/I

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | |
| **Experimental design** | Plot design | plots blocked |
| | Plot size | 3m x 1m |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Cherry |
| | Varieties per crop | Nefris |
| | Sowing period | 1996 |
| **Application** | Crop stage (BBCH)* at application | BBCH 51-69 |
| | Number of applications<br>Intervals between applications | 2 |
| | Spray volumes | 600 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves and fruits |
| | Assessment dates | 04.06.2004 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | podzolic soil with sandy loam soil |
| | e.g. Natural / artificial innoculation… | natural |

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|---|---|---|
| | e.g. Field / Greenhouse... | Orchard, Dąbrowice (near Skierniewice)/prov. łódzkie (Poland) |

The biological effectiveness of the Miedzian 50 WP fungicide in combating bacterial cancer of stone trees in the field was assessed on the basis of the number of infected leaves and fruit susceptible to infestation of the Nefris variety. Observations were made after clear disease symptoms appeared in control trees. In duplicate, 100 randomly selected leaves and 100 fruits found at different locations on the tree crown were analyzed. 400 leaves and 400 fruits were analyzed in each combination (four replicates).
Miedzian 50 WP applied in doses of 1,5 kg/ha (during flowering and fruit growth) and 3,0 kg/ha (during swelling of buds) in combating bacterial carcinoma of stone trees (*Pseudomonas syringae pv. Syringae*) significantly reduced the number of infected leaves and fruit.
The effectiveness of this product in leaf protection was 56,5% and in fruit protection 85,7% and was the same as the comparator Nordox 75 WG used in doses: 1,0 kg/ha during flowering and growth of fruit and 2,0 kg/ha during budding.
The effectiveness of the comparative fungicide used at the following doses: 1,0 kg/ha during flowering and fruit growth, and 2,0 kg/ha during bud growth was 52,4% in leaf protection and 72% in fruit protection.
Weather conditions in the 2004 season favored the occurrence of bacterial cancer of stone trees (*Pseudomonas syringae pv. Syringae*). In the orchard in Dąbrowice, 27,1% of leaves and 17,5% of fruits were infected on unprotected cherry trees of the Nefris variety.
During the research, neither the leaves nor the cherry fruit of the Nefris variety had any symptoms of phytotoxic effects of the tested preparation Miedzian 50 WP.
No visual impact of the test agent on non-target organisms was found during visual observations.
Fungicide Miedzian 50 WP applied in doses of 1,5 kg/ha during flowering and growth of fruit and 3,0 kg/ha during budding, significantly reduced infestation of leaves and fruit of the cherry variety Nefris by bacterial cancer of stone trees (*Pseudomonas syringae pv. Syringae).*
Its effectiveness in leaf protection was 56,5% and in fruit protection 85,7% and was the same as the comparative fungicide.

TRIAL:OR/10/a/2004/2/II

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | |
| **Experimental design** | Plot design | plots blocked |
| | Plot size | 4m x 1,5m |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Cherry |
| | Varieties per crop | Nefris |
| | Sowing period | 1992 |
| **Application** | Crop stage (BBCH)* at application | BBCH 51-69 |
| | Number of applications<br>Intervals between applications | 2 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves and fruits |
| | Assessment dates | 07.06.2004 |

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| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | podzolic soil with loamy soil |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Orchard, Prusy (near Głuchów)/prov. łódzkie (Poland) |

The biological effectiveness of the Miedzian 50 WP fungicide in combating bacterial cancer of stone trees in the field was assessed on the basis of the number of infected leaves and fruit susceptible to infestation of the Nefris variety. Observations were made after clear disease symptoms appeared in control trees. In duplicate, 100 randomly selected leaves and 100 fruits found at different locations on the tree crown were analyzed. 400 leaves and 400 fruits were analyzed in each combination (four replicates).
Miedzian 50 WP applied in doses of 1,5 kg/ha (during flowering and fruit growth) and 3,0 kg/ha (during swelling of buds) in combating bacterial carcinoma of stone trees (*Pseudomonas syringae pv. Syringae*) significantly reduced the number of infected leaves and fruit.
The effectiveness of this product in leaf protection was 88,5% and in fruit protection 89,9% and was the same as the comparator Nordox 75 WG used in doses: 1,0 kg/ha during flowering and growth of fruit and 2,0 kg/ha during budding.
The effectiveness of the comparative fungicide used at the following doses: 1,0 kg/ha during flowering and fruit growth, and 2,0 kg/ha during bud growth was 78,7% in leaf protection and 80,8% in fruit protection.
Weather conditions in the 2004 season favored the occurrence of bacterial cancer of stone trees (*Pseudomonas syringae pv. Syringae*). In the orchard in Prusy, 28,6% of leaves and 23,8% of fruits were infected on unprotected cherry trees of the Nefris variety.
During the research, neither the leaves nor the cherry fruit of the Nefris variety had any symptoms of phytotoxic effects of the tested preparation Miedzian 50 WP.
No visual impact of the test agent on non-target organisms was found during visual observations.
Fungicide Miedzian 50 WP applied in doses of 1,5 kg/ha during flowering and growth of fruit and 3,0 kg/ha during budding, significantly reduced infestation of leaves and fruit of the cherry variety Nefris by bacterial cancer of stone trees (*Pseudomonas syringae pv. Syringae).*
Its effectiveness in leaf protection was 88,5% and in fruit protection 89,9% and was the same as the comparative fungicide.

TRIAL: OR/17/2006/4a

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 3m x 1,5m |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Cherry |
| | Varieties per crop | Nefris |
| | Sowing period | 1999 |
| **Application** | Crop stage (BBCH)* at application | BBCH 51-73 |
| | Number of applications<br>Intervals between applications | 6 |

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| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves and fruits |
| | Assessment dates | Leaves: 10.07.2006; fruits: 22.06.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | podzolic soil with sandy loam soil |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Orchard, Dąbrowice (near Skierniewice)/prov. łódzkie (Poland) |

The biological effectiveness of the Miedzian 50 WP fungicide in combating bacterial cancer of stone trees (*Pseudomonas syringae pv. Syringae).* in the field was assessed on the basis of the number of infected leaves and fruit susceptible to infestation of the Nefris variety. Observations were made after clear disease symptoms appeared in control trees. In duplicate, 200 randomly selected leaves and 100 fruits found at different locations on the tree crown were analyzed. 800 leaves and 400 fruits were analyzed in each combination (four replicates).
The effectiveness of the Miedzian 50 WP fungicide in fighting bacterial cancer of stone trees (*Pseudomonas syringae pv. Syringae).* was 43,8% on leaves and 44,0% on fruit. The effectiveness of the test product was the same as the standard fungicides.
The effectiveness of all standard fungicides was similar and in the case of Miedzian Extra 350 SC - on leaves 47,8% and on fruits 48,4%, Champion 50 WP 51,8% and 48,4% respectively and Funguran-OH 50 WP – 47,1% and 44,8%.
In the 2006 season, the symptoms of bacterial cancer of stone trees (*Pseudomonas syringae pv. Syringae)* on cherries Nefris variety were of moderate intensity. 27,6% of leaves and 22,3% of fruits were infected on unprotected trees.
During the observations carried out on the cherry variety 'Nefris', no phytotoxic effect of the fungicide Miedzian 50 WP was found.
Fungicide Miedzian 50 WP in field conditions, with moderate disease pressure, clearly reduced the occurrence of stone tree bacterial cancer (*Pseudomonas syringae pv. Syringae)* on cherries of the Nefris variety. The effectiveness of the tested fungicide was the same as that of standard fungicides: Champion 50 WP, Funguran-OH 50 WP and Miedzian Extra 350 SC.
Fungicide Miedzian 50 WP applied at a dose of 3,0 kg/ha during budding and 1,5 kg/ha during flowering and fruit growth showed satisfactory preventive action, the same as standard fungicides in reducing the occurrence of stone tree bacterial cancer (*Pseudomonas syringae pv. Syringae)* .
Copper products are the only fungicides currently recommended for controlling bacterial cancer of stone trees. Their field performance usually does not exceed 50%.

**TOMATO (outdoor)/ PSDMTM**

TRIAL:PoZ 6/9 za

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | $5m^2$ |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Tomato |
| | Varieties per crop | Fuga |
| | Sowing period | 25.05.2006 |

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|---|---|---|
| **Application** | Crop stage (BBCH)* at application | BBCH 51-85 |
| | Number of applications<br>Intervals between applications | 4 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves and fruits |
| | Assessment dates | 14.07.2006, 25.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy soil on loam |
| | e.g. Natural / artificial innoculation… | provocative conditions |
| | e.g. Field / Greenhouse... | Field, Skierniewice/prov. łódzkie (Poland) |

Test product- Miedzian 50 WP showed no phytotoxicity in all tomato development stages.
The weather conditions prevailing in the 2006 growing season were conducive to the development of potato blight only in the second half of the summer, when the average air temperature decreased and significant rainfall occurred. Weather conditions negatively affected the growth of tomatoes causing cracking of the fruit.
Potato blight occurred rapidly to a large extent on the entire surface of experiments. Tomato bacterial disease was moderate.
In order to maintain uniform infection of plants, fogging of plants with water in the evening was used.
Fungicide Miedzian 50 WP (copper oxychloride) was tested at a dose of 2,5 kg and 3,0 kg/ha to protect tomatoes against bacterial tuberculosis and potato blight. The comparative product were Miedzian 50 WG fungicide at 2,5 kg/ha. The research was carried out at two locations in Skierniewice: location 1 in the provocation field for disease development, the second location in the conventional field in Powiercie 135 km away, with different environmental conditions of natural infection by Phytophthora infestans.
Fungicide Miedzian 50 WP (copper oxychloride) at a dose of 2,5 kg and 3,0 kg/ha showed high effectiveness in protecting tomatoes against bacterial tomato tuberculosis and moderate potato blight and statistically significantly reduced the development of diseases compared to standard measures. Higher efficacy was found at the dose of 3,0 kg/ha from 2,5 kg/ha.
The use of Miedzian 50 WP 2,5 kg and 3,0 kg/ha had a significant impact on the increase in the quantity and quality of tomato yield as compared to the control combination. No phytotoxic effects were observed on the plants treated with the fungicide Miedzian 50 WP 2,5 kg, 3,0 kg/ha and 6,0 kg/ha.
The tested fungicide Miedzian 50 WP (copper oxychloride) at a dose of 2,5 kg and 3,0 kg/ha showed high biological effectiveness in protecting tomatoes and against bacterial tomato tubularity and moderate potato blight, which was at the level of 67% in experiment no. 1 and at 90% in experiment 2 with a higher dose (3,0 kg/ha) compared to the control.
The application of the tested dose of the agent statistically significantly increased the amount and quality of the commercial crop in comparison.
The test agent did not show phytotoxicity at all test locations.
Based on previous studies, we can recommend the registration of Miedzian 50 WP (copper oxychloride) at a dose of 2,5 - 3.,0 kg/ha in the protection of tomatoes and against bacterial tuberculosis of tomato and potato blight. A higher dose should be used in conditions of increased threat of plants with potato blight.
We recommend 2-3 spraying with this agent at intervals of 7-10, alternating with agents from other chemical groups.
The protection of tomatoes should be carried out in accordance with the signaling or preventive measures during periods of expected threat of potato blight.
Water dose used in tests was 700 L/ha.

TRIAL:PoT 6/9 za

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 5m$^2$ |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Tomato |
| | Varieties per crop | Fuga |
| | Sowing period | 25.05.2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 51-84 |
| | Number of applications<br>Intervals between applications | 4 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves and fruits |
| | Assessment dates | 14.07.2006, 10.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy soil on loam |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Field, Powiercie/prov. wielkopolskie (Poland) |

Test product- Miedzian 50 WP showed no phytotoxicity in all tomato development stages.
The weather conditions prevailing in the 2006 growing season were conducive to the development of potato blight only in the second half of the summer, when the average air temperature decreased and significant rainfall occurred. Weather conditions negatively affected the growth of tomatoes causing cracking of the fruit.
Potato blight occurred rapidly to a large extent on the entire surface of experiments. Tomato bacterial disease was moderate.
In order to maintain uniform infection of plants, fogging of plants with water in the evening was used.
Fungicide Miedzian 50 WP (copper oxychloride) was tested at a dose of 2,5 kg and 3,0 kg/ha to protect tomatoes against bacterial tuberculosis and potato blight. The comparative product were Miedzian 50 WG fungicide at 2,5 kg/ha. The research was carried out at two locations in Skierniewice: location 1 in the provocation field for disease development, the second location in the conventional field in Powiercie 135 km away, with different environmental conditions of natural infection by Phytophthora infestans.
Fungicide Miedzian 50 WP (copper oxychloride) at a dose of 2,5 kg and 3,0 kg/ha showed high effectiveness in protecting tomatoes against bacterial tomato tuberculosis and moderate potato blight and statistically significantly reduced the development of diseases compared to standard measures. Higher efficacy was found at the dose of 3,0 kg/ha from 2,5 kg/ha.
The use of Miedzian 50 WP 2,5 kg and 3,0 kg/ha had a significant impact on the increase in the quantity and quality of tomato yield as compared to the control combination. No phytotoxic effects were observed on the plants treated with the fungicide Miedzian 50 WP 2,5 kg, 3,0 kg/ha and 6,0 kg/ha.

The tested fungicide Miedzian 50 WP (copper oxychloride) at a dose of 2,5 kg and 3,0 kg/ha showed high biological effectiveness in protecting tomatoes and against bacterial tomato tubularity and moderate potato blight, which was at the level of 67% in experiment no. 1 and at 90% in experiment 2 with a higher dose (3,0 kg/ha) compared to the control.
The application of the tested dose of the agent statistically significantly increased the amount and quality of the commercial crop in comparison.
The test agent did not show phytotoxicity at all test locations.
Based on previous studies, we can recommend the registration of Miedzian 50 WP (copper oxychloride) at a dose of 2,5 - 3.,0 kg/ha in the protection of tomatoes and against bacterial tuberculosis of tomato and potato blight. A higher dose should be used in conditions of increased threat of plants with potato blight.
We recommend 2-3 spraying with this agent at intervals of 7-10, alternating with agents from other chemical groups.
The protection of tomatoes should be carried out in accordance with the signaling or preventive measures during periods of expected threat of potato blight.
Water dose used in tests was 700 L/ha

**TOMATO (outdoor)/ PHYTIN**

TRIAL: PoZ 6/9 ba

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 5m$^2$ |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Tomato |
| | Varieties per crop | Fuga |
| | Sowing period | 25.05.2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 51-85 |
| | Number of applications<br>Intervals between applications | 4 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves and fruits |
| | Assessment dates | 14.07.2006, 25.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy soil on loam |
| | e.g. Natural / artificial innoculation… | provocative conditions |
| | e.g. Field / Greenhouse... | Field, Skierniewice/ prov. łódzkie (Poland) |

Test product- Miedzian 50 WP showed no phytotoxicity in all tomato development stages.
The weather conditions prevailing in the 2006 growing season were conducive to the development of potato blight only in the second half of the summer, when the average air temperature decreased and sig-

nificant rainfall occurred. Weather conditions negatively affected the growth of tomatoes causing cracking of the fruit.
Potato blight occurred rapidly to a large extent on the entire surface of experiments. Tomato bacterial disease was moderate.
In order to maintain uniform infection of plants, fogging of plants with water in the evening was used.
Fungicide Miedzian 50 WP (copper oxychloride) was tested at a dose of 2,5 kg and 3,0 kg/ha to protect tomatoes against bacterial tuberculosis and potato blight. The comparative product were Miedzian 50 WG fungicide at 2,5 kg/ha. The research was carried out at two locations in Skierniewice: location 1 in the provocation field for disease development, the second location in the conventional field in Powiercie 135 km away, with different environmental conditions of natural infection by Phytophthora infestans.
Fungicide Miedzian 50 WP (copper oxychloride) at a dose of 2,5 kg and 3,0 kg/ha showed high effectiveness in protecting tomatoes against bacterial tomato tuberculosis and moderate potato blight and statistically significantly reduced the development of diseases compared to standard measures. Higher efficacy was found at the dose of 3,0 kg/ha from 2,5 kg/ha.
The use of Miedzian 50 WP 2,5 kg and 3,0 kg/ha had a significant impact on the increase in the quantity and quality of tomato yield as compared to the control combination. No phytotoxic effects were observed on the plants treated with the fungicide Miedzian 50 WP 2,5 kg, 3,0 kg/ha and 6,0 kg/ha.
The tested fungicide Miedzian 50 WP (copper oxychloride) at a dose of 2,5 kg and 3,0 kg/ha showed high biological effectiveness in protecting tomatoes and against bacterial tomato tubularity and moderate potato blight, which was at the level of 67% in experiment no. 1 and at 90% in experiment 2 with a higher dose (3,0 kg/ha) compared to the control.
The application of the tested dose of the agent statistically significantly increased the amount and quality of the commercial crop in comparison.
The test agent did not show phytotoxicity at all test locations.
Based on previous studies, we can recommend the registration of Miedzian 50 WP (copper oxychloride) at a dose of 2,5 - 3.,0 kg/ha in the protection of tomatoes and against bacterial tuberculosis of tomato and potato blight. A higher dose should be used in conditions of increased threat of plants with potato blight.
We recommend 2-3 spraying with this agent at intervals of 7-10, alternating with agents from other chemical groups.
The protection of tomatoes should be carried out in accordance with the signaling or preventive measures during periods of expected threat of potato blight.
Water dose used in tests was 700 L/ha.

TRIAL:PoT 6/9 ba

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | $5m^2$ |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Tomato |
| | Varieties per crop | Fuga |
| | Sowing period | 25.05.2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 51-84 |
| | Number of applications<br>Intervals between applications | 4 |
| | Spray volumes | 700 L/ha |

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| **Assessment** | Assessment types | Analysis of infected leaves and fruits |
| | Assessment dates | 14.07.2006, 10.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy soil on loam |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Field, Powiercie/prov. wielkopolskie (Poland) |

Test product- Miedzian 50 WP showed no phytotoxicity in all tomato development stages.
The weather conditions prevailing in the 2006 growing season were conducive to the development of potato blight only in the second half of the summer, when the average air temperature decreased and significant rainfall occurred. Weather conditions negatively affected the growth of tomatoes causing cracking of the fruit.
Potato blight occurred rapidly to a large extent on the entire surface of experiments. Tomato bacterial disease was moderate.
In order to maintain uniform infection of plants, fogging of plants with water in the evening was used.
Fungicide Miedzian 50 WP (copper oxychloride) was tested at a dose of 2,5 kg and 3,0 kg/ha to protect tomatoes against bacterial tuberculosis and potato blight. The comparative product were Miedzian 50 WG fungicide at 2,5 kg/ha. The research was carried out at two locations in Skierniewice: location 1 in the provocation field for disease development, the second location in the conventional field in Powiercie 135 km away, with different environmental conditions of natural infection by Phytophthora infestans.
Fungicide Miedzian 50 WP (copper oxychloride) at a dose of 2,5 kg and 3,0 kg/ha showed high effectiveness in protecting tomatoes against bacterial tomato tuberculosis and moderate potato blight and statistically significantly reduced the development of diseases compared to standard measures. Higher efficacy was found at the dose of 3,0 kg/ha from 2,5 kg/ha.
The use of Miedzian 50 WP 2,5 kg and 3,0 kg/ha had a significant impact on the increase in the quantity and quality of tomato yield as compared to the control combination. No phytotoxic effects were observed on the plants treated with the fungicide Miedzian 50 WP 2,5 kg, 3,0 kg/ha and 6,0 kg/ha.
The tested fungicide Miedzian 50 WP (copper oxychloride) at a dose of 2,5 kg and 3,0 kg/ha showed high biological effectiveness in protecting tomatoes and against bacterial tomato tubularity and moderate potato blight, which was at the level of 67% in experiment no. 1 and at 90% in experiment 2 with a higher dose (3,0 kg/ha) compared to the control.
The application of the tested dose of the agent statistically significantly increased the amount and quality of the commercial crop in comparison.
The test agent did not show phytotoxicity at all test locations.
Based on previous studies, we can recommend the registration of Miedzian 50 WP (copper oxychloride) at a dose of 2,5 - 3.,0 kg/ha in the protection of tomatoes and against bacterial tuberculosis of tomato and potato blight. A higher dose should be used in conditions of increased threat of plants with potato blight.
We recommend 2-3 spraying with this agent at intervals of 7-10, alternating with agents from other chemical groups.
The protection of tomatoes should be carried out in accordance with the signaling or preventive measures during periods of expected threat of potato blight.
Water dose used in tests was 700 L/ha.

**CUCUMBER (outdoor)/ PSDMLA**

TRIAL:OgZ 6/9 mr

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |

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| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 10 m2 |
| | Number of replications | 4 |
| **Crop** | Trials per crop | Cucumber |
| | Varieties per crop | Śremski |
| | Sowing period | 24.05.2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 15-79 |
| | Number of applications<br>Intervals between applications | 6 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves |
| | Assessment dates | 09.07.2006, 21.07.2006, 03.08.2006, 14.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy soil on loam |
| | e.g. Natural / artificial innoculation… | provocative conditions |
| | e.g. Field / Greenhouse... | Field, Skierniewice/ prov. łódzkie (Poland) |

Test product showed no phytotoxicity in all developmental stages of cucumbers in field cultivation.
Weather conditions prevailing in the 2006 growing season were conducive to the development of downy mildew on cucumbers and bacterial angular blotch due to the possibility of plantation sprinkling. Cucumber growth was normal.
Downy mildew appeared in a high intensity and uniform intensity on the entire surface of experiments No. 1, 2, weak bacterial angular blotch. In order to maintain uniform infection of plants, fogging of plants with water in the evening was used.
Fungicide Miedzian 50 WP (copper oxychloride) was tested in doses: 2,5 kg and 3,0 kg/ha in the protection of cucumbers against downy mildew and bacterial angular spotting in field cultivation. The comparative agent was the Miedzian 50 WG fungicide at 2,5 kg/ha. The research was carried out at two locations in Skierniewice, location 1 in the provocation field for disease development, second location in the conventional field in Powiercie 135 km away, with different environmental conditions of infection by *Pseudoperonospora cubensis.*
Fungicide Miedzian 50 WP in doses: 2,5 kg and 3,0 kg/ha showed high effectiveness in the protection of cucumbers in field cultivation against bacterial angular spotted (100%) and insufficient against downy mildew compared to the control object.
Higher effectiveness of Miedzian 50 WP at a dose of 3,0 kg/ha was found in the protection of cucumbers against downy mildew, but with lower disease pressure.
The use of Miedzian 50 WP in the doses tested did not cause a significant increase in the quantity and quality of cucumber yield compared to the control combination. No phytotoxic effect of the agent on plants was observed at all doses and stages of development of plants and fruits studied.
The tested fungicide Miedzian 50 WP (copper oxychloride) in doses: 2,5 kg and 3,0 kg/ha showed high biological effectiveness in protecting cucumbers in field cultivation against bacterial angular spotted and insufficient against downy mildew compared to the control object. There was a difference in the higher efficacy of the product at a higher dose (3,0 kg/ha) in controlling downy mildew.
The application of the tested dose of the product in a statistically significant manner did not affect the increase in the height and quality of commercial yield of cucumbers compared to standard objects.

There was no phytotoxic effect of the agent on plants in all subjects.
Based on current research, we can recommend the registration of Miedzian 50 WP (copper oxychloride) in doses: 2,5 kg and 3,0 kg in the protection of cucumbers in field cultivation against bacterial angular spottedness. We recommend 2-3 spraying with this agent at intervals of 7-10, alternating with agents from other chemical groups. The agent limits the occurrence of downy mildew in the early stages of plant growth.
Cucumber protection should be carried out in accordance with signaling or preventively during periods expected risk of downy mildew.
Water dose used in tests was 700 L/ha.

TRIAL:OgT 6/9 mr

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|---|---|---|
| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 10 m2 |
| | Number of replications | 4 |
| **Crop** | Trials per crop | cucumber |
| | Varieties per crop | Śremska |
| | Sowing period | 29.05.2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 75-78 |
| | Number of applications<br>Intervals between applications | 4 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves |
| | Assessment dates | 31.07.2006, 07.08.2006, 14.08.2006, 28.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy soil on loam |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Field, Powiercie/prov. wielkopolskie (Poland) |

Test product showed no phytotoxicity in all developmental stages of cucumbers in field cultivation.
Weather conditions prevailing in the 2006 growing season were conducive to the development of downy mildew on cucumbers and bacterial angular blotch due to the possibility of plantation sprinkling. Cucumber growth was normal.
Downy mildew appeared in a high intensity and uniform intensity on the entire surface of experiments No. 1, 2, weak bacterial angular blotch. In order to maintain uniform infection of plants, fogging of plants with water in the evening was used.
Fungicide Miedzian 50 WP (copper oxychloride) was tested in doses: 2,5 kg and 3,0 kg/ha in the protection of cucumbers against downy mildew and bacterial angular spotting in field cultivation. The comparative agent was the Miedzian 50 WG fungicide at 2,5 kg/ha. The research was carried out at two locations in Skierniewice, location 1 in the provocation field for disease development, second location in the conventional field in Powiercie 135 km away, with different environmental conditions of infection by *Pseu-*

*doperonospora cubensis.*
Fungicide Miedzian 50 WP in doses: 2,5 kg and 3,0 kg/ha showed high effectiveness in the protection of cucumbers in field cultivation against bacterial angular spotted (100%) and insufficient against downy mildew compared to the control object.
Higher effectiveness of Miedzian 50 WP at a dose of 3,0 kg/ha was found in the protection of cucumbers against downy mildew, but with lower disease pressure.
The use of Miedzian 50 WP in the doses tested did not cause a significant increase in the quantity and quality of cucumber yield compared to the control combination. No phytotoxic effect of the agent on plants was observed at all doses and stages of development of plants and fruits studied.
The tested fungicide Miedzian 50 WP (copper oxychloride) in doses: 2,5 kg and 3,0 kg/ha showed high biological effectiveness in protecting cucumbers in field cultivation against bacterial angular spotted and insufficient against downy mildew compared to the control object. There was a difference in the higher efficacy of the product at a higher dose (3,0 kg/ha) in controlling downy mildew.
The application of the tested dose of the product in a statistically significant manner did not affect the increase in the height and quality of commercial yield of cucumbers compared to standard objects.
There was no phytotoxic effect of the agent on plants in all subjects.
Based on current research, we can recommend the registration of Miedzian 50 WP (copper oxychloride) in doses: 2,5 kg and 3,0 kg in the protection of cucumbers in field cultivation against bacterial angular spottedness. We recommend 2-3 spraying with this agent at intervals of 7-10, alternating with agents from other chemical groups. The agent limits the occurrence of downy mildew in the early stages of plant growth.
Cucumber protection should be carried out in accordance with signaling or preventively during periods expected risk of downy mildew.
Water dose used in tests was 700 L/ha.

**CUCUMBER (outdoor)/ PSPECU**

TRIAL: OgZ 6/9 bk

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 10 m2 |
| | Number of replications | 4 |
| **Crop** | Trials per crop | cucumber |
| | Varieties per crop | Śremska |
| | Sowing period | 24.05.2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 15-79 |
| | Number of applications<br>Intervals between applications | 6 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves |
| | Assessment dates | 09.07.2006, 21.07.2006, 03.08.2006, 14.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy soil on loam |
| | e.g. Natural / artificial | provocative conditions |

| | | |
|---|---|---|
| | innoculation… | |
| | e.g. Field / Greenhouse... | Field, Skierniewice/ prov. łódzkie (Poland) |

Test product showed no phytotoxicity in all developmental stages of cucumbers in field cultivation.
Weather conditions prevailing in the 2006 growing season were conducive to the development of downy mildew on cucumbers and bacterial angular blotch due to the possibility of plantation sprinkling. Cucumber growth was normal.
Downy mildew appeared in a high intensity and uniform intensity on the entire surface of experiments No. 1, 2, weak bacterial angular blotch. In order to maintain uniform infection of plants, fogging of plants with water in the evening was used.
Fungicide Miedzian 50 WP (copper oxychloride) was tested in doses: 2,5 kg and 3,0 kg/ha in the protection of cucumbers against downy mildew and bacterial angular spotting in field cultivation. The comparative agent was the Miedzian 50 WG fungicide at 2,5 kg/ha. The research was carried out at two locations in Skierniewice, location 1 in the provocation field for disease development, second location in the conventional field in Powiercie 135 km away, with different environmental conditions of infection by *Pseudoperonospora cubensis.*
Fungicide Miedzian 50 WP in doses: 2,5 kg and 3,0 kg/ha showed high effectiveness in the protection of cucumbers in field cultivation against bacterial angular spotted (100%) and insufficient against downy mildew compared to the control object.
Higher effectiveness of Miedzian 50 WP at a dose of 3,0 kg/ha was found in the protection of cucumbers against downy mildew, but with lower disease pressure.
The use of Miedzian 50 WP in the doses tested did not cause a significant increase in the quantity and quality of cucumber yield compared to the control combination. No phytotoxic effect of the agent on plants was observed at all doses and stages of development of plants and fruits studied.
The tested fungicide Miedzian 50 WP (copper oxychloride) in doses: 2,5 kg and 3,0 kg/ha showed high biological effectiveness in protecting cucumbers in field cultivation against bacterial angular spotted and insufficient against downy mildew compared to the control object. There was a difference in the higher efficacy of the product at a higher dose (3,0 kg/ha) in controlling downy mildew.
The application of the tested dose of the product in a statistically significant manner did not affect the increase in the height and quality of commercial yield of cucumbers compared to standard objects.
There was no phytotoxic effect of the agent on plants in all subjects.
Based on current research, we can recommend the registration of Miedzian 50 WP (copper oxychloride) in doses: 2,5 kg and 3,0 kg in the protection of cucumbers in field cultivation against bacterial angular spottedness. We recommend 2-3 spraying with this agent at intervals of 7-10, alternating with agents from other chemical groups. The agent limits the occurrence of downy mildew in the early stages of plant growth.
Cucumber protection should be carried out in accordance with signaling or preventively during periods expected risk of downy mildew.
Water dose used in tests was 700 L/ha.

TRIAL:OgT 6/9 bk

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|---|---|---|
| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 10 m2 |
| | Number of replications | 4 |
| **Crop** | Trials per crop | cucumber |
| | Varieties per crop | Śremska |
| | Sowing period | 29.05.2006 |

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|---|---|---|
| **Application** | Crop stage (BBCH)* at application | BBCH 75-78 |
| | Number of applications<br>Intervals between applications | 4 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves |
| | Assessment dates | 31.07.2006, 07.08.2006, 14.08.2006, 28.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy soil on loam |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Field, Powiercie/prov. wielkopolskie (Poland) |

Test product showed no phytotoxicity in all developmental stages of cucumbers in field cultivation.
Weather conditions prevailing in the 2006 growing season were conducive to the development of downy mildew on cucumbers and bacterial angular blotch due to the possibility of plantation sprinkling. Cucumber growth was normal.
Downy mildew appeared in a high intensity and uniform intensity on the entire surface of experiments No. 1, 2, weak bacterial angular blotch. In order to maintain uniform infection of plants, fogging of plants with water in the evening was used.
Fungicide Miedzian 50 WP (copper oxychloride) was tested in doses: 2,5 kg and 3,0 kg/ha in the protection of cucumbers against downy mildew and bacterial angular spotting in field cultivation. The comparative agent was the Miedzian 50 WG fungicide at 2,5 kg/ha. The research was carried out at two locations in Skierniewice, location 1 in the provocation field for disease development, second location in the conventional field in Powiercie 135 km away, with different environmental conditions of infection by *Pseudoperonospora cubensis.*
Fungicide Miedzian 50 WP in doses: 2,5 kg and 3,0 kg/ha showed high effectiveness in the protection of cucumbers in field cultivation against bacterial angular spotted (100%) and insufficient against downy mildew compared to the control object.
Higher effectiveness of Miedzian 50 WP at a dose of 3,0 kg/ha was found in the protection of cucumbers against downy mildew, but with lower disease pressure.
The use of Miedzian 50 WP in the doses tested did not cause a significant increase in the quantity and quality of cucumber yield compared to the control combination. No phytotoxic effect of the agent on plants was observed at all doses and stages of development of plants and fruits studied.
The tested fungicide Miedzian 50 WP (copper oxychloride) in doses: 2,5 kg and 3,0 kg/ha showed high biological effectiveness in protecting cucumbers in field cultivation against bacterial angular spotted and insufficient against downy mildew compared to the control object. There was a difference in the higher efficacy of the product at a higher dose (3,0 kg/ha) in controlling downy mildew.
The application of the tested dose of the product in a statistically significant manner did not affect the increase in the height and quality of commercial yield of cucumbers compared to standard objects.
There was no phytotoxic effect of the agent on plants in all subjects.
Based on current research, we can recommend the registration of Miedzian 50 WP (copper oxychloride) in doses: 2,5 kg and 3,0 kg in the protection of cucumbers in field cultivation against bacterial angular spottedness. We recommend 2-3 spraying with this agent at intervals of 7-10, alternating with agents from other chemical groups. The agent limits the occurrence of downy mildew in the early stages of plant growth.
Cucumber protection should be carried out in accordance with signaling or preventively during periods expected risk of downy mildew.

Water dose used in tests was 700 L/ha.

**FRENCH BEAN/ PSDMPH**

TRIAL:FaZ 6/9 ba

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 10 $m^2$ |
| | Number of replications | 4 |
| **Crop** | Trials per crop | French bean |
| | Varieties per crop | Złota Saxa |
| | Sowing period | 28.05.2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 65-69 |
| | Number of applications<br>Intervals between applications | 2 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves and pods |
| | Assessment dates | 15.07.2006, 08.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy soil on loam |
| | e.g. Natural / artificial innoculation… | provocative conditions |
| | e.g. Field / Greenhouse... | Field, Skierniewice/ prov. łódzkie (Poland) |

Weather conditions prevailing in the 2006 growing season favored the development of gray mold and bacteriosis at the end of the growing season due to lower temperatures and periodic high rainfall. In addition, in order to obtain provocation conditions for the development of bean anthracnose, gray mold and bacteriosis, the experimental plants were successively irrigated.
Fungicide Miedzian 50 WP (copper oxychloride) was tested at a dose of 2,5 and 3,0 kg/ha in comprehensive protection of french beans against bean anthracnose, gray mold and bacteriosis. The comparative agent was Miedzian 50 WG (copper oxychloride) fungicide at a dose of 3,0 kg/ha. The research was carried out at two locations in Skierniewice: location 1 in the provocation field for disease development, the second location in the conventional field in the ZSPG in Powiercie located 135 km away with different environmental conditions of infection by *Colletotrichum lindemuthianum*, *Botrytis cinerea* and *Pseudomonas phaseolicola*.
Fungicide Miedzian 50 WP at a dose of 2,5 and 3,0 kg/ha has demonstrated high effectiveness in protecting french beans against a complex of diseases: bean anthracnose, gray mold and bacteriosis.
The application of the product at doses of Miedzian 50 WP at the dose of 2,5 and 3,0 kg/ha had a significant impact on the increase in the quantity and quality of string beans compared to the control combination.
No phytotoxicity effects were observed on the treated plants with the tested fungicide.
The tested fungicide Miedzian 50 WP (copper oxychloride) tested at a dose of 2,5 and 3,0 kg/ha showed

very high biological effectiveness in protecting french beans and against a complex of fungal diseases: bean anthracnose, gray mold and bacteriosis. The level of disease severity was 70-100% in all test locations compared to the control object.
The application of the tested dose of the agent in a statistically significant way had an impact on the increase in the amount and quality of the commercial crop compared to the control variant, not treated with plant protection products
The tested agent Miedzian 50 WP (copper oxychloride) at the dose of 2,5, 3,0 and 6,0 kg/ha did not show phytotoxicity at all test locations.

TRIAL:FaT 6/9 ba

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 10 $m^2$ |
| | Number of replications | 4 |
| **Crop** | Trials per crop | French bean |
| | Varieties per crop | Złota Saxa |
| | Sowing period | 28.05.2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 65-69 |
| | Number of applications<br>Intervals between applications | 2 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves and pods |
| | Assessment dates | 15.07.2006, 08.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy soil on loam |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Field, Powiercie/prov. wielkopolskie (Poland) |

Weather conditions prevailing in the 2006 growing season favored the development of gray mold and bacteriosis at the end of the growing season due to lower temperatures and periodic high rainfall. In addition, in order to obtain provocation conditions for the development of bean anthracnose, gray mold and bacteriosis, the experimental plants were successively irrigated.
Fungicide Miedzian 50 WP (copper oxychloride) was tested at a dose of 2,5 and 3,0 kg/ha in comprehensive protection of french beans against bean anthracnose, gray mold and bacteriosis. The comparative agent was Miedzian 50 WG (copper oxychloride) fungicide at a dose of 3,0 kg/ha. The research was carried out at two locations in Skierniewice: location 1 in the provocation field for disease development, the second location in the conventional field in the ZSPG in Powiercie located 135 km away with different environmental conditions of infection by *Colletotrichum lindemuthianum*, *Botrytis cinerea* and *Pseudomonas phaseolicola*.
Fungicide Miedzian 50 WP at a dose of 2,5 and 3,0 kg/ha has demonstrated high effectiveness in protecting french beans against a complex of diseases: bean anthracnose, gray mold and bacteriosis.

The application of the product at doses of Miedzian 50 WP at the dose of 2,5 and 3,0 kg/ha had a significant impact on the increase in the quantity and quality of string beans compared to the control combination.
No phytotoxicity effects were observed on the treated plants with the tested fungicide.
The tested fungicide Miedzian 50 WP (copper oxychloride) tested at a dose of 2,5 and 3,0 kg/ha showed very high biological effectiveness in protecting french beans and against a complex of fungal diseases: bean anthracnose, gray mold and bacteriosis. The level of disease severity was 70-100% in all test locations compared to the control object.
The application of the tested dose of the agent in a statistically significant way had an impact on the increase in the amount and quality of the commercial crop compared to the control variant, not treated with plant protection products
The tested agent Miedzian 50 WP (copper oxychloride) at the dose of 2,5, 3,0 and 6,0 kg/ha did not show phytotoxicity at all test locations.

**FRENCH BEAN/ COLLLD**

TRIAL:FaZ 6/9 an

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 10 $m^2$ |
| | Number of replications | 4 |
| **Crop** | Trials per crop | French bean |
| | Varieties per crop | Złota Saxa |
| | Sowing period | 28.05.2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 65-69 |
| | Number of applications<br>Intervals between applications | 2 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves and pods |
| | Assessment dates | 15.07.2006, 08.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy soil on loam |
| | e.g. Natural / artificial innoculation… | provocative conditions |
| | e.g. Field / Greenhouse... | Field, Skierniewice/ prov. łódzkie (Poland) |

Weather conditions prevailing in the 2006 growing season favored the development of gray mold and bacteriosis at the end of the growing season due to lower temperatures and periodic high rainfall. In addition, in order to obtain provocation conditions for the development of bean anthracnose, gray mold and bacteriosis, the experimental plants were successively irrigated.
Fungicide Miedzian 50 WP (copper oxychloride) was tested at a dose of 2,5 and 3,0 kg/ha in comprehen-

sive protection of french beans against bean anthracnose, gray mold and bacteriosis. The comparative agent was Miedzian 50 WG (copper oxychloride) fungicide at a dose of 3,0 kg/ha. The research was carried out at two locations in Skierniewice: location 1 in the provocation field for disease development, the second location in the conventional field in the ZSPG in Powiercie located 135 km away with different environmental conditions of infection by *Colletotrichum lindemuthianum*, *Botrytis cinerea* and *Pseudomonas phaseolicola*.
Fungicide Miedzian 50 WP at a dose of 2,5 and 3,0 kg/ha has demonstrated high effectiveness in protecting french beans against a complex of diseases: bean anthracnose, gray mold and bacteriosis.
The application of the product at doses of Miedzian 50 WP at the dose of 2,5 and 3,0 kg/ha had a significant impact on the increase in the quantity and quality of string beans compared to the control combination.
No phytotoxicity effects were observed on the treated plants with the tested fungicide.
The tested fungicide Miedzian 50 WP (copper oxychloride) tested at a dose of 2,5 and 3,0 kg/ha showed very high biological effectiveness in protecting french beans and against a complex of fungal diseases: bean anthracnose, gray mold and bacteriosis. The level of disease severity was 70-100% in all test locations compared to the control object.
The application of the tested dose of the agent in a statistically significant way had an impact on the increase in the amount and quality of the commercial crop compared to the control variant, not treated with plant protection products
The tested agent Miedzian 50 WP (copper oxychloride) at the dose of 2,5, 3,0 and 6,0 kg/ha did not show phytotoxicity at all test locations.

TRIAL:FaT 6/9 an

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 10 $m^2$ |
| | Number of replications | 4 |
| **Crop** | Trials per crop | French bean |
| | Varieties per crop | Złota Saxa |
| | Sowing period | 28.05.2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 65-69 |
| | Number of applications<br>Intervals between applications | 2 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves and pods |
| | Assessment dates | 15.07.2006, 08.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy soil on loam |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Field, Powiercie/prov. wielkopolskie (Poland) |

Weather conditions prevailing in the 2006 growing season favored the development of gray mold and bacteriosis at the end of the growing season due to lower temperatures and periodic high rainfall. In addition, in order to obtain provocation conditions for the development of bean anthracnose, gray mold and bacteriosis, the experimental plants were successively irrigated.
Fungicide Miedzian 50 WP (copper oxychloride) was tested at a dose of 2,5 and 3,0 kg/ha in comprehensive protection of french beans against bean anthracnose, gray mold and bacteriosis. The comparative agent was Miedzian 50 WG (copper oxychloride) fungicide at a dose of 3,0 kg/ha. The research was carried out at two locations in Skierniewice: location 1 in the provocation field for disease development, the second location in the conventional field in the ZSPG in Powiercie located 135 km away with different environmental conditions of infection by *Colletotrichum lindemuthianum*, *Botrytis cinerea* and *Pseudomonas phaseolicola*.
Fungicide Miedzian 50 WP at a dose of 2,5 and 3,0 kg/ha has demonstrated high effectiveness in protecting french beans against a complex of diseases: bean anthracnose, gray mold and bacteriosis.
The application of the product at doses of Miedzian 50 WP at the dose of 2,5 and 3,0 kg/ha had a significant impact on the increase in the quantity and quality of string beans compared to the control combination.
No phytotoxicity effects were observed on the treated plants with the tested fungicide.
The tested fungicide Miedzian 50 WP (copper oxychloride) tested at a dose of 2,5 and 3,0 kg/ha showed very high biological effectiveness in protecting french beans and against a complex of fungal diseases: bean anthracnose, gray mold and bacteriosis. The level of disease severity was 70-100% in all test locations compared to the control object.
The application of the tested dose of the agent in a statistically significant way had an impact on the increase in the amount and quality of the commercial crop compared to the control variant, not treated with plant protection products
The tested agent Miedzian 50 WP (copper oxychloride) at the dose of 2,5, 3,0 and 6,0 kg/ha did not show phytotoxicity at all test locations.

**FRENCH BEAN/ BOTRICI**

TRIAL: FaZ 6/9 sz

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| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 10 $m^2$ |
| | Number of replications | 4 |
| **Crop** | Trials per crop | French bean |
| | Varieties per crop | Złota Saxa |
| | Sowing period | 28.05.2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 65-69 |
| | Number of applications<br>Intervals between applications | 2 |
| | Spray volumes | 700 L/ha |
| **Assessment** | Assessment types | Analysis of infected leaves and pods |
| | Assessment dates | 15.07.2006, 08.08.2006 |
| **Other relevant infor-** | e.g. Soil type, pH (in case of soil active | sandy soil on loam |

| | | |
|---|---|---|
| **mation** | substance …) | |
| | e.g. Natural / artificial innoculation… | provocative conditions |
| | e.g. Field / Greenhouse... | Field, Skierniewice/ prov. łódzkie (Poland) |

Weather conditions prevailing in the 2006 growing season favored the development of gray mold and bacteriosis at the end of the growing season due to lower temperatures and periodic high rainfall. In addition, in order to obtain provocation conditions for the development of bean anthracnose, gray mold and bacteriosis, the experimental plants were successively irrigated.
Fungicide Miedzian 50 WP (copper oxychloride) was tested at a dose of 2,5 and 3,0 kg/ha in comprehensive protection of french beans against bean anthracnose, gray mold and bacteriosis. The comparative agent was Miedzian 50 WG (copper oxychloride) fungicide at a dose of 3,0 kg/ha. The research was carried out at two locations in Skierniewice: location 1 in the provocation field for disease development, the second location in the conventional field in the ZSPG in Powiercie located 135 km away with different environmental conditions of infection by *Colletotrichum lindemuthianum*, *Botrytis cinerea* and *Pseudomonas phaseolicola*.
Fungicide Miedzian 50 WP at a dose of 2,5 and 3,0 kg/ha has demonstrated high effectiveness in protecting french beans against a complex of diseases: bean anthracnose, gray mold and bacteriosis.
The application of the product at doses of Miedzian 50 WP at the dose of 2,5 and 3,0 kg/ha had a significant impact on the increase in the quantity and quality of string beans compared to the control combination.
No phytotoxicity effects were observed on the treated plants with the tested fungicide.
The tested fungicide Miedzian 50 WP (copper oxychloride) tested at a dose of 2,5 and 3,0 kg/ha showed very high biological effectiveness in protecting french beans and against a complex of fungal diseases: bean anthracnose, gray mold and bacteriosis. The level of disease severity was 70-100% in all test locations compared to the control object.
The application of the tested dose of the agent in a statistically significant way had an impact on the increase in the amount and quality of the commercial crop compared to the control variant, not treated with plant protection products
The tested agent Miedzian 50 WP (copper oxychloride) at the dose of 2,5, 3,0 and 6,0 kg/ha did not show phytotoxicity at all test locations.

TRIAL: FaT 6/9 sz

| | | |
|---|---|---|
| **Guidelines** | General guidelines | EPPO PP 1/152 (4), EPPO PP 1/135 (4), EPPO PP 1/181 (4), EPPO PP 1/225 (2) |
| | Specific guidelines | EPPO PP 1/121(2) |
| **Experimental design** | Plot design | Random Complete Block (RCB) |
| | Plot size | 10 $m^2$ |
| | Number of replications | 4 |
| **Crop** | Trials per crop | French bean |
| | Varieties per crop | Złota Saxa |
| | Sowing period | 28.05.2006 |
| **Application** | Crop stage (BBCH)* at application | BBCH 65-69 |
| | Number of applications<br>Intervals between applications | 2 |
| | Spray volumes | 700 L/ha |

| | | |
|---|---|---|
| **Assessment** | Assessment types | Analysis of infected leaves and pods |
| | Assessment dates | 15.07.2006, 08.08.2006 |
| **Other relevant information** | e.g. Soil type, pH (in case of soil active substance …) | sandy soil on loam |
| | e.g. Natural / artificial innoculation… | natural |
| | e.g. Field / Greenhouse... | Field, Powiercie/prov. wielkopolskie (Poland) |

Weather conditions prevailing in the 2006 growing season favored the development of gray mold and bacteriosis at the end of the growing season due to lower temperatures and periodic high rainfall. In addition, in order to obtain provocation conditions for the development of bean anthracnose, gray mold and bacteriosis, the experimental plants were successively irrigated.
Fungicide Miedzian 50 WP (copper oxychloride) was tested at a dose of 2,5 and 3,0 kg/ha in comprehensive protection of french beans against bean anthracnose, gray mold and bacteriosis. The comparative agent was Miedzian 50 WG (copper oxychloride) fungicide at a dose of 3,0 kg/ha. The research was carried out at two locations in Skierniewice: location 1 in the provocation field for disease development, the second location in the conventional field in the ZSPG in Powiercie located 135 km away with different environmental conditions of infection by *Colletotrichum lindemuthianum*, *Botrytis cinerea* and *Pseudomonas phaseolicola*.
Fungicide Miedzian 50 WP at a dose of 2,5 and 3,0 kg/ha has demonstrated high effectiveness in protecting french beans against a complex of diseases: bean anthracnose, gray mold and bacteriosis.
The application of the product at doses of Miedzian 50 WP at the dose of 2,5 and 3,0 kg/ha had a significant impact on the increase in the quantity and quality of string beans compared to the control combination.
No phytotoxicity effects were observed on the treated plants with the tested fungicide.
The tested fungicide Miedzian 50 WP (copper oxychloride) tested at a dose of 2,5 and 3,0 kg/ha showed very high biological effectiveness in protecting french beans and against a complex of fungal diseases: bean anthracnose, gray mold and bacteriosis. The level of disease severity was 70-100% in all test locations compared to the control object.
The application of the tested dose of the agent in a statistically significant way had an impact on the increase in the amount and quality of the commercial crop compared to the control variant, not treated with plant protection products
The tested agent Miedzian 50 WP (copper oxychloride) at the dose of 2,5, 3,0 and 6,0 kg/ha did not show phytotoxicity at all test locations.

**APPLE/VENTIN**

**Table 3.2-7: Efficacy of Miedzian 50 WP and standard products in all trials.**

| trial number | product | Dose | infected leaves | | | | infected fruits | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | I evaluation | | II evaluation | | I evaluation | | II evaluation | |
| | | | percent of infected leaves | efficacy | percent of infected leaves | efficacy | percent of infected fruits | efficacy | percent of infected fruits | efficacy |
| ZF/S/7/2019/2/I | control | - | 5,2 b* | - | 1,5 b | - | 1,9 a | - | 2,2 b | - |
| | Miedzian 50 WP | 1,5 kg/ha | 0,5 a | **90,4** | 0,03 a | **98** | 0,7 a | **63,2** | 0,3 a | **86,4** |
| | Miedzian 50 WP | 1,2 kg/ha | 0,4 a | **92,3** | 0,2 a | **86,7** | 0,1 a | **94,7** | 0,3 a | **86,4** |
| | Miedzian 50 WP | 0,9 kg/ha | 0,1 a | **98,1** | 0,1 a | **93,3** | 0,1 a | **94,7** | 0,6 ab | **72,7** |
| | Nordox 75 | 1,0 kg/ha | 0,4 a | **92,3** | 0,03 a | **98** | 0,3 a | **84,2** | 0,3 a | **86,4** |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | WG | | | | | | | | | |
| | Cuproflow 377,5 SC | 2,0 l/ha | 0,2 a | **96,2** | 0,3 a | **80** | 0,6 a | **68,4** | 0,1 a | **95,5** |
| ZF/S/7/2019/2/II | control | - | 6,1 b* | - | 0,3 a | - | 0,3 b | - | 0,7 b | - |
| | Miedzian 50 WP | 1,5 kg/ha | 0,1 a | **98,4** | 0,03 a | **90** | 0,0 a | **100** | 0,00 | **100** |
| | Miedzian 50 WP | 1,2 kg/ha | 0,1 a | **98,4** | 0 a | **100** | 0,0 a | **100** | 0,00 | **100** |
| | Miedzian 50 WP | 0,9 kg/ha | 0,1 a | **98,4** | 0,00 | **100** | 0,0 a | **100** | 0,01 a | **98,6** |
| | Nordox 75 WG | 1,0 kg/ha | 0,00 | **100** | 0,00 | **100** | 0,0 a | **100** | 0,00 | **100** |
| | Cuproflow 377,5 SC | 2,0 l/ha | 0,3 a | **95,1** | 0,1a | **66,7** | 0,0 a | **100** | 0,00 | **100** |
| ZF/S/7/2019/2/III | control | - | 5,4b* | - | 1,5 b | - | 1,9 b | - | 1,0 b | - |
| | Miedzian 50 WP | 1,5 kg/ha | 0,1 a | **98,1** | 0,1 a | **93,3** | 0,1 a | **94,7** | 0,1 a | **90** |
| | Miedzian 50 WP | 1,2 kg/ha | 0,7 a | **87** | 0,4 a | **73,3** | 0,00 | **100** | 0,00 | **100** |
| | Miedzian 50 WP | 0,9 kg/ha | 0,4 a | **92,6** | 0,03 a | **98** | 0,1 a | **94,7** | 0,00 | **100** |
| | Nordox 75 WG | 1,0 kg/ha | 0,3 a | **94,4** | 0,03 a | **98** | 0,1 a | **94,7** | 0,00 | **100** |
| | Cuproflow 377,5 SC | 2,0 l/ha | 0,5 a | **90,7** | 0,13 a | **91,3** | 0,1 a | **94,7** | 0,00 | **100** |
| ZF/S/7/2019/2/IV | control | - | 5,7 b | - | 1,6 a | - | 0,9 b | - | 0,3 a | - |
| | Miedzian 50 WP | 1,5 kg/ha | 0,5 a | **91,2** | 0,03 a | **98,1** | 0,1 a | **88,9** | 0,1 a | **66,7** |
| | Miedzian 50 WP | 1,2 kg/ha | 0,5 a | **91,2** | 0,1 a | **93,8** | 0,00 | **100** | 0,1 a | **66,7** |
| | Miedzian 50 WP | 0,9 kg/ha | 0,2 a | **87,7** | 0,1 a | **93,8** | 0,1 a | **88,9** | 0,1 a | **66,7** |
| | Nordox 75 WG | 1,0 kg/ha | 0,1 a | **98,2** | 0,1 a | **93,8** | 0,00 | **100** | 0,1 a | **66,7** |
| | Cuproflow 377,5 SC | 2,0 l/ha | 0,5 a | **91,2** | 0,3 a | **81,3** | 0,1 a | **88,9** | 0,3 a | - |
| OR/17/2006/1/I | control | - | 49 b | - | 71,7 c | - | 87,5 c | - | | |
| | Miedzian 50 WP | 1,5 kg/ha | 1,2 a | **97,6** | 2,8 a | **96,1** | 6,7 a | **92,3** | | |
| | Champion 50 WP | 0,75 kg/ha | 2,9 a | **94,1** | 3,8 a | **94,7** | 0,13 | **96,6** | | |
| | Cuproflow 375 SC | 1,5 L/ha | 1,1 a | **97,8** | 3,2 a | **95,5** | 1,6 a | **98,2** | | |
| OR/17/2006/1/II | control | - | 26,7 | - | 71,7 | - | 64,9 | - | | |
| | Miedzian 50 WP | 1,5 kg/ha | 0 | **100** | 0,36 | **99,5** | 0,73 | **98,9** | | |
| | Miedzian Extra 350 SC | 1,5 L/ha | 0 | **100** | 0,13 | **99,8** | 0,37 | **99,4** | | |
| | Cuproflow 375 SC | 1,5 L/ha | 0 | **100** | 0,03 | **99,9** | 0,00 | **100** | | |
| | Kocide 101 WP | 1,5 kg/ha | 0,03 | **99,9** | 0,13 | **99,8** | 0,37 | **99,4** | | |
| OR/17/2006/1/III | control | - | 76,8 | - | 78,1 | - | 94,80 | - | 98,1 | - |
| | Miedzian 50 WP | 1,5 kg/ha | 2 | **97,4** | 8,6 | **89** | 1,30 | **98,6** | 3,6 | **96,3** |
| | Miedzian Extra 350 SC | 1,5 L/ha | 1,5 | **98** | 8,1 | **89,6** | 3,90 | **95,9** | 1,7 | **98,3** |
| | Champion 50 WP | 0,75 kg/ha | 1,4 | **98,2** | 8,3 | **89,4** | 5,90 | **93,8** | 3,7 | **96,2** |
| | Cuproflow 375 SC | 1,5 L/ha | 1,2 | **98,4** | 8 | **89,8** | 2,00 | **97,9** | 0,9 | **99,1** |
| OR/17/2006/1/IV | control | - | 42,4 | - | 49,9 | - | 54,78 | - | - | - |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Miedzian 50 WP | 1,5 kg/ha | 0,3 | **99,3** | 0,03 | **99,9** | 0,06 | **99,9** | - | - |
| | Miedzian Extra 350 SC | 1,5 L/ha | 0,06 | **99,9** | 0,13 | **99,9** | 0,00 | **100** | - | - |
| | Cuproflow 375 SC | 1,5 L/ha | 0,3 | **99,3** | 0,13 | **99,7** | 0,00 | **100** | - | - |
| | Kocide 101 WP | 1,5 kg/ha | 0,4 | **99,1** | 0,03 | **99,9** | 0,06 | **99,9** | - | - |

A total of 7 trials were carried out to evaluate the efficacy of Miedzian 50 WP for control of VENTIN in apple orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. Miedzian 50 WP was applied at dose rates: 0,9 kg/ha, 1,2 kg/ha and 1,5 kg/ha. As a standards were used Nordox 75 WG (1 kg/ha), Cuproflow 377,5 SC (2 L/ha), Champion 50 WP (0,75 kg/ha), Cuproflow 375 SC (1,5 L/ha), Miedzian Extra 350 SC (1,5 L/ha) and Kocide 101 WP (1,5 kg/ha). These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-11a and No. 3.2-11b).

**Table 3.2-11a: Average efficacy of Miedzian 50 WP and standard products.**

| average efficacy | | | | |
|---|---|---|---|---|
| trial number | product | Dose | infected leaves | infected fruits |
| ZF/S/7/2019/2/I | control | - | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 94,2 | 74,8 |
| | Miedzian 50 WP | 1,2 kg/ha | 89,5 | 90,55 |
| | Miedzian 50 WP | 0,9 kg/ha | 95,7 | 83,7 |
| | Nordox 75 WG | 1,0 kg/ha | 95,15 | 85,3 |
| | Cuproflow 377,5 SC | 2,0 l/ha | 88,1 | 81,95 |
| ZF/S/7/2019/2/II | control | - | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 94,2 | 100 |
| | Miedzian 50 WP | 1,2 kg/ha | 99,2 | 100 |
| | Miedzian 50 WP | 0,9 kg/ha | 99,2 | 99,3 |
| | Nordox 75 WG | 1,0 kg/ha | 100 | 100 |
| | Cuproflow 377,5 SC | 2,0 l/ha | 80,9 | 100 |
| ZF/S/7/2019/2/III | control | - | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 95,7 | 92,35 |
| | Miedzian 50 WP | 1,2 kg/ha | 80,15 | 100 |
| | Miedzian 50 WP | 0,9 kg/ha | 95,3 | 97,35 |
| | Nordox 75 WG | 1,0 kg/ha | 96,2 | 97,35 |
| | Cuproflow 377,5 SC | 2,0 l/ha | 91 | 97,35 |
| ZF/S/7/2019/2/IV | control | - | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 94,65 | 77,8 |
| | Miedzian 50 WP | 1,2 kg/ha | 92,5 | 83,35 |
| | Miedzian 50 WP | 0,9 kg/ha | 90,75 | 77,8 |
| | Nordox 75 WG | 1,0 kg/ha | 96 | 83,35 |
| | Cuproflow 377,5 SC | 2,0 l/ha | 86,25 | 88,9 |
| OR/17/2006/1/I | control | - | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 96,85 | 92,3 |
| | Champion 50 WP | 0,75 kg/ha | 94,4 | 96,6 |
| | Cuproflow 375 SC | 1,5 L/ha | 96,65 | 98,2 |
| OR/17/2006/1/II | control | - | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 99,75 | 98,9 |
| | Miedzian Extra 350 SC | 1,5 L/ha | 99,9 | 99,4 |
| | Cuproflow 375 SC | 1,5 L/ha | 99,95 | 100 |
| | Kocide 101 WP | 1,5 kg/ha | 99,85 | 99,4 |
| OR/17/2006/1/III | control | - | - | - |

| | | | | |
|---|---|---|---|---|
| | Miedzian 50 WP | 1,5 kg/ha | 93,2 | 97,45 |
| | Miedzian Extra 350 SC | 1,5 L/ha | 93,8 | 97,1 |
| | Champion 50 WP | 0,75 kg/ha | 93,8 | 95 |
| | Cuproflow 375 SC | 1,5 L/ha | 94,1 | 98,5 |
| OR/17/2006/1/IV | control | - | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 99,6 | 99,9 |
| | Miedzian Extra 350 SC | 1,5 L/ha | 99,9 | 100 |
| | Cuproflow 375 SC | 1,5 L/ha | 99,5 | 100 |
| | Kocide 101 WP | 1,5 kg/ha | 99,5 | 99,9 |

**Table 3.2-11b: Summary of average efficacy of Miedzian 50 WP and standard products.**

| product | Dose | average efficacy |
|---|---|---|
| Miedzian 50 WP | 1,5 kg/ha | 93,85313 |
| Miedzian 50 WP | 1,2 kg/ha | 91,90625 |
| Miedzian 50 WP | 0,9 kg/ha | 92,3875 |
| Nordox 75 WG | 1,0 kg/ha | 94,16875 |
| Cuproflow 377,5 SC | 2,0 l/ha | 89,30625 |
| Champion 50 WP | 0,75 kg/ha | 94,95 |
| Cuproflow 375 SC | 1,5 L/ha | 98,3625 |
| Miedzian Extra 350 SC | 1,5 L/ha | 98,35 |
| Kocide 101 WP | 1,5 kg/ha | 99,6625 |

**Summary and conclusion (APPLE/VENTIN)**

Miedzian 50 WP at all doses (1,5 kg/ha, 1,2 kg/ha, 0,9 kg/ha) significantly reduced occurrence of VENTIN in apple orchards. At dose 0,9 kg/ha average efficacy reached 92,39%, at dose 1,2 kg/ha average efficacy reached 91,9% and at dose 1,5 kg/ha average efficacy reached 93,85 %. There was no significant different between Miedzian 50 WP and standard fungicides (Nordox 75 WG, Cuproflow 377,5 SC, Champion 50 WP, Cuproflow 375 SC, Miedzian Extra 350 SC, Kocide 101 WP). Due to low level of infection to significantly reduce VENTIN recommended dose of Miedzian 50 WP is 0,9-1,5 kg/ha. The dose should be selected depending on the severity of the infection.

**APPLE/ ERWIAM**

**Table 3.2-12: Efficacy of Miedzian 50 WP and standard products in all trials.**

| trial number | product | Dose | infected shoots | | | | | | trial number | infected flowers | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | I assessment 6-7 days after inoculation | | II assessment 13-14 days after inoculation | | III assessment 20-22 days after inoculation | | | I assessment 5-6 days after inoculation | | II assessment 8-10 days after inoculation | |
| | | | Shoot necrosis [%] | efficacy | Shoot necrosis [%] | efficacy | Shoot necrosis [%] | efficacy | | Flowers necrosis [%] | efficacy | Flowers necrosis [%] | efficacy |
| ZF/S/7/2019/3/I/a | control | - | 34,8 b | - | 63,6 b | - | 83,0 c | - | ZF/S/7/2019/3/I/b | 1,36 b | - | 2,35 b | - |
| | Miedzian 50 WP | 0,9 kg/ha | 4,0 a | **88,5** | 14,1 a | **77,8** | 28,9 b | **65,1** | | 0,46 a | **66,2** | 1,35 a | **42,6** |
| | Miedzian 50 WP | 1,2 kg/ha | 1,5 a | **95,6** | 8,5 a | **86,6** | 15,7 ab | **81,1** | | 0,38 a | **72,1** | 1,23 a | **47,7** |
| | Miedzian 50 WP | 1,5 kg/h | 0,0 a | **100** | 1,8 a | **97,1** | 10,2 a | **87,7** | | 0,35 a | **74,3** | 1,05 a | **55,3** |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | a | | | | | | | | | | | |
| | Miedzian Extra 350 S.C. | 1,5 l/ha | 4,5 a | 87,1 | 15,0 a | 76,4 | 27,1 b | 67,3 | | 0,47 a | 65,4 | 1,73 ab | 26,4 |
| ZF/S/7/ 2019/3/I I/a | control | - | 20,7 b | - | 33,3 b | - | 40,1 b | - | ZF/S/7/ 2019/3/I I/b | 1,92 c | - | 2,70 b | - |
| | Miedzian 50 WP | 0,9 kg/ha | 3,8 a | 81,6 | 6,4 a | 80,8 | 10,2 a | 74,6 | | 1,35 b | 29,60 | 2,26 ab | 16,30 |
| | Miedzian 50 WP | 1,2 kg/ha | 3,4 a | 83,5 | 7,4 a | 77,8 | 9,1 a | 77,3 | | 1,21 b | 36,9 | 1,74 a | 35,50 |
| | Miedzian 50 WP | 1,5 kg/ha | 1,0 a | 95,1 | 1,7 a | 94,9 | 2,1 a | 94,7 | | 0,53 a | 72,3 | 1,28 a | 52,60 |
| | Miedzian Extra 350 S.C. | 1,5 l/ha | 4,6 a | 77,8 | 8,8 a | 73,6 | 13,3 a | 66,8 | | 0,77 a | 59,8 | 1,42 a | 47,40 |
| OR/17/2 006/3a | Kontrola | | 11,1 | 0 | 81 | 0 | - | - | - | - | - | - | - |
| | Miedzian 50 WP | 0,75 kg/ha | 8 | 27,9 | 54,7 | 32,5 | - | - | - | - | - | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 0,6 | 94,6 | 42,1 | 48 | - | - | - | - | - | - | - |
| | Cu-proflow 375 SC | 1,5 L/ha | 3,5 | 68,5 | 28,5 | 64,8 | - | - | - | - | - | - | - |
| | Cu-proflow 375 SC | 2,0 L/ha | 2 | 82 | 26.7 | 67 | - | - | - | - | - | - | - |
| | Kocide 101 WP | 0,75 kg/ha | 5,7 | 48,6 | 36,5 | 54,9 | - | - | - | - | - | - | - |
| | Kocide 101 WP | 1,5 kg/ha | 4,6 | 58,6 | 36,8 | 54,6 | - | - | - | - | - | - | - |
| OR/17/2 006/3b | Kontrola | | 1,45 | 0 | 4 | 0 | - | - | - | - | - | - | - |
| | Miedzian 50 WP | 0,75 kg/ha | 0,3 b | 79,3 | 2,3 d | 42,5 | - | - | - | - | - | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 0,0 a | 100 | 0,5 ab | 87,5 | - | - | - | - | - | - | - |
| | Cu-proflow 375 SC | 1,5 L/ha | 0,03 a | 97,9 | 1,5 c | 62,5 | - | - | - | - | - | - | - |
| | Cu-proflow 375 SC | 2,0 L/ha | 0,0 a | 100 | 0,5 ab | 87,5 | - | - | - | - | - | - | - |
| | Champion 50 WP | 0,75 kg/ha | 0,2 b | 86,2 | 2,7 d | 32,5 | - | - | - | - | - | - | - |
| | Champion 50 WP | 1,5 kg/ha | 0,05 a | 96,6 | 0,6 b | 85 | - | - | - | - | - | - | - |
| | Champion 50 WP | 3,0 kg/ha | 0,0 a | 100 | 0,1 ab | 97,5 | - | - | - | - | - | - | - |
| | Kocide 101 WP | 0,75 kg/ha | 0,6 c | 58,6 | 3,4 e | 15 | - | - | - | - | - | - | - |
| | Kocide 101 WP | 1,5 kg/ha | 0,0 a | 100 | 0,3 ab | 92,5 | - | - | - | - | - | - | - |
| | Kocide | 3,0 | 0,0 a | 100 | 0,0 a | 100 | - | - | - | - | - | - | - |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 101 WP | kg/ha | | | | | | | | | | | |

A total of 4 trials were carried out to evaluate the efficacy of Miedzian 50 WP for control of ERWIAM in apple orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. Miedzian 50 WP was applied at dose rates: 0,75 kg/ha, 0,9 kg/ha, 1,2 kg/ha and 1,5 kg/ha. As a standards were used Champion 50 WP (0,75 kg/ha, 1,5 kg/ha, 3 kg/ha), Cuproflow 375 SC (1,5 L/ha, 2 L/ha), Miedzian Extra 350 SC (1,5 L/ha) and Kocide 101 WP (0,75 kg/ha, 1,5 kg/ha, 3 kg/ha). These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-12a and No. 3.2-12b).

**Table 3.2-12a: Average efficacy of Miedzian 50 WP and standard products.**

| average efficacy | | | | | |
|---|---|---|---|---|---|
| trial number | product | Dose | infected shoots | trial number | infected flowers |
| ZF/S/7/2019/3/I/a | control | - | - | ZF/S/7/2019/3/I/b | - |
| | Miedzian 50 WP | 0,9 kg/ha | 77,13333 | | 54,4 |
| | Miedzian 50 WP | 1,2 kg/ha | 87,76667 | | 59,9 |
| | Miedzian 50 WP | 1,5 kg/ha | 94,93333 | | 64,8 |
| | Miedzian Extra 350 SC | 1,5 l/ha | 76,93333 | | 45,9 |
| ZF/S/7/2019/3/II/a | control | - | - | ZF/S/7/2019/3/II/b | - |
| | Miedzian 50 WP | 0,9 kg/ha | 79 | | 22,95 |
| | Miedzian 50 WP | 1,2 kg/ha | 79,53333 | | 36,20 |
| | Miedzian 50 WP | 1,5 kg/ha | 94,9 | | 62,45 |
| | Miedzian Extra 350 S.C. | 1,5 l/ha | 72,73333 | | 53,60 |
| OR/17/2006/3a | Kontrola | | - | - | - |
| | Miedzian 50 WP | 0,75 kg/ha | 30,2 | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 71,3 | - | - |
| | Cuproflow 375 SC | 1,5 L/ha | 66,65 | - | - |
| | Cuproflow 375 SC | 2,0 L/ha | 74,5 | - | - |
| | Kocide 101 WP | 0,75 kg/ha | 51,75 | - | - |
| | Kocide 101 WP | 1,5 kg/ha | 56,6 | - | - |
| OR/17/2006/3b | Kontrola | | - | - | - |
| | Miedzian 50 WP | 0,75 kg/ha | 60,9 | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 93,75 | - | - |
| | Cuproflow 375 SC | 1,5 L/ha | 80,2 | - | - |
| | Cuproflow 375 SC | 2,0 L/ha | 93,75 | - | - |
| | Champion 50 WP | 0,75 kg/ha | 59,35 | - | - |
| | Champion 50 WP | 1,5 kg/ha | 90,8 | - | - |
| | Champion 50 WP | 3,0 kg/ha | 98,75 | - | - |
| | Kocide 101 WP | 0,75 kg/ha | 36,8 | - | - |
| | Kocide 101 WP | 1,5 kg/ha | 96,25 | - | - |
| | Kocide 101 WP | 3,0 kg/ha | 100 | - | - |

**Table 3.2-12b: Summary of average efficacy of Miedzian 50 WP and standard products.**

| product | Dose | average efficacy |
|---|---|---|
| Miedzian 50 WP | 0,75 kg/ha | 45,55 |
| Miedzian 50 WP | 0,9 kg/ha | 58,37 |
| Miedzian 50 WP | 1,2 kg/ha | 65,85 |
| Miedzian 50 WP | 1,5 kg/ha | 80,36 |
| Miedzian Extra 350 S.C. | 1,5 l/ha | 62,29 |
| Cuproflow 375 SC | 1,5 L/ha | 73,425 |
| Cuproflow 375 SC | 2,0 L/ha | 84,125 |

| | | |
|---|---|---|
| Kocide 101 WP | 0,75 kg/ha | 44,275 |
| Kocide 101 WP | 1,5 kg/ha | 76,425 |
| Kocide 101 WP | 3,0 kg/ha | 100 |
| Champion 50 WP | 0,75 kg/ha | 59,35 |
| Champion 50 WP | 1,5 kg/ha | 90,8 |
| Champion 50 WP | 3,0 kg/ha | 98,75 |

**Summary and conclusion (APPLE/ERWIAM)**
Miedzian 50 WP at dose 1,5 kg/ha significantly reduced occurrence of ERWIAM in apple orchards. At dose 1,5 kg/ha average efficacy reached 80,36%. There was no significant different between Miedzian 50 WP and standard fungicides (Champion 50 WP, Cuproflow 375 SC, Miedzian Extra 350 SC, Kocide 101 WP). To significantly reduce ERWIAM recommended dose of Miedzian 50 WP is 1,5 kg/ha.

**PEAR/ VENTPI**

**Table 3.2-13: Efficacy of Miedzian 50 WP and standard products in all trials.**

| trial number | product | Dose | infected leaves | | | | infected fruits | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | I evaluation | | II evaluation | | I evaluation | | II evaluation | |
| | | | per-cent of infect-ed leaves | effica-cy | per-cent of infect-ed leaves | effica-cy | per-cent of infect-ed fruits | effica-cy | per-cent of infect-ed fruits | effica-cy |
| OR/17/2006/ 2/I | control | - | 2,9 | - | - | - | 30,9 | - | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 0 | **100** | - | - | 5,3 | **82,8** | - | - |
| | Miedzian Extra 350 S.C. | 1,5 L/ha | 0 | **100** | - | - | 1,5 | **95,1** | - | - |
| | Champion 50 WP | 0,75 kg/ha | 0 | **100** | - | - | 0 | **100** | - | - |
| | Cuproflow 375 S.C. | 1,5 L/ha | 0 | **100** | - | - | 0 | **100** | - | - |
| OR/17/2006/ 2/II | controla | - | 10,6 | - | 54,1 | - | 70,6 | - | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 0 | **100** | 10,2 | **81,1** | 1,4 | **98** | - | - |
| | Miedzian 50 WP | 3 kg/ha | 0 | **100** | 6,3 | **88,4** | 2,4 | **96,6** | - | - |
| | Cuproflow 375 SC | 1,5 L/ha | 0 | **100** | 5,1 | **91,1** | 1,9 | **97,3** | - | - |
| | Kocide 101 WP | 3 kg/ha | 0 | **100** | 5,6 | **89,6** | 1,5 | **97,9** | - | - |

A total of 2 trials were carried out to evaluate the efficacy of Miedzian 50 WP for control of VENTPI in pear orchards. Trials were conducted in different regions in Poland where orchards are grown commercially. Trials were made of randomized block design with a minimum of four replicates. Miedzian 50 WP was applied at dose rate: 1,5 kg/ha. As a standards were used Cuproflow 375 SC (1,5 L/ha), Champion 50 WP (0,75 kg/ha), Miedzian Extra 350 SC (1,5 L/ha) and Kocide 101 WP (3 kg/ha). These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-13a and No. 3.2-13b).

**Table 3.2-13a: Average efficacy of Miedzian 50 WP and standard products.**

| average efficacy | | | | |
|---|---|---|---|---|
| trial number | product | Dose | infected leaves | infected fruits |
| OR/17/2006/2/I | control | - | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 100 | 82,8 |
| | Miedizan Extra 350 S.C. | 1,5 L/ha | 100 | 95,1 |
| | Champion 50 WP | 0,75 kg/ha | 100 | 100 |
| | Cuproflow 375 S.C. | 1,5 L/ha | 100 | 100 |
| OR/17/2006/2/II | controla | - | - | - |
| | Miedzian 50 WP | 1,5 kg/ha | 90,55 | 98 |
| | Miedzian 50 WP | 3 kg/ha | 94,2 | 96,6 |
| | Cuproflow 375 SC | 1,5 L/ha | 95,55 | 97,3 |

| | | | | |
|---|---|---|---|---|
| | Kocide 101 WP | 3 kg/ha | 94,8 | 97,9 |

**Table 3.2-13b: Summary of average efficacy of Miedzian 50 WP and standard products.**

| product | Dose | average efficacy |
|---|---|---|
| Miedzian 50 WP | 1,5 kg/ha | 92,8375 |
| Miedzian 50 WP | 3 kg/ha | 95,4 |
| Miedzian Extra 350 S.C. | 1,5 L/ha | 97,55 |
| Champion 50 WP | 0,75 kg/ha | 100 |
| Cuproflow 375 S.C. | 1,5 L/ha | 98,2125 |
| Kocide 101 WP | 3 kg/ha | 96,35 |

**Summary and conclusion (PEAR/VENTPI)**
Miedzian 50 WP at dose 1,5 kg/ha significantly reduced occurrence of VENTPI in pear orchards. At dose 1,5 kg/ha average efficacy reached 92,84%. There was no significant different between Miedzian 50 WP and standard fungicides (Champion 50 WP, Cuproflow 375 SC, Miedzian Extra 350 SC, Kocide 101 WP). To significantly reduce VENTPI recommended dose of Miedzian 50 WP is 1,5 kg/ha.
In case of PEAR/VENTPI, carried 2 trials on pear and support it with 7 trials on apple (according to Harmonization Meeting about effectiveness 'Annex 2- Generic Extrapolation Tables') give possibilities to extend use on pear against VENTPI. Recommended dose to control VENTPI in pear orchards is 1,5 kg/ha.

**TOMATO (outdoor)/ PSDMTM**

**Table 3.2-14: Efficacy of Miedzian 50 WP and standard products in all trials.**

| trial number | product | Dose | I evaluation | | II evaluation | |
|---|---|---|---|---|---|---|
| | | | percent of infected leaves | efficacy | percent of infected leaves | efficacy |
| PoZ 6/9 ba | control | | 6,1 a | - | 21,3 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 0,8 b | **86** | 2,3 b | **89** |
| | Miedzian 50 WP | 3 kg/ha | 0,8 b | **86** | 3,0 b | **86** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 1,3 b | **79** | 3,5 b | **83** |
| PoT 6/9 ba | control | | 5,1 a | - | 5,2 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 0 b | **100** | 2,4 | **55** |
| | Miedzian 50 WP | 3 kg/ha | 0 b | **100** | 1,5 | **71** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 0 b | **100** | 2 | **60** |

A total of 2 trials were carried out to evaluate the efficacy of Miedzian 50 WP for control of PSDMTM in tomato (outdoor). Trials were conducted in different regions in Poland. Trials were made of randomized block design with a minimum of four replicates. Miedzian 50 WP was applied at dose rates: 2,5 kg/ha, 3 kg/ha and 6 kg/ha (phytotoxicity). As a standards were used Miedzian 50 WG (2,5 kg/ha). These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-14a and No. 3.2-14b).

**Table 3.2-14a: Average efficacy of Miedzian 50 WP and standard products.**

| average efficacy | | | |
|---|---|---|---|
| trial number | product | Dose | infected leaves |
| PoZ 6/9 ba | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 87,5 |
| | Miedzian 50 WP | 3 kg/ha | 86 |

| | | | |
|---|---|---|---|
| | Miedzian 50 WP | 6 kg/ha | - |
| | Miedzian 50 WG | 2,5 kg/ha | 81 |
| PoT 6/9 ba | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 77,5 |
| | Miedzian 50 WP | 3 kg/ha | 85,5 |
| | Miedzian 50 WP | 6 kg/ha | - |
| | Miedzian 50 WG | 2,5 kg/ha | 80 |

**Table 3.2-14b: Summary of average efficacy of Miedzian 50 WP and standard products.**

| product | Dose | average efficacy |
|---|---|---|
| Miedzian 50 WP | 2,5 kg/ha | 82,5 |
| Miedzian 50 WP | 3 kg/ha | 85,75 |
| Miedzian 50 WP | 6 kg/ha | - |
| Miedzian 50 WG | 2,5 kg/ha | 80,5 |

**Summary and conclusion (TOMATO (outdoor)/PSDMTM)**
Miedzian 50 WP at dose 2,5 kg/ha significantly reduced occurrence of PSDMTM in tomato (outdoor). At dose 2,5 kg/ha average efficacy reached 82,5%. There was no significant different between Miedzian 50 WP and standard fungicide (Miedzian 50 WG). To significantly reduce PSDMTM recommended dose of Miedzian 50 WP is 2,5 kg/ha.

**TOMATO (outdoor)/ PHYTIN**

**Table 3.2-15: Efficacy of Miedzian 50 WP and standard products in all trials.**

| trial number | product | Dose | I evaluation | | II evaluation | |
|---|---|---|---|---|---|---|
| | | | percent of infected leaves | efficacy | percent of infec-ted leaves | efficacy |
| PoZ 6/9 za | control | | 7,4 a | - | 66,4 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 1,9 b | **74** | 24,6 b | **64** |
| | Miedzian 50 WP | 3 kg/ha | 1,3 c | **82** | 21,9 c | **67** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 2,0 b | **73** | 22,2 c | **67** |
| PoT 6/9 za | control | | 9,0 a | - | 94,2 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 1,7 c | **81** | 6,3 b | **93** |
| | Miedzian 50 WP | 3 kg/ha | 1,0 d | **88** | 5,1 c | **95** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 2,1 b | **77** | 6,3 b | **93** |

A total of 2 trials were carried out to evaluate the efficacy of Miedzian 50 WP for control of PHYTIN in tomato (outdoor). Trials were conducted in different regions in Poland. Trials were made of randomized block design with a minimum of four replicates. Miedzian 50 WP was applied at dose rates: 2,5 kg/ha, 3 kg/ha and 6 kg/ha (phytotoxicity). As a standards were used Miedzian 50 WG (2,5 kg/ha). These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-15a and No. 3.2-15b).

**Table 3.2-15a: Average efficacy of Miedzian 50 WP and standard products.**

| average efficacy | | | |
|---|---|---|---|
| trial number | product | Dose | infected leaves |
| PoZ 6/9 za | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 69 |
| | Miedzian 50 WP | 3 kg/ha | 74,5 |
| | Miedzian 50 WP | 6 kg/ha | - |

| | | | |
|---|---|---|---|
| | Miedzian 50 WG | 2,5 kg/ha | 70 |
| PoT 6/9 za | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 87 |
| | Miedzian 50 WP | 3 kg/ha | 91,5 |
| | Miedzian 50 WP | 6 kg/ha | - |
| | Miedzian 50 WG | 2,5 kg/ha | 85 |

**Table 3.2-15b: Summary of average efficacy of Miedzian 50 WP and standard products.**

| product | Dose | average efficacy |
|---|---|---|
| Miedzian 50 WP | 2,5 kg/ha | 78 |
| Miedzian 50 WP | 3 kg/ha | 83 |
| Miedzian 50 WP | 6 kg/ha | - |
| Miedzian 50 WG | 2,5 kg/ha | 77,5 |

**Summary and conclusion (TOMATO (outdoor)/PHYTIN)**
Miedzian 50 WP at dose 2,5 kg/ha reduced occurrence of PHYTIN in tomato (outdoor). At dose 2,5 kg/ha average efficacy reached 78%. There was no significant different between Miedzian 50 WP and standard fungicide (Miedzian 50 WG). Due to quite high level of infection to reduce PHYTIN recommended dose of Miedzian 50 WP is 2,5 kg/ha.

**CUCUMBER (outdoor)/ PSDMLA**

**Table 3.2-16: Efficacy of Miedzian 50 WP and standard products in all trials.**

| trial number | product | Dose | I evaluation | | II evaluation | |
|---|---|---|---|---|---|---|
| | | | percent of infected leaves | efficacy | percent of infected leaves | efficacy |
| OgZ 6/9 bk | control | | 3,0 a | - | 2,8 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 0 b | **100** | 0 b | **100** |
| | Miedzian 50 WP | 3 kg/ha | 0 b | **100** | 0 b | **100** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 0 b | **100** | 0 b | **100** |
| OgT 6/9 bk | control | | 2,0 a | - | 1,8 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 0 b | **100** | 0 b | **100** |
| | Miedzian 50 WP | 3 kg/ha | 0 b | **100** | 0 b | **100** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 0 b | **100** | 0 b | **100** |

A total of 2 trials were carried out to evaluate the efficacy of Miedzian 50 WP for control of PSDMLA in cucumber (outdoor). Trials were conducted in different regions in Poland. Trials were made of randomized block design with a minimum of four replicates. Miedzian 50 WP was applied at dose rates: 2,5 kg/ha, 3 kg/ha and 6 kg/ha (phytotoxicity). As a standards were used Miedzian 50 WG (2,5 kg/ha). These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-16a and No. 3.2-16b).

**Table 3.2-16a: Average efficacy of Miedzian 50 WP and standard products.**

| average efficacy | | | |
|---|---|---|---|
| trial number | product | Dose | infected leaves |
| OgZ 6/9 bk | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 100 |

| | | | |
|---|---|---|---|
| | Miedzian 50 WP | 3 kg/ha | 100 |
| | Miedzian 50 WP | 6 kg/ha | - |
| | Miedzian 50 WG | 2,5 kg/ha | 100 |
| OgT 6/9 bk | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 100 |
| | Miedzian 50 WP | 3 kg/ha | 100 |
| | Miedzian 50 WP | 6 kg/ha | - |
| | Miedzian 50 WG | 2,5 kg/ha | 100 |

**Table 3.2-16b: Summary of average efficacy of Miedzian 50 WP and standard products.**

| product | Dose | average efficacy |
|---|---|---|
| Miedzian 50 WP | 2,5 kg/ha | 100 |
| Miedzian 50 WP | 3 kg/ha | 100 |
| Miedzian 50 WP | 6 kg/ha | - |
| Miedzian 50 WG | 2,5 kg/ha | 100 |

**Summary and conclusion (CUCUMBER(outdoor)/ PSDMLA)**
Miedzian 50 WP at dose 2,5 kg/ha significantly reduced occurrence of PSDMLA in cucumber (outdoor). At dose 2,5 kg/ha average efficacy reached 100%. There was no significant different between Miedzian 50 WP and standard fungicide (Miedzian 50 WG). To significantly reduce PSDMLA recommended dose of Miedzian 50 WP is 2,5 kg/ha.

**CUCUMBER (outdoor)/ PSPECU**

**Table 3.2-17: Efficacy of Miedzian 50 WP and standard products in all trials.**

| trial number | product | Dose | I evaluation | | II evaluation | |
|---|---|---|---|---|---|---|
| | | | percent of infected leaves | efficacy | percent of infected leaves | efficacy |
| OgZ 6/9 mr | control | | 18,8 a | - | 90 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 6,8 b | **64** | 72,5 b | **19** |
| | Miedzian 50 WP | 3 kg/ha | 5,0 c | **73** | 72,5 b | **19** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 6,2 b | **67** | 71,0 b | **20** |
| OgT 6/9 mr | control | | 24,7 a | - | 87,5 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 6,4 b | **74** | 31,0 b | **65** |
| | Miedzian 50 WP | 3 kg/ha | 6,3 b | **72** | 20,7 d | **76** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 3,8 c | **85** | 27,1 c | **69** |

A total of 2 trials were carried out to evaluate the efficacy of Miedzian 50 WP for control of PSPECU in cucumber (outdoor). Trials were conducted in different regions in Poland. Trials were made of randomized block design with a minimum of four replicates. Miedzian 50 WP was applied at dose rates: 2,5 kg/ha, 3 kg/ha and 6 kg/ha (phytotoxicity). As a standards were used Miedzian 50 WG (2,5 kg/ha). These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-17a and No. 3.2-17b).

**Table 3.2-17a: Average efficacy of Miedzian 50 WP and standard products.**

| average efficacy | | | |
|---|---|---|---|
| trial number | product | Dose | infected leaves |
| OgZ 6/9 mr | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 41,5 |
| | Miedzian 50 WP | 3 kg/ha | 46 |
| | Miedzian 50 WP | 6 kg/ha | - |

| | | | |
|---|---|---|---|
| | Miedzian 50 WG | 2,5 kg/ha | 43,5 |
| OgT 6/9 mr | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 69,5 |
| | Miedzian 50 WP | 3 kg/ha | 74 |
| | Miedzian 50 WP | 6 kg/ha | - |
| | Miedzian 50 WG | 2,5 kg/ha | 77 |

**Table 3.2-17b: Summary of average efficacy of Miedzian 50 WP and standard products.**

| product | Dose | average efficacy |
|---|---|---|
| Miedzian 50 WP | 2,5 kg/ha | 55,5 |
| Miedzian 50 WP | 3 kg/ha | 60 |
| Miedzian 50 WP | 6 kg/ha | - |
| Miedzian 50 WG | 2,5 kg/ha | 60,25 |

**Summary and conclusion (CUCUMBER (outdoor)/PSPECU)**
Miedzian 50 WP at dose 2,5 kg/ha reduced occurrence of PSPECU in cucumber (outdoor). At dose 2,5 kg/ha average efficacy reached 55,5%. There was no significant different between Miedzian 50 WP and standard fungicide (Miedzian 50 WG). Due to quite high level of infection to reduce PSPECU recommended dose of Miedzian 50 WP is 2,5 kg/ha.

**FRENCH BEAN/ PSDMPH**

**Table 3.2-18: Efficacy of Miedzian 50 WP and standard products in all trials.**

| trial number | product | Dose | I evaluation | | II evaluation | |
|---|---|---|---|---|---|---|
| | | | percent of infected leaves | efficacy | percent of infected leaves | efficacy |
| FaZ 6/9 ba | control | | 2,4 a | - | 3,8 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 0,0 b | **100** | 0,2 | **95** |
| | Miedzian 50 WP | 3 kg/ha | 0,0 b | **100** | 0,2 | **87** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 0,0 b | **100** | 0,3 | **87** |
| FaT 6/9 ba | control | | 3,1 a | - | 3,9 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 0,0 b | **100** | 0,2 b | **93** |
| | Miedzian 50 WP | 3 kg/ha | 0,0 b | **100** | 0,2 b | **83** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 0,0 b | **100** | 0,2 b | **93** |

A total of 2 trials were carried out to evaluate the efficacy of Miedzian 50 WP for control of PSDMPH in french bean. Trials were conducted in different regions in Poland. Trials were made of randomized block design with a minimum of four replicates. Miedzian 50 WP was applied at dose rates: 2,5 kg/ha, 3 kg/ha and 6 kg/ha (phytotoxicity). As a standards were used Miedzian 50 WG (2,5 kg/ha). These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-18a and No. 3.2-18b).

**Table 3.2-18a: Average efficacy of Miedzian 50 WP and standard products.**

| average efficacy | | | |
|---|---|---|---|
| trial number | product | Dose | infected leaves |
| FaZ 6/9 ba | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 97,5 |
| | Miedzian 50 WP | 3 kg/ha | 93,5 |
| | Miedzian 50 WP | 6 kg/ha | - |
| | Miedzian 50 WG | 2,5 kg/ha | 93,5 |

| | | | |
|---|---|---|---|
| FaT 6/9 ba | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 96,5 |
| | Miedzian 50 WP | 3 kg/ha | 91,5 |
| | Miedzian 50 WP | 6 kg/ha | - |
| | Miedzian 50 WG | 2,5 kg/ha | 96,5 |

**Table 3.2-18b: Summary of average efficacy of Miedzian 50 WP and standard products.**

| product | Dose | average efficacy |
|---|---|---|
| Miedzian 50 WP | 2,5 kg/ha | 97 |
| Miedzian 50 WP | 3 kg/ha | 92,5 |
| Miedzian 50 WP | 6 kg/ha | - |
| Miedzian 50 WG | 2,5 kg/ha | 95 |

**Summary and conclusion (FRECH BEAN/ PSDMPH)**
Miedzian 50 WP at dose 2,5 kg/ha significantly reduced occurrence of PSDMPH in french bean. At dose 2,5 kg/ha average efficacy reached 97%. There was no significant different between Miedzian 50 WP and standard fungicide (Miedzian 50 WG). To significantly reduce PSDMPH recommended dose of Miedzian 50 WP is 2,5 kg/ha.

**FRENCH BEAN/ COLLLD**

**Table 3.2-19: Efficacy of Miedzian 50 WP and standard products in all trials.**

| trial number | product | Dose | I evaluation | | II evaluation | |
|---|---|---|---|---|---|---|
| | | | percent of infected leaves | efficacy | percent of infected leaves | efficacy |
| FaZ 6/9 an | control | | 0,9 a | - | 4,7 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 0,0 b | **100** | 0,7 b | **82** |
| | Miedzian 50 WP | 3 kg/ha | 0,0 b | **100** | 0,4 c | **92** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 0,0 b | **100** | 0,8 b | **83** |
| FaT 6/9 an | control | | 1,0 a | - | 4,9 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 0,0 b | **100** | 1,1 b | **78** |
| | Miedzian 50 WP | 3 kg/ha | 0,0 b | **100** | 1,0 b | **79** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 0,0 b | **100** | 1,1 b | **78** |

A total of 2 trials were carried out to evaluate the efficacy of Miedzian 50 WP for control of COLLLD in french bean. Trials were conducted in different regions in Poland. Trials were made of randomized block design with a minimum of four replicates. Miedzian 50 WP was applied at dose rates: 2,5 kg/ha, 3 kg/ha and 6 kg/ha (phytotoxicity). As a standards were used Miedzian 50 WG (2,5 kg/ha). These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-19a and No. 3.2-19b).

**Table 3.2-19a: Average efficacy of Miedzian 50 WP and standard products.**

| average efficacy | | | |
|---|---|---|---|
| trial number | product | Dose | infected leaves |
| FaZ 6/9 an | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 91 |
| | Miedzian 50 WP | 3 kg/ha | 96 |
| | Miedzian 50 WP | 6 kg/ha | - |
| | Miedzian 50 WG | 2,5 kg/ha | 91,5 |
| FaT 6/9 an | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 89 |

| | | | |
|---|---|---|---|
| | Miedzian 50 WP | 3 kg/ha | 89,5 |
| | Miedzian 50 WP | 6 kg/ha | - |
| | Miedzian 50 WG | 2,5 kg/ha | 89 |

**Table 3.2-19b: Summary of average efficacy of Miedzian 50 WP and standard products.**

| product | Dose | average efficacy |
|---|---|---|
| Miedzian 50 WP | 2,5 kg/ha | 89 |
| Miedzian 50 WP | 3 kg/ha | 89,5 |
| Miedzian 50 WP | 6 kg/ha | - |
| Miedzian 50 WG | 2,5 kg/ha | 89 |

**Summary and conclusion (FRECH BEAN/ COLLLD)**
Miedzian 50 WP at dose 2,5 kg/ha significantly reduced occurrence of COLLLD in french bean. At dose 2,5 kg/ha average efficacy reached 89%. There was no significant different between Miedzian 50 WP and standard fungicide (Miedzian 50 WG). To significantly reduce COLLLD recommended dose of Miedzian 50 WP is 2,5 kg/ha.

**FRENCH BEAN/ BOTRICI**

**Table 3.2-20: Efficacy of Miedzian 50 WP and standard products in all trials.**

| trial number | product | Dose | I evaluation | | II evaluation | |
|---|---|---|---|---|---|---|
| | | | percent of infected leaves | efficacy | percent of infected leaves | efficacy |
| FaZ 6/9 sz | control | | 9,0 a | - | 12,3 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 1,0 c | **89** | 3,8 b | **69** |
| | Miedzian 50 WP | 3 kg/ha | 1,0 c | **89** | 3,6 b | **71** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 1,4 b | **84** | 3,8 b | **69** |
| Fat 6/9 sz | control | | 3,2 a | - | 9,8 a | - |
| | Miedzian 50 WP | 2,5 kg/ha | 0,9 b | **72** | 3,0 b | **69** |
| | Miedzian 50 WP | 3 kg/ha | 0,9 b | **72** | 3,0 b | **69** |
| | Miedzian 50 WP | 6 kg/ha | - | - | - | - |
| | Miedzian 50 WG | 2,5 kg/ha | 0,9 b | **72** | 2,8 b | **71** |

A total of 2 trials were carried out to evaluate the efficacy of Miedzian 50 WP for control of BOTRICI in french bean. Trials were conducted in different regions in Poland. Trials were made of randomized block design with a minimum of four replicates. Miedzian 50 WP was applied at dose rates: 2,5 kg/ha, 3 kg/ha and 6 kg/ha (phytotoxicity). As a standards were used Miedzian 50 WG (2,5 kg/ha). These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-20a and No. 3.2-20b).

**Table 3.2-20a: Average efficacy of Miedzian 50 WP and standard products.**

| average efficacy | | | |
|---|---|---|---|
| trial number | product | Dose | infected leaves |
| FaZ 6/9 sz | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 79 |
| | Miedzian 50 WP | 3 kg/ha | 80 |
| | Miedzian 50 WP | 6 kg/ha | - |
| | Miedzian 50 WG | 2,5 kg/ha | 76,5 |
| Fat 6/9 sz | control | | - |
| | Miedzian 50 WP | 2,5 kg/ha | 70,5 |
| | Miedzian 50 WP | 3 kg/ha | 70,5 |
| | Miedzian 50 WP | 6 kg/ha | - |

| | | | |
|---|---|---|---|
| | Miedzian 50 WG | 2,5 kg/ha | 71,5 |

**Table 3.2-20b: Summary of average efficacy of Miedzian 50 WP and standard products.**

| product | Dose | average efficacy |
|---|---|---|
| Miedzian 50 WP | 2,5 kg/ha | 74,75 |
| Miedzian 50 WP | 3 kg/ha | 75,25 |
| Miedzian 50 WP | 6 kg/ha | - |
| Miedzian 50 WG | 2,5 kg/ha | 74 |

**Summary and conclusion (FRENCH BEAN/BOTRICI)**
Miedzian 50 WP at dose 2,5 kg/ha reduced occurrence of BOTRICI in french bean. At dose 2,5 kg/ha average efficacy reached 74,75%. There was no significant different between Miedzian 50 WP and standard fungicide (Miedzian 50 WG). Due to quite high level of infection to reduce BOTRICI recommended dose of Miedzian 50 WP is 2,5 kg/ha.

**CHERRY/ PSDMSY**

**Table 3.2-21: Efficacy of Miedzian 50 WP and standard products in all trials.**

| trial number | product | Dose | I evaluation | | II evaluation | |
|---|---|---|---|---|---|---|
| | | | percent of infected leaves | efficacy | percent of infected fruits | efficacy |
| OR/10A/2004/2/I | control | - | 27,1 | - | 17,5 | - |
| | Miedzian 50 WP | 1,5kg/ha; 3,0 kg/ha | 11,8 | **56,5** | 2,5 | **85,7** |
| | Nordox 75 WG | 1,0 kg/ha; 2,0 kg/ha | 12,9 | **52,4** | 4,9 | **72** |
| OR/10A/2004/2/II | control | - | 28,6 | - | 23,8 | - |
| | Miedzian 50 WP | 1,5kg/ha; 3,0 kg/ha | 3,3 | **88,5** | 2,4 | **89,9** |
| | Nordox 75 WG | 1,0 kg/ha; 2,0 kg/ha | 6,1 | **78,7** | 4,6 | **80,8** |
| OR/17/2006/4a | control | - | 27,6 | - | 22,3 | - |
| | Miedzian 50 WP | 1,5 kg/ha; 3 kg/ha | 15,5 | **43,8** | 12,5 | **44** |
| | Miedzian Extra 350 SC | 1,5 L/ha; 3 L/ha | 14,4 | **47,8** | 11,5 | **48,4** |
| | Champion 50 WP | 1,5 kg/ha, 3 kg/ha | 13,3 | **51,8** | 11,5 | **48,4** |
| | Funguran-OH 50WP | 1,5 kg/ha, 3 kg/ha | 14,6 | **47,1** | 12,3 | **44,8** |

A total of 3 trials were carried out to evaluate the efficacy of Miedzian 50 WP for control of PSDMSY in cherry. Trials were conducted in different regions in Poland. Trials were made of randomized block design with a minimum of four replicates. Miedzian 50 WP was applied at dose rates: 1,5 kg/ha and 3 kg/ha. As a standards were used Nordox 75 WG (1,0 kg/ha and 2,0 kg/ha), Miedzian Extra 350 SC (1,5 L/ha and 3 L/ha), Champion 50 WP (1,5 kg/ha and 3 kg/ha) and Funguran-OH 50 WP (1,5 kg/ha and 3 kg/ha). These studies were described in compliance with the principles of Good Experimental Practice (GEP) while the test results were summarize in appropriate Tables (see attachment No. 3.2-21a and No. 3.2-21b).

**Table 3.2-21a: Average efficacy of Miedzian 50 WP and standard products.**

| average efficacy | | | |
|---|---|---|---|
| trial number | product | Dose | infected leaves and fruits |
| OR/10A/2004/2/I | control | - | - |
| | Miedzian 50 WP | 1,5kg/ha; 3,0 kg/ha | 71,1 |
| | Nordox 75 WG | 1,0 kg/ha; 2,0 kg/ha | 62,2 |
| OR/10A/2004/2/II | control | - | - |
| | Miedzian 50 WP | 1,5kg/ha; 3,0 kg/ha | 89,2 |
| | Nordox 75 WG | 1,0 kg/ha; 2,0 kg/ha | 79,75 |

| | | | |
|---|---|---|---|
| OR/17/2006/4a | control | - | - |
| | Miedzian 50 WP | 1,5 kg/ha; 3 kg/ha | 43,9 |
| | Miedzian Extra 350 SC | 1,5 L/ha; 3 L/ha | 48,1 |
| | Champion 50 WP | 1,5 kg/ha, 3 kg/ha | 50,1 |
| | Funguran-OH 50WP | 1,5 kg/ha, 3 kg/ha | 45,95 |

**Table 3.2-21b: Summary of average efficacy of Miedzian 50 WP and standard products.**

| product | Dose | average efficacy |
|---|---|---|
| Miedzian 50 WP | 1,5kg/ha; 3,0 kg/ha | 68,07 |
| Nordox 75 WG | 1,0 kg/ha; 2,0 kg/ha | 70,98 |
| Miedzian Extra 350 SC | 1,5 L/ha; 3 L/ha | 48,1 |
| Champion 50 WP | 1,5 kg/ha, 3 kg/ha | 50,1 |
| Funguran-OH 50WP | 1,5 kg/ha, 3 kg/ha | 45,95 |

**Summary and conclusion (CHERRY/PSDMSY)**

Miedzian 50 WP at doses 1,5 kg/ha and 3,0 kg/ha reduced occurrence of PSDMSY in cherry. At doses 1,5 kg/ha and 3,0 kg/ha average efficacy reached 68,07%. There was no significant different between Miedzian 50 WP and standard fungicide (Nordox 75 WG) at the same time Miedzian 50 WP showed better efficacy than standard fungicides: Miedzian Extra 250 SC, Champion 50 WP and Funguran-Oh 50 WP. Due to quite high level of infection to reduce PSDMSY recommended dose of Miedzian 50 WP is 1,5 kg/ha and 3,0 kg/ha. Dose 3,0 kg/ha should be applied during the budding phase of the flower buds (BBCH 51- 61), and dose 1,5 kg/ha should be applied flowering phase and fruit growth phase (BBCH 65-73).

**Yield (and relevant quality indicators), from efficacy trials (in the presence of challenging pest populations)**

Miedzian 50 WP at all tested rates did not have a negative effect on crop quality apple, pear, tomato, cucumber and french bean varieties studied. There was no effect of the test preparations on the quality parameters of yield.

**Summary and conclusion**

Tested product Miedzian 50 WP showed high efficacy reduced the severity of VENTIN and ERWIAM on apple, VENTPI on pear, PSDMSY on cherry, PSDMTM and PHYTIN on tomato (outdoor), PSDMILA and PSPECU on cucumber (outdoor) and PSDMPH, COLLLD and BOTRICI on french bean.

**APPLE/VENTIN**

Due to low level of infection to significantly reduce VENTIN recommended dose of Miedzian 50 WP is 0,9-1,5 kg/ha. The dose should be selected depending on the severity of the infection.

**APPLE/ERWIAM**

To significantly reduce ERWIAM recommended dose of Miedzian 50 WP is 1,5 kg/ha.

**PEAR/VENTPI**

In case of PEAR/VENTPI, carried 2 trials on pear and support it with 7 trials on apple (according to Harmonization Meeting about effectiveness 'Annex 2- Generic Extrapolation Tables') give possibilities to extend use on pear against VENTPI. Recommended dose to control VENTPI in pear orchards is 1,5 kg/ha.

**CHERRY/ PSDMSY**

Due to quite high level of infection to reduce PSDMSY recommended dose of Miedzian 50 WP is 1,5 kg/ha and 3,0 kg/ha. Dose 3,0 kg/ha should be applied during the budding phase of the flower buds (BBCH 51- 61), and dose 1,5 kg/ha should be applied flowering phase and fruit growth phase (BBCH 65-73).

**TOMATO (outdoor)/PSDMTM**

To significantly reduce PSDMTM recommended dose of Miedzian 50 WP is 2,5 kg/ha.

**TOMATO (outdoor)/PHYTIN**

Due to quite high level of infection to reduce PHYTIN recommended dose of Miedzian 50 WP is 2,5 kg/ha.

**CUCUMBER(outdoor)/ PSDMLA**

To significantly reduce PSDMLA recommended dose of Miedzian 50 WP is 2,5 kg/ha.

**CUCUMBER (outdoor)/PSPECU**

Due to quite high level of infection to reduce PSPECU recommended dose of Miedzian 50 WP is 2,5 kg/ha.

**FRECH BEAN/ PSDMPH**

To significantly reduce PSDMPH recommended dose of Miedzian 50 WP is 2,5 kg/ha.

**FRECH BEAN/ COLLLD**

To significantly reduce COLLLD recommended dose of Miedzian 50 WP is 2,5 kg/ha.

**FRENCH BEAN/BOTRICI**

Due to quite high level of infection to reduce BOTRICI recommended dose of Miedzian 50 WP is 2,5 kg/ha.

Due to unknown crop height LWA dose was not calculated.

Efficacy of tested fungicide was higher or without significand different compered to standard products. There was no negative effect of the test preparations on the quality parameters of yield.

| | |
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| Comments of zRMS: | All necessary information's were provided above by Applicant. This document summarises the information related to the efficacy of the plant protection product – Miedzian 50 (product code: Miedzian 50 WP) containing copper oxychloride, 500 g/kg (as Cu).<br><br>**The data presented in this dossier fully support the renewal under Article 43 of Miedzian 50 WP (product code: Miedzian 50 WP) containing copper oxychloride, 500 g/kg (as Cu). for the control of fungicide diseases in apple, pear, cherry and sweet cherry in Poland. Also, many minor uses (ex. grape, black currant, walnut, hazelnut) can be accepted on the basis on Article 51.**<br><br>Data used for previous registration should not been assessed for renewal. However, Applicant submitted some new trials performed in 2019 on apples against VENTIN (4 trials) and ERWIAM (4 trials). Those trials only confirmed the conclusions of the previous registration, which is that Miedzian 50 WP significantly reduced occurrence of VENTIN and ERWIAM in apple and pear orchards. Miedzian 50 WP in trials from 2019 was used at following doses: 1,5 kg/ha, 1,2 kg/ha, 0,9 kg/ha in 2 applications (after second application, an evaluation of effectiveness was made). During previous application, the recommended dose was also 1,5 kg/ha applied in twice application at intervals of 7-10 days. For apple against VENTIN applicant submitted in total 8 trials and against ERWIAM – 5 trials. Those studies were performed during two growing seasons – 2006 and 2019. For pear applicant submitted in total 3 trials – against VENTIN – 2 trials and against ERWIAM – 1 trial. In accordance with the harmonisation agreements, we can also accept a renewal for pear trees (at least one efficacy study was presented for each disease) confirming the comparability of the results for apple trees. For pear against VENTIN – 1,5 kg/ha is recommended, and against ERWIAM at BBCH 60-69. For pear at BBCH 71 – dose 0,75 kg/ha is recommended against ERWIAM (in line to previous registration).<br><br>Applicant submitted trials (those data are from previous registration and were submitted in main body of the label) for some minor uses: cherry against PSDMSY (3 trials), tomato (outdoor – 4 trials) against PSDMTH (2 trials) and PHYTIN (2 trials), cucumber (outdoor – 4 trials) against PSDMLA (2 trials) and PSPECU (2 trials) and French bean (6 trials) against PSDMPH (2 trials), COLLLD (2 trials) and BOTRICI (2 trials). In the opinion of Evaluator, those uses should be presented in the main body of label and GAP table after renewal, as it was during the |

previous registration.

For new minor uses or accepted minor uses at previous registration (peach, sweet cherry, tomato indoor) for which no trials have been submitted, they may be registered in accordance with the terms and conditions of the previous registration, provided that other sections also accept these terms and conditions (e.g., residue section). So, sweet cherry can be accepted in the main part of label, because it was already registered previous and now it is a renewal of registration. New trials are not required if all conditions as, for example window application, dose, BBCH is not changed in comparable to previous registration.

Peach can be registered only as minor crop according to Article 51, because of lack of trials and dose change by Applicant. At previous registration the dose 7,0 kg/ha was registered, now submitted for registration is dose 3,0 kg/ha. Without any efficacy trials we cannot assessed if such lower dose can be efficacy.

In our opinion, minor uses which were not included in the label during previous registration, but Applicant proposed the new ones in GAP table and label project - can be accepted. Those accepted new minor uses are tomato (in greenhouse use), aubergines (out- and indoor), cucumber (indoor), Gherkins, courgette, melon (indoor), pumpkins (indoor), watermelon (indoor), grape (table, wine) and currant.

For the purposes of renewal, it is also necessary to propose LWA doses for pear, cherry and apple trees.

## EFFECTIVENESS ACCORDING TO LWA APPROACH:

According to EPPO PP 1/239, the application rate should be calculated per treated leaf wall area unit (LWA) and results of the test product should be presented and interpreted according to LWA by the applicant. From efficacy`s point of view, the reference to ha ground area is not sufficient any more (EPPO PP 1/239). Therefore, the Evaluator calculated the LWA for Miedzian 50 WP, using the treated canopy height as well as the row distance between the rows from the single trial reports (where these parameters were available).

**Conversion of the application dose in kg/ha LWA**
According to the EPPO guideline PP 1/239(2) “great efforts are being made to obtain optimum efficacy from the applied product and to avoid unnecessary emission of products into the environment and residues in feed and food” and “the best watt to achieves this is to adapt dose rate to the area where the treatment is needed (e.g. crop canopy) and its structure.
An easy way to establish correct application dose in three-dimensional crops is to use dose per treated leaf area unit (LWA).

To calculate LWA is needed to know distance between rows and treated foliage height.

**Calculation of LWA:**

$$\text{Leaf Wall Area (LWA)} = \frac{2 \times \text{tree height [m]}}{\text{Distance between rows [m]}} \times 10\,000\ m^2/ha$$

However, due to unknown crop height, LWA dose was not calculated by Applicant. In efficacy studies only, distance between rows is presented, lack of plants height or number of plants per ha. So, Evaluator used average values of apple tree height in Polish orchards for purpose the dose LWA for orchards.

Usually, large fruit trees for the garden or orchard are planted every 4 meters in a

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| | row, and the rows are determined every 5 meters, medium fruit trees are planted every 3 meters in rows, with a distance between the rows of 4 meters, and the lowest fruit trees, grafted on dwarf rootstocks - every 2 meters in rows determined every 3 meters. In orchards apple trees height is usually between 2,5 – 3,5 m, so those values were used for calculations.<br><br>For pear, the distance between trees in a row must be 3,5-4 m. In recent years, many varieties of pear have been introduced on scarification rootstocks, allowing fruit to be produced on 1,8 to 2,5 m tall trees.<br><br>For cherry and sweet cherry, the height is usually 1,5-2,5 m and row spacing: 2-2,5m.<br><br>For determining the dose per ha ground for every m canopy height we should dose per ha LWA * conversion factor (the conversion factor is calculated by dividing the leaf wall area by 10 000) *canopy height (m) = 'dose per ha ground per m canopy height).<br><br>• apple: for calculations, the Evaluator used average height of plants (lack of height in studies report). Range of LWA vary between 12500 (2,5m height, 4 m distance between row) to 17500 (3,5 m height, 4 m distance between row). In Poland the average LWA for apples is usually between 16000-17000 (average: 16500), which corresponds to 0,91 kg/ha LWA.<br><br>• pear: for calculations, the Evaluator used average height of plants (lack of height in studies report). Range of LWA vary between 10286 (1,8m height, 3,5 m distance between row) to 12500 (2,5 m height, 4 m distance between row). In Poland the average LWA for pear is usually between 10000-12000 (average: 11000), which corresponds to 1,36 kg/ha LWA (it corresponds to dose per ground 1,5 kg/ha) and 0,68 kg/ha (which corresponds to dose 0,75 kg/ha per ground).<br><br>• cherry and sweet cherry: for calculations, the Evaluator used average height of plants (lack of height in studies report). Range of LWA vary between 15000 (1,5m height, 2,0 m distance between row) to 20000 (2,5 m height, 2,5 m distance between row). In Poland the average LWA for pear is usually between 15000-17000 (average: 16000), which corresponds to 0,94 kg/ha LWA (it corresponds to dose 1,5 kg/ha per ground) and 1,88 kg/ha LWA (which corresponds to dose 3,0 k/ha per ground).<br><br>**As ZRMs we present only the obtained results (on the basis on average LWA for each crop).** |

## 3.3 Information on the occurrence or possible occurrence of the development of resistance (KCP 6.3)

Copper is one of the earliest known material used for plant pathogenic fungi and bacteria. It has been used in viticulture for over a century in the form of the well-known Bordeaux mixture. In all five forms of copper it is the copper ion (Cu2+) that is the only biologically active ingredient. As with other older fungicides with multi-site activity such as sulphur, dithiocarbamates, phtalimids and chlorothalonil, no resistance to copper has been reported in any fungal pathogen and copper fungicides have retained their full effectiveness despite extensive use over many years.
In recent times there have been incidences of bacterial resistance to metallic copper especially in the species *Pseudomonas spp*, However, a lot of these species exist as epiphytic populations (and are therefore not considered true pathogens) on the surfaces of plants, contributing to the complexing of copper ions applied to the leaf surfaces and thus indirectly affecting the effect on pathogenic species.
In the field management of bacteriosis, copper compounds still remain the only highly efficient com-

pounds used for the control of the most important and widespread bacterial diseases.
In terms of pathogen resistance, according to FRAC (2005), pathogens showing high risk of development of resistance to fungicides include the causal agents of late blights and downy mildew, *Phytophthora infestans, Plasmopara viticola and Pseudoperonospora cubensis.*
Several studies about the resistance of the bacteria *Xanthomonas* to copper in Europe, were conducted in the field on walnut trees (*Xanthomonas arboricola pv. juglandis*) in France, and also more commonly there is a suspicion of resistance to copper of the bacteria *Xanthomonas*, isolated in the overseas departments (especially on Citrus crops and Solanaceae). The walnut is the second fruit species in France and special national monitoring program has been conducted since 2007.
Also there is some information about the resistance of the different copper forms of *Xanthomonas* to optimize the monitoring of this disease. A special program was developed for risk assessment against this pest in order to avoid the resistance of the bacteria *Xanthomonas* to copper.
The potential resistance of the bacterial pathogen *Pseudomonas* savastanoi pv. savastanoi to copper was studied in Cordoba, Spain. This pathogen is considered as one of the most common diseases on olive (Olea europaea). The relationship between the sensitivity of bacterial strains to copper and intensity of treatments in the olive groves of origin was studied through new developed specific laboratory techniques. ("Evaluación de la tolerancia al cobre en *Pseudomonas savastanoi pv. savastanoi*, bacteria causante de la tuberculosis del olivo " by Pedro Miranda Fuentes).
Following the FRAC definition of fungicide resistance it is considered to use the terms "reduced sensitivity" or "tolerance".
However, when the pathogen risk is assessed in relation to the inherent resistance risk of the fungicide class, the combined resistance risk gives a true picture of the risk of resistance to copper. With multi-site fungicides such as copper, where the fungicide resistance risk is low, the combined risk that includes the highly resistant pathogen, in reality becomes much lower. In addition, the overall combined risk of copper fungicide resistance, pathogen resistance as well as the agronomic risk is low for copper compounds.

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| Comments of zRMS: | The following dossier section should follow EPPO standard PP 1/213(4) *Resistance risk analysis in particular point 6. Registration requirements and Appendix I of the standard.*<br><br>The fungicide-resistant population develops because the sensitive population is suppressed, and the rare fungicide-resistant individual can multiply and occupy the biological niche previously filled by the sensitive population. An increase in the frequency of such resistant strains may result in loss of disease control. As a general principle, resistance develops at different rates depending on the pathogen type, nature of the epidemic (or disease severity) and use pattern of the fungicide.<br><br>The active substance copper oxychloride belongs to the chemical class of inorganic copper compounds in the group of multisite contact fungicides and is classified in Group M01 by FRAC (FRAC MOA Code: Multi-site, Group code M01).<br><br>Copper oxychloride is a protective fungicide used to control bacterial and fungal diseases of fruit, vegetable, nut, and field crops. These diseases include mildew, leaf spots, blights and apple scab. It is used as a protective fungicide (Bordeaux mixture) for leaf application and seed treatment. It is also used as an algacide and herbicide, and to kill slugs and snails in irrigation and municipal water treatment systems. It has been used to control Dutch elm disease.<br><br>Copper fungicides have been used by fruit and vegetable growers for many years as protectant treatments to prevent spore germination on plant tissue. Fungicides based on copper provide cost effective disease control but also have an additional benefit over non-copper fungicides which is their activity against bacterial pathogens. Plant surfaces need to have a complete coverage of copper fungicide to defend the plant against infection. Copper fungicides work by preventing spore germination and can act at several stages in the fungus development. Any plant surface left untreated remains a potential disease infection site. |

| | |
|---|---|
| | Copper oxychloride has multisite mode of action and therefore resistance rarely develop. In a study conducted by Barak and Edgington (1984), thiol compounds in the fungal cells could be involved in such resistance to a multi-site fungicide like copper oxychloride.<br><br>**The risk for resistance for inorganic copper is according to Fungicide Resistance Action Committee (FRAC) is low.** Even though resistance appears not to be a problem in the EU according to FRAC, it is of course not a guarantee that it does not exists somewhere in Europe and caution should be taken when using Miedzian 50 WP in the recommended crops at the recommend dose rates.<br><br>No cross-resistance has been reported between group members M01 to M12, to which copper oxychloride belongs (FRAC, 2012).<br><br>**FRAC regards the resistance risk of the Group M01 (copper (different salts), hereunder copper oxychloride) as low.**<br><br>In terms of agronomic practice, the selection pressure on the intended disease target for Miedzian 50 WP may be low to high in annual crops like solanaceous crops. Cultural control measures that can be adopted to reduce selection pressure are e.g. crop rotations, resistant crop varieties, cultural measure like adjusting planting date and soil cultivation (e.g. ploughing) as well as good crop hygiene.<br><br>As the unmodified use pattern is considered unacceptable, a number of modifiers are proposed which are entirely in accordance with the general recommendations made by FRAC:<br>• Use in alternation with fungicides with a different mode of action<br>• Use as recommended on the label. Do not use reduced doses. Application should be at an early stage of development (e.g. at the first signs of disease or as soon as disease symptoms appear) or as a protective application.<br>• Use other measures such as resistant varieties, good agronomic practice.<br><br>Where field performance is significantly less than expected and where no other explanation can be found for the reduced performance e.g. application errors, then samples may be taken for sensitivity testing. Where testing is carried out it will be conducted at laboratories experienced in carrying out such testing and using methods recommended by FRAC. Where resistance can be confirmed as the cause for loss of field performance this will be reported to the authorities on an annual basis or as required. |

## 3.4 Adverse effects on treated crops (KCP 6.4)

### 3.4.1 Phytotoxicity to host crop (KCP 6.4.1)

Phytotoxicity assessment of the tested product (Miedzian 50 WP) was made at the same time as studies of its effectiveness. Phytotoxicity assessment was carried out with the use of different cultivars (commercially grown varieties), which is compliant with PP 1/135 Phytotoxicity assessment.
Phytotoxicity was visual only in two trials:
TRIAL:ZF/S/7/2019/3/I/b
During observation, a phytotoxic effect of Miedzian 50 WP, 1,5 kg/ha, was found on apple flowers of the Idared variety, on about 5-10% of all crown petals. In the remaining doses no phytotoxic effect of the tested preparation was found.
TRIAL: ZF/S/7/2019/3/II/b
During observation, a phytotoxic effect of Miedzian 50 WP, 1,5 kg/ha, was found on apple flowers of the

Idared variety, on about 5-10% of all crown petals. In the remaining doses no phytotoxic effect of the tested preparation was found.

In all others trial no phytotoxicity was shown.

**Table 3.4-1: Phytotoxicity of product**

No phytotoxicity symptom caused by Miedzian 50 WP at the highest dose rate of 6 kg/ha was recorded in all trials.

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| Comments of zRMS: | The phytotoxicity assessments were carried out during efficacy trials about tested plant protection product and have been carried out in accordance with EPPO-Guidelines. The conduct of the field work is principally compliant with "Good Agricultural Practice"and in accordance with EPPO Guidelines PP 1/135.<br>Both EU Directive 91/414 (EU, 1991) and EPPO PP 1/226 (3) – Number of efficacy trials requires testing phytotoxicity at normal (N) and double (2N) recommended dose. N dose, lower and even higher in some trials than recommended doses were studied during trials, which is accepted for fungicides. EPPO 1/135 (3) – Phytotoxicity assessment states: 'EPPO Standards on fungicides, insecticides and plant growth regulators, on the other hand, include only a relatively simple special section on phytotoxicity assessment, because, for these types of plant protection products, phytotoxic effects will be less frequent'. Selectivity trials were not required, which is in accordance with EPPO 1/135 (3). Phytotoxicity was assessed during efficacy trials. Detailed information's are presented by Applicant.<br>Miedzian 50 WP applied at the recommended dose rate did not cause phytotoxicity in any of the submitted trials. Copper is reported to cause damage to flowers and leaves in pome fruit in practice when applied later than BBCH 53. With regard to this, a warning of the possibility of phytotoxic damages to the pome fruit should be put on the label, in the opinion of Evaluator.<br>However, in accordance with the Article 43 of Regulation (EC) No 1107/2009, the already submitted data will not be re-evaluated because the conclusions of previous assessments are still considered valid in the case of no significant change of the GAP table. |

## 3.4.2 Effect on the yield of treated plants or plant product (KCP 6.4.2)

Tested fungicide Miedzian 50 WP did not affect negatively quality and the yield of apple cv. 'Ligol', 'Jonagored' and 'Jonagored Decosta'. During visual observations no influence of tested product on organisms, which were not the subject of control, was noted.
The use of Miedzian 50 WP 2,5 kg and 3,0 kg/ha had a significant impact on the increase in the quantity and quality of tomato yield as compared to the control combination. The application of the tested dose of the agent statistically significantly increased the amount and quality of the commercial crop in comparison.
The use of Miedzian 50 WP in the doses tested did not cause a significant increase in the quantity and quality of cucumber yield compared to the control combination. The application of the tested dose of the product in a statistically significant manner did not affect the increase in the height and quality of commercial yield of cucumbers compared to standard objects.

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| Comments of zRMS: | ZRMs agree with Applicant. Miedzian 50 WP (product code: Miedzian 50 WP) containing copper oxychloride applied at the recommended rate did not significantly affect the crop yield of apple, tomato and cucumber.<br>**However, in accordance with the Article 43 of Regulation (EC) No 1107/2009,** |

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| | **the already submitted data will not be re-evaluated because the conclusions of previous assessments are still considered valid in the case of no significant change of the GAP table.** |

### 3.4.3 Effects on the quality of plants or plant products (KCP 6.4.3)

The use of Miedzian 50 WP 2,5 kg and 3,0 kg/ha had a significant impact on the increase in the quantity and quality of tomato yield as compared to the control combination. The application of the tested dose of the agent statistically significantly increased the amount and quality of the commercial crop in comparison.
The use of Miedzian 50 WP in the doses tested did not cause a significant increase in the quantity and quality of cucumber yield compared to the control combination. The application of the tested dose of the product in a statistically significant manner did not affect the increase in the height and quality of commercial yield of cucumbers compared to standard objects.

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| Comments of zRMS: | ZRMs agree with Applicant. Miedzian 50 WP (product code: Miedzian 50 WP) containing copper oxychloride applied at the recommended rate did not significantly affect the crop yield (tomato, cucumber). **However, in accordance with the Article 43 of Regulation (EC) No 1107/2009, the already submitted data will not be re-evaluated because the conclusions of previous assessments are still considered valid in the case of no significant change of the GAP table.** |

### 3.4.4 Effects on transformation processes (KCP 6.4.4)

Details concerning the remains of the active substance copper oxychloride are contained in Part B section 7.

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| Comments of zRMS: | Transformation processes that may be sensitive to treatment with plant protection products are considered to be those that depend on biological activity, for example the activity of yeasts in bread-making, baking, vinification and brewing, according to guidance provided in EPPO standard PP1/243(2); Effects of plant protection products on transformation processes.<br><br>Copper fungicides have not been shown to present a risk of occurrence of taint or odour nor to have an adverse influence on the quality. There are no indications that the use of the product could have an influence on the processing procedure and other products based on the same active ingredient have not been shown to have an adverse influence on these processes.<br><br>In conclusion, no negative influence of the product Miedzian 50 WP (product code: Miedzian 50 WP) on the yield of treated plants and plant products is to be expected when applied at the intended dose rate and used according to the label recommendations. **However, in accordance with the Article 43 of Regulation (EC) No 1107/2009, the already submitted data will not be re-evaluated because the conclusions of previous assessments are still considered valid in the case of no significant change of the GAP table.** |

### 3.4.5 Impact on treated plants or plant products to be used for propagation (KCP 6.4.5)

It was not presented in the research. Tested measure is not intended to protect seeds, grains, cuttings, tubers, rhizomes. Product application in accordance with label recommendation has no negative impact on parts of plant used for propagating purposes.

**Summary and conclusion**

Phytotoxicity was visual only in two trials on apple flowers of the Idared variety. In all others trial no phytotoxicity was shown. No phytotoxicity symptom caused by Miedzian 50 WP at the highest dose rate of 6 kg/ha was recorded in all trials.
Tested fungicide Miedzian 50 WP did not affect negatively quality and the yield of apple cv. 'Ligol', 'Jonagored' and 'Jonagored Decosta'. During visual observations no influence of tested product on organisms, which were not the subject of control, was noted.
The use of Miedzian 50 WP 2,5 kg and 3,0 kg/ha had a significant impact on the increase in the quantity and quality of tomato and cucumber yield as compared to the control combination. The application of the tested dose of the agent statistically significantly increased the amount and quality of the commercial crop in comparison.

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| Comments of zRMS: | Based on the absence of negative effects on parts of plant used for propagating purposes from practice, it can be concluded, that a negative effect of Miedzian 50 WP (product code: Miedzian 50 WP) on parts of plant used for propagating purposes is not expected in the opinion of Evaluator. **However, in accordance with the Article 43 of Regulation (EC) No 1107/2009, the already submitted data will not be re-evaluated because the conclusions of previous assessments are still considered valid in the case of no significant change of the GAP table.** |

## 3.5 Observations on other undesirable or unintended side-effects (KCP 6.5)

### 3.5.1 Impact on other plants including adjacent crops (KCP 6.5.2)

Orchards are perennial crops. They can remain in the same post 10-15 years. There is no necessity to check impact on succeeding crops. Therefore the impact on succeeding plants in this case is irrelevant.
At the moment there was no danger in the application of copper oxychloride on neighboring plants. Moreover, the strict adherence to all the rules during the fungicide techniques treatments as well as observance of GEP rules, it can protect the neighboring plants from potential adverse effects relating to the protection of the crop. It is crucial to take care when carrying the liquid spray drift during spraying as well as to keep the appropriate buffer-zone.

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| Comments of zRMS: | Without any herbicide effect Miedzian 50 WP (product code: Miedzian 50 WP) poses an acceptable risk to succeeding crops and other plants including adjacent crops following the proposed uses. Based on this, it is reasonable to conclude that Miedzian 50 WP (product code: Miedzian 50 WP) has no adverse effects on replacement or succeeding crops sown or planted following its application as per label recommendations. Therefore, no label restrictions on the sowing or planting of succeeding or replacement crops following the application of Miedzian 50 WP is necessary in the opinion of Evaluator. **However, in accordance with the Article 43 of Regulation (EC) No 1107/2009, the already submitted data will not be re-evaluated because the conclusions of previous assessments are still considered valid in the case of no significant change of the GAP table.** |

### 3.5.2 Effects on beneficial and other non-target organisms (KCP 6.5.3)

During visual observations no influence of tested product on organisms, which were not the subject of control, was noted.
Detailed studies on the possible adverse effects to beneficial organisms are submitted and summarised in Part B, Section 9 (Ecotoxicology).

**Summary and conclusion**

Orchards are perennial crops. They can remain in the same post 10-15 years. There is no necessity to check impact on succeeding crops. Therefore the impact on succeeding plants in this case is irrelevant.
At the moment there was no danger in the application of copper oxychloride on neighboring plants.
During visual observations no influence of tested product on organisms, which were not the subject of control, was noted.

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| Comments of zRMS: | Statement accepted. All detailed information's are presented in dRR part B section 9. **However, in accordance with the Article 43 of Regulation (EC) No 1107/2009, the already submitted data will not be re-evaluated because the conclusions of previous assessments are still considered valid in the case of no significant change of the GAP table.** |

### 3.6 Other/special studies

No additional information is considered relevant.

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| Comments of zRMS: | Statement accepted. |

### 3.7 List of test facilities including the corresponding certificates

**Table 3.7-1: List of test facilities**

| Test facility | Address | Certificate (Yes or No) |
|---|---|---|
| Zakład Ochrony Roślin, Pracownia Fitopatologii. (Instytut Ogrodnictwa w Skierniewicach) | ul. Konstytucji 3 Maja 1/3<br>96-100 Skierniewice | YES |
| Zakład Ochrony Roślin Sadowniczych | ul. Pomologiczna 18<br>96-100 Skierniewice | YES |

# Appendix 1 Lists of data considered in support of the evaluation

Tables considered not relevant can be deleted as appropriate.

MS to blacken authors of vertebrate studies in the version made available to third parties/public.

**List of data submitted by the applicant and relied on**

| Data point | Author(s) | Year | **Title**<br>**Company Report No.**<br>**Source (where different from company)**<br>**GLP or GEP status**<br>**Published or not** | Vertebrate study Y/N | Owner |
|---|---|---|---|---|---|
| KCP 3.2.3 | Sylwester Masny | 2006 | Evaluation of the biological effectiveness of the Miedzian 50 WP fungicide applied at a dose of 1,5 kg / ha in control of apple scab (Venturia inaequalis Cooke. Aderh.).<br>OR/17/2006/1/I<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Beata Meszka | 2006 | Evaluation of the biological effectiveness of the Miedzian 50 WP fungicide applied at a dose of 1,5 kg / ha in control of apple scab (Venturia inaequalis Cooke. Aderh.).<br>OR/17/2006/1/II<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Beata Meszka | 2006 | Evaluation of the biological effectiveness of the Miedzian 50 WP fungicide applied at a dose of 1,5 kg / ha in control of apple scab (Venturia inaequalis Cooke. Aderh.).<br>OR/17/2006/1/III<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Beata Meszka | 2006 | Evaluation of the biological effectiveness of the Miedzian 50 WP fungicide applied at a dose of 1,5 kg / ha in control of apple scab (Venturia inaequalis Cooke. Aderh.). | N | Synthos Agro Sp. z o. o. ul. |

| Data point | Author(s) | Year | Title<br>Company Report No.<br>Source (where different from company)<br>GLP or GEP status<br>Published or not | Vertebrate study Y/N | Owner |
|---|---|---|---|---|---|
| | | | OR/17/2006/1/IV<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | | Chemików 1<br>32-600<br>Oświęcim |
| KCP 3.2.3 | Hubert Głos | 2019 | Control of apple scab (Miedzian 50 WP).<br>ZF/S/7/2019/2/I<br>Instytut Ogrodnictwa w Skierniewicach<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1<br>32-600<br>Oświęcim |
| KCP 3.2.3 | Hubert Głos | 2019 | Control of apple scab (Miedzian 50 WP).<br>ZF/S/7/2019/2/II<br>Instytut Ogrodnictwa w Skierniewicach<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1<br>32-600<br>Oświęcim |
| KCP 3.2.3 | Hubert Głos | 2019 | Control of apple scab (Miedzian 50 WP).<br>ZF/S/7/2019/2/III<br>Instytut Ogrodnictwa w Skierniewicach<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1<br>32-600<br>Oświęcim |
| KCP 3.2.3 | Hubert Głos | 2019 | Control of apple scab (Miedzian 50 WP).<br>ZF/S/7/2019/2/IV<br>Instytut Ogrodnictwa w Skierniewicach<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1<br>32-600<br>Oświęcim |
| KCP 3.2.3 | Beata Meszka | 2006 | Evaluation of the biological effectiveness of the Miedzian 50 WP fungicide applied at a dose of 1,5 kg / ha in control of pear scab (Venturia pirina. Aderh.).<br>OR/17/2006/2/I<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1<br>32-600<br>Oświęcim |

| Data point | Author(s) | Year | Title<br>Company Report No.<br>Source (where different from company)<br>GLP or GEP status<br>Published or not | Vertebrate study Y/N | Owner |
|---|---|---|---|---|---|
| KCP 3.2.3 | Beata Meszka | 2006 | Evaluation of the biological effectiveness of the Miedzian 50 WP fungicide applied at a dose of 1,5 kg / ha in control of pear scab (Venturia pirina. Aderh.).<br>OR/17/2006/2/II<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Piotr Sobiczewski | 2006 | Evaluation of the biological effectiveness of the fungicide Miedzian 50 WP used in doses of 0,75 kg/ha and 1,5 kg/ha in combating fire blight of apple and pear (Erwinia amylovora).<br>OR/17/2006/3a<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Piotr Sobiczewski | 2006 | Evaluation of the biological effectiveness of the fungicide Miedzian 50 WP used in doses of 0,75 kg/ha and 1,5 kg/ha in combating fire blight of apple and pear (Erwinia amylovora).<br>OR/17/2006/3b<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Artur Mikiciński | 2019 | Control of fire blight on apple shoots (Miedzian 50 WP).<br>ZF/S/7/2019/3/I/a<br>Instytut Ogrodnictwa w Skierniewicach<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Artur Mikiciński | 2019 | Control of fire blight on apple flowers (Miedzian 50 WP).<br>ZF/S/7/2019/3/I/b<br>Instytut Ogrodnictwa w Skierniewicach<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Artur Mikiciński | 2019 | Control of fire blight on apple shoots (Miedzian 50 WP).<br>ZF/S/7/2019/3/II/a | N | Synthos Agro Sp. z o. o. ul. |

| Data point | Author(s) | Year | Title<br>Company Report No.<br>Source (where different from company)<br>GLP or GEP status<br>Published or not | Vertebrate study Y/N | Owner |
|---|---|---|---|---|---|
| | | | Instytut Ogrodnictwa w Skierniewicach<br>GEP<br>Unpublished | | Chemików 1<br>32-600<br>Oświęcim |
| KCP 3.2.3 | Artur Mikiciński | 2019 | Control of fire blight on apple flowers (Miedzian 50 WP).<br>ZF/S/7/2019/3/II/b<br>Instytut Ogrodnictwa w Skierniewicach<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1<br>32-600<br>Oświęcim |
| KCP 3.2.3 | Anna Bielenin | 2004 | Assessment of the bilogical effectiveness of the Miedzian 50 WP fungicide used in doses of 1,5 kg/ha and 3,0 kg/ha in controlling bacterial cancer of stone trees (pseudomonas syringae).<br>OR/10a/2004/2/I<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1<br>32-600<br>Oświęcim |
| KCP 3.2.3 | Anna Bielenin | 2004 | Assessment of the bilogical effectiveness of the Miedzian 50 WP fungicide used in doses of 1,5 kg/ha and 3,0 kg/ha in controlling bacterial cancer of stone trees (pseudomonas syringae).<br>OR/10a/2004/2/II<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1<br>32-600<br>Oświęcim |
| KCP 3.2.3 | Stanisław Berczyński | 2006 | Evaluation of the biological effectiveness of the fungicide Miedzian 50 WP in combating bacterial cancer of stone trees (Pseudomonas syringae).<br>OR/17/2006/4a<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1<br>32-600<br>Oświęcim |
| KCP 3.2.3 | Piotr Sobiczewski | 2006 | Assessment of the bilogical effectiveness of the Miedzian 50 WP fungicide used in doses of 1,5 kg/ha and 3,0 kg/ha in controlling bacterial cancer of stone trees (pseudomonas syringae).<br>OR/17/2006/5b<br>Zakład Ochrony Roślin Sadowniczych | N | Synthos Agro Sp. z o. o. ul. Chemików 1<br>32-600 |

| Data point | Author(s) | Year | Title<br>Company Report No.<br>Source (where different from company)<br>GLP or GEP status<br>Published or not | Vertebrate study Y/N | Owner |
|---|---|---|---|---|---|
| | | | GEP<br>Unpublished | | Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF TOMATO DISEASES GROWING IN OPEN FIELD<br>PoZ 6/9 za<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF TOMATO DISEASES GROWING IN OPEN FIELD<br>PoZ 6/9 ba<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF TOMATO DISEASES GROWING IN OPEN FIELD<br>PoT 6/9 za<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF TOMATO DISEASES GROWING IN OPEN FIELD<br>PoT 6/9 ba<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF CUCUMBER DISEASES GROWING IN OPEN FIELD<br>OgZ 6/9 mr<br>Zakład Ochrony Roślin Sadowniczych | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 |

| Data point | Author(s) | Year | Title<br>Company Report No.<br>Source (where different from company)<br>GLP or GEP status<br>Published or not | Vertebrate study Y/N | Owner |
|---|---|---|---|---|---|
| | | | GEP<br>Unpublished | | Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF CUCUMBER DISEASES GROWING IN OPEN FIELD<br>OgZ 6/9 bk<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF CUCUMBER DISEASES GROWING IN OPEN FIELD<br>OgT 6/9 mr<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF CUCUMBER DISEASES GROWING IN OPEN FIELD<br>OgT 6/9 bk<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF BEAN DISEASES GROWING IN OPEN FIELD<br>FaZ 6/9 an<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF BEAN DISEASES GROWING IN OPEN FIELD<br>FaT 6/9 an<br>Zakład Ochrony Roślin Sadowniczych | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 |

| Data point | Author(s) | Year | Title<br>Company Report No.<br>Source (where different from company)<br>GLP or GEP status<br>Published or not | Vertebrate study Y/N | Owner |
|---|---|---|---|---|---|
| | | | GEP<br>Unpublished | | Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF BEAN DISEASES GROWING IN OPEN FIELD<br>FaZ 6/9 sz<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF BEAN DISEASES GROWING IN OPEN FIELD<br>FaT 6/9 sz<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF BEAN DISEASES GROWING IN OPEN FIELD<br>FaZ 6/9 ba<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |
| KCP 3.2.3 | Józef Robak | 2006 | EFFICACY OF FUNGICYDE MIEDZIAN 50 WP TO CONTOL OF BEAN DISEASES GROWING IN OPEN FIELD<br>FaT 6/9 ba<br>Zakład Ochrony Roślin Sadowniczych<br>GEP<br>Unpublished | N | Synthos Agro Sp. z o. o. ul. Chemików 1 32-600 Oświęcim |

**List of data submitted or referred to by the applicant and relied on, but already evaluated at EU peer review**

| **Data point** | **Author(s)** | **Year** | **Title**<br>**Company Report No.**<br>**Source (where different from company)**<br>**GLP or GEP status**<br>**Published or not** | **Vertebrate study**<br>**Y/N** | **Owner** |
|---|---|---|---|---|---|
| KCP XX | Author | YYYY | Title<br>Company Report N<br>Source<br>GLP/non GLP/GEP/non GEP<br>Published/Unpublished | Y/N | Owner |
| | | | | | |

The following tables are to be completed by MS

**List of data submitted by the applicant and not relied on**

| **Data point** | **Author(s)** | **Year** | **Title**<br>**Company Report No.**<br>**Source (where different from company)**<br>**GLP or GEP status**<br>**Published or not** | **Vertebrate study**<br>**Y/N** | **Owner** |
|---|---|---|---|---|---|
| KCP XX | Author | YYYY | Title<br>Company Report N<br>Source<br>GLP/non GLP/GEP/non GEP<br>Published/Unpublished | Y/N | Owner |
| | | | | | |

## List of data relied on not submitted by the applicant but necessary for evaluation

| Data point | Author(s) | Year | **Title**<br>**Company Report No.**<br>**Source (where different from company)**<br>**GLP or GEP status**<br>**Published or not** | **Vertebrate study Y/N** | Owner |
|---|---|---|---|---|---|
| KCP XX | Author | YYYY | Title<br>Company Report N<br>Source<br>GLP/non GLP/GEP/non GEP<br>Published/Unpublished | Y/N | Owner |
| | | | | | |