

**FINAL** REGISTRATION REPORT

**Part B**

**Section 8**

**Environmental Fate**

Detailed summary of the risk assessment

Product code: SHA 1100 D

Product name(s): CANDELA

Chemical active substance(s):

Glyphosate 540 g/L

Central Zone

Zonal Rapporteur Member State: Poland

**CORE ASSESSMENT**

Applicant: Sharda Cropchem España S.L.

Submission date: February 2018

**MS Finalisation date: 18/10/2022**

## Version history

| When          | What   |
|---------------|--|
| 10/2018       | Dossier sent for evaluation to Merit Mark (PL)         |
| February 2019 | Applicant update                                       |
| 10/2021       | zRMS finalised evaluation                              |
| October 2022  | Final version prepared by zRMS after Commenting period |
|               |  |

## Table of Contents

|                   |  |           |
|-------------------|--|-----------|
| <b>8</b>          | <b>Fate and behaviour in the environment (KCP 9).....</b>                                      | <b>4</b>  |
| 8.1               | Critical GAP and overall conclusions.....  | 4         |
| 8.2               | Metabolites considered in the assessment.....  | 8         |
| 8.3               | Rate of degradation in soil (KCP 9.1.1).....   | 8         |
| 8.3.1             | Aerobic degradation in soil (KCP 9.1.1.1) .....  | 8         |
| 8.3.2             | Anaerobic degradation in soil (KCP 9.1.1.1).....   | 13        |
| 8.4               | Field studies (KCP 9.1.1.2).....   | 13        |
| 8.4.1             | Soil dissipation testing on a range of representative soils (KCP 9.1.1.2.1). .....             | 13        |
| 8.4.2             | Soil accumulation testing (KCP 9.1.1.2.2) .....  | 15        |
| 8.5               | Mobility in soil (KCP 9.1.2) .....   | 15        |
| 8.5.1             | Column leaching (KCP 9.1.2.1).....   | 17        |
| 8.5.2             | Lysimeter studies (KCP 9.1.2.2).....   | 17        |
| 8.5.3             | Field leaching studies (KCP 9.1.2.3) .....   | 17        |
| 8.6               | Degradation in the water/sediment systems (KCP 9.2, KCP 9.2.1, KCP 9.2.2, KCP 9.2.3) .....     | 17        |
| 8.7               | Predicted Environmental Concentrations in soil (PEC <sub>soil</sub> ) (KCP 9.1.3) .....        | 22        |
| 8.7.1             | Justification for new endpoints .....  | 22        |
| 8.7.2             | Active substance(s) and relevant metabolite(s) .....   | 22        |
| 8.7.2.1           | PEC <sub>soil</sub> of Glyphosate 54% SL.....  | 24        |
| 8.8               | Predicted Environmental Concentrations in groundwater (PEC <sub>gw</sub> ) (KCP 9.2.4) .....   | 25        |
| 8.8.1             | Justification for new endpoints .....  | 25        |
| 8.8.2             | Active substance(s) and relevant metabolite(s) (KCP 9.2.4.1).....                              | 26        |
| 8.9               | Predicted Environmental Concentrations in surface water (PEC <sub>sw</sub> ) (KCP 9.2.5) ..... | 32        |
| 8.9.1             | Justification for new endpoints .....  | 33        |
| 8.9.2             | Active substance(s), relevant metabolite(s) and the formulation (KCP 9.2.5) .....              | 34        |
| 8.9.2.1           | PEC <sub>sw/sed</sub> of Glyphosate 54% SL.....  | 43        |
| 8.10              | Fate and behaviour in air (KCP 9.3, KCP 9.3.1) .....   | 43        |
| <b>Appendix 1</b> | <b>Lists of data considered in support of the evaluation.....</b>                              | <b>44</b> |
| <b>Appendix 2</b> | <b>Detailed evaluation of the new Annex II studies.....</b>                                    | <b>44</b> |
| <b>Appendix 3</b> | <b>Additional information provided by the applicant (e.g. detailed modelling data).....</b>    | <b>44</b> |

Evaluator comments:

The text highlighted in grey was provided by the evaluator.

## 8 Fate and behaviour in the environment (KCP 9)

### 8.1 Critical GAP and overall conclusions

**Table 8.1-1:** Critical use pattern of the formulated product

| 1  | 2                  | 3   | 4   | 5   | 6             | 7   | 8   | 9  | 10   | 11   | 12                    | 13            | 14  | 15                            |
|--|--------------------|---|---|---|---------------|---|---|--|--|--|-----------------------|---------------|---|-------------------------------|
| Use-<br>No.<br>*   | Member<br>state(s) | Crop and/or<br>situation<br>(crop destination<br>/ purpose of crop) | F, Fn,<br>Fpn<br>G,<br>Gn,<br>Gpn<br>or<br>I ** | Pests or Group of pests<br>controlled<br>(additionally:<br>developmental stages of<br>the pest or pest group) | Application   |   |   |  | Application rate   |  |                       | PHI<br>(days) | Remarks:<br>e.g. g saf-<br>ener/<br>synergist<br>per ha | Conclusion<br><br>Groundwater |
|  |                    |   |   |   | Method / Kind | Timing /<br>Growth stage<br>of crop &<br>season | Max. number<br>a) per use<br>b) per crop/<br>season | Min. interval<br>between<br>applications<br>(days) | kg or L<br>product/ha<br>a) max. rate<br>per appl.<br>b) max. total<br>rate per<br>crop/season | g or kg as/ha<br>a) max. rate<br>per appl.<br>b) max. total<br>rate per<br>crop/season | Water L/ha<br>min/max |               |   |                               |
| Zonal uses (field or outdoor uses, certain types of protected crops) |                    |   |   |   |               |   |   |  |  |  |                       |               |   |                               |
| 1  | CEU                | Winter cereals<br>(wheat, barley,<br>rye, oats,<br>triticale)       | F   | Annual and perennial<br>grass and broadleaved<br>weeds  | Foliar Spray  | Application<br>before<br>seedling               | a) 1<br>b) 1  | -  | a) 3.5<br>b) 3.5   | a) 1.89<br>b) 1.89   | 200-400               | -             |   |                               |
| 2  | CEU                | Winter wheat  | F   | Desiccation before<br>harvest   | Foliar Spray  | BBCH 89   | a) 1<br>b) 1  | -  | a) 2<br>b) 2   | a) 1.08<br>b) 1.08   | 200-400               | 7             |   |                               |
| 3  | CEU                | Oilseed rape  | F   | Annual and perennial<br>grass and broadleaved<br>weeds  | Foliar Spray  | Application<br>before<br>seedling               | a) 1<br>b) 1  | -  | a) 3.5<br>b) 3.5   | a) 1.89<br>b) 1.89   | 200-400               | -             |   |                               |
| 4  | CEU                | Spring barley   | F   | Annual and perennial<br>grass and broadleaved<br>weeds  | Foliar Spray  | Application<br>before<br>seedling               | a) 1<br>b) 1  | -  | a) 3.5<br>b) 3.5   | a) 1.89<br>b) 1.89   | 200-400               | -             |   |                               |
| 5  | CEU                | Sunflower   | F   | Annual and perennial<br>grass and broadleaved<br>weeds  | Foliar Spray  | Application<br>before<br>seedling               | a) 1<br>b) 1  | -  | a) 3.5<br>b) 3.5   | a) 1.89<br>b) 1.89   | 200-400               | -             |   |                               |
| 6  | CEU                | Maize   | F   | Annual and perennial<br>grass and broadleaved<br>weeds  | Foliar Spray  | Application<br>before<br>seedling               | a) 1<br>b) 1  | -  | a) 3.5<br>b) 3.5   | a) 1.89<br>b) 1.89   | 200-400               | -             |   |                               |
| 7  | CEU                | Pome fruit  | F   | Annual and perennial  | Foliar Spray  | Spring  | a) 1  | -  | a) 3.5   | a) 1.89  | 800-1000              | -             |   |                               |

|   |     |  |   |  |              |                               |              |   |                  |                    |          |   |  |  |
|---|-----|--|---|--|--------------|-------------------------------|--------------|---|------------------|--------------------|----------|---|--|--|
|   |     | (Apple, pear)                              |   | grass and broadleaved weeds                      |              | application BBCH 31-69        | b) 1         |   | b) 3.5           | b) 1.89            |          |   |  |  |
| 8 | CEU | Grapevine                                  | F | Annual and perennial grass and broadleaved weeds | Foliar Spray | Spring application BBCH 13-69 | a) 1<br>b) 1 | - | a) 3.5<br>b) 3.5 | a) 1.89<br>b) 1.89 | 600-1000 | - |  |  |
| 9 | CEU | Stone fruit (Peach, apricot, plum, cherry) | F | Annual and perennial grass and broadleaved weeds | Foliar Spray | Spring application BBCH 31-59 | a) 1<br>b) 1 | - | a) 3.5<br>b) 3.5 | a) 1.89<br>b) 1.89 | 800-1000 |   |  |  |

\* 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

#### Explanation for column 15 “Conclusion”

|   |   |
|---|---|
| A | Safe use  |
| R | Further refinement and/or risk mitigation measures required |
| C | To be confirmed by cMS                                      |
| N | No safe use   |

**Table 8.1-2: Assessed (critical) uses during approval of Glyphosate concerning the Section Environmental Fate**

| 1            | 2               | 3  | 4                              | 5   | 6             | 7                                      | 8   | 9   | 10   | 11  | 12                 | 13         | 14  |
|--------------|-----------------|--|--------------------------------|---|---------------|--|---|---|--|---|--------------------|------------|---|
| Use-No.<br>* | Member state(s) | Crop and/or situation (crop destination / purpose of crop) | F, Fn, Fpn, G, Gn, Gpn or I ** | Pests or Group of pests controlled (additionally: developmental stages of the pest or pest group) | Application   |  |   |   | Application rate   |   |                    | PHI (days) | Remarks:<br>e.g. g safener/ synergist per ha  |
|              |                 |  |                                |   | 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<br>a) max. rate per appl.<br>b) max. total rate per crop/season | g or kg as/ha<br>a) max. rate per appl.<br>b) max. total rate per crop/season | Water L/ha min/max |            |   |
| 1            | EU              | All crops** (all seeded or transplants crops)              | F                              | Emerged annual, perennial and biennial weeds  | Spray         | Pre planting of crops                  | 1-2                                       | 21 (see remark)                           | 1-6  | 0.36-2.16   | 100-400            |            | Spring & autumn after harvest (incl. stubble and/or seedbed prep.)  |
| 2            | EU              | All crops** (all seeded or transplants crops)              | F                              | Emerged annual, perennial and biennial weeds  | Spray         | Post planting/ pre emergence of crop   | 1   | -   | 1-3  | 0.36-1.08   | 100-400            |            | For all crops:<br>Max. application rate 4.32 kg/ha glyphosate in any 12 month period across use categories, equivalent to the sum of pre-plant, pre-harvest and postharvest stubble applications. |

|   |    |   |   |  |  |                                     |     |    |     |           |         |     |  |
|---|----|---|---|--|--|-------------------------------------|-----|----|-----|-----------|---------|-----|--|
|   |    |   |   |  |  |                                     |     |    |     |           |         |     | The interval between applications is dependent on new weed emergence after the first treatment, relative to the time of planting the crop.   |
| 3 | EU | Cereals (pre-harvest) wheat, rye, triticale               | F | Emerged annual, perennial and biennial weeds | Spray  | Crop Maturity < 30 % grain moisture | 1   | -  | 2-6 | 0.72-2.16 | 100-400 | 7   | Max. application rate 4.32 kg/ha glyphosate in any 12 month period across use categories, equivalent to the sum of pre-plant, pre-harvest and postharvest stubble applications<br>Pre-harvest uses in all crops include uses for weed control (higher doses) and harvest aid, sometimes referred to as desiccation (lower doses). The critical GAP is the high dose recommended used for weed control.                                 |
| 4 | EU | Cereals (pre-harvest) barley and oats                     | F | Emerged annual, perennial and biennial weeds | Spray  | Crop Maturity < 30 % grain moisture | 1   | -  | 2-6 | 0.72-2.16 | 100-400 | 7   |  |
| 5 | EU | Oilseeds (pre-harvest) rapeseed, mustard seed and linseed | F | Emerged annual, perennial and biennial weeds | Spray  | Crop Maturity < 30 % grain moisture | 1   | -  | 2-6 | 0.72-2.16 | 100-400 | 14  |  |
| 6 | EU | Orchard crops, vines, including citrus & tree nuts        | F | Emerged annual, perennial and biennial weeds | Spray  | Post emergence of weeds             | 1-3 | 28 | 2-8 | 0.72-2.88 | 100-400 | N/A | Stone & pome fruit, olives<br>Applications to avoid contact with tree branches.<br>Maximum cumulative application rate 4.32 kg/ha glyphosate in any 12 month period<br>Note: Because applications are made to the intra-rows (inner strips between the trees within a row), application rates per ha are expressed per 'unit of treated surface area' the actual application rate per ha orchard or vineyard will roughly only be 33 % |
| 7 | EU | Orchard crops, vines, including citrus & tree nuts        | F | Emerged annual, perennial and biennial weeds | (ULV) Sprayer or Knapsack use (spot treatment) | Post emergence of weeds             | 1-3 | 28 | 2-8 | 0.72-2.88 | 0-400   |     | Stone & pome fruit, olives<br>Applications made round base of trunk [0.0 L/ha water addresses ULV application of the undiluted product]  |

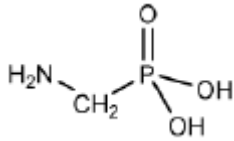
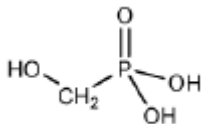
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |  |  |  | <p>Max. cumulative application rate 4.32 kg/ha glyphosate in any 12 month period</p> <p>Note: Because applications are made round base of trunk and to the intrarows, (inner strips between two trees within a row), application rates per ha are expressed per 'unit of treated surface area' the actual application rate per ha orchard or vineyard will roughly only be 33 % - 50 %</p> |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

\* 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

## 8.2 Metabolites considered in the assessment

**Table 8.2-1: Metabolites of Glyphosate potentially relevant for exposure assessment**

| Metabolite | Molar mass | Chemical structure  | Maximum observed occurrence in compartments   | Exposure assessment required due to   |
|------------|------------|---|---|---|
| AMPA       | 111 g/mol  |  | Soil: 53.8%<br>Water 15.7%<br>Sediment: 18.7% | PEC <sub>gw</sub> : leaching potential to groundwater<br>PEC <sub>soil</sub> : not covered by EU assessment<br>PEC <sub>sw/sed</sub> : not covered by EU assessment |
| HMPA       | 112 g/mol  |  | Water: 10%                                    | PEC <sub>sw/sed</sub> : not covered by EU assessment  |

## 8.3 Rate of degradation in soil (KCP 9.1.1)

Studies on degradation in soil with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substance.

### 8.3.1 Aerobic degradation in soil (KCP 9.1.1.1)

Persistence endpoints at 20 and 25°C

**Table 8.3-1: Summary of aerobic degradation rates for Glyphosate - laboratory studies**

| Glyphosate,                          |                       |                     | Aerobic conditions |          |          |  |                    |                       |                                   |
|--------------------------------------|-----------------------|---------------------|--------------------|----------|----------|--|--------------------|-----------------------|-----------------------------------|
| Persistence endpoints at 20 and 25°C |                       |                     |                    |          |          |  |                    |                       |                                   |
| Soil type                            | pH (H <sub>2</sub> O) | T(°C)/soil moisture |                    | DT50 (d) | DT90 (d) | Kinetic model                          | Fit Chi2 error (%) | Method of calculation | Evaluated on EU level y Reference |
| Gartenacker, loam                    | 7.1                   | 20/pF2.5            |                    | 7.86     | 56.29    | k1: 0.2474<br>k2: 0.0304<br>g: 0.4459  | 3.0                | DFOP                  | EFSA, 2015                        |
| Arrow, sandy loam                    | 6.5 <sup>(a)</sup>    | 20/40% MWHC         |                    | 37.75    | 1661     | α: 0.45389<br>β:10.47275               | 2.31               | FOMC                  |                                   |
| Soil B, sandy loam                   | 6.7                   | 25/75% of 1/3 bar   |                    | 1.2      | 20.8     | α: 0.6565 β: 0.6406                    | 6.9                | FOMC                  |                                   |
| Les Evouettes, silt loam             | 6.1 <sup>(b)</sup>    | 20/40% MWHC         |                    | 8.55     | 83.92    | k1:0.23497<br>k2:0.00826<br>g:0.541289 | 5.93               | DFOP                  |                                   |
| Maasdjik, sandy loam                 | 7.5 <sup>(a)</sup>    | 20/1/3 bar          |                    | 4.61     | 62.00    | k1: 0.2638<br>k2: 0.0192<br>g: 0.6715  | 0.84               | DFOP                  |                                   |
| Drusenheim, loam                     | 7.4                   | 20                  | pF2.5              | 2.06     | 15.38    | k1: 1.2566<br>k2: 0.1161<br>g: 0.4038  | 2.4                | DFOP                  |                                   |
| Pappelacker, loamy sand              | 7.0                   | 20                  | pF2.5              | 3.94     | 43.45    | α: 0.8550 β: 3.1539                    | 4.1                | FOMC                  |                                   |



| Glyphosate,                          |                       |                     | Aerobic conditions |                     |                      |   |                    |                       |                                   |
|--------------------------------------|-----------------------|---------------------|--------------------|---------------------|----------------------|---|--------------------|-----------------------|-----------------------------------|
| Persistence endpoints at 20 and 25°C |                       |                     |                    |                     |                      |   |                    |                       |                                   |
| Soil type                            | pH (H <sub>2</sub> O) | T(°C)/soil moisture |                    | DT50 (d)            | DT90 (d)             | Kinetic model                                       | Fit Chi2 error (%) | Method of calculation | Evaluated on EU level y Reference |
| 18-Acres, clay loam                  | 5.7                   | 20                  | pF2.5              | 67.72               | 471.4                | k1: 0.1129<br>k2: 0.0040<br>g: 0.3453               | 2.9                | DFOP                  |                                   |
| Speyer 2.3, loamy sand               | 6.9                   | 20                  | 40                 | 5.78                | 21.99                | k1: 0.1277<br>k2: 2.3e <sup>-014</sup><br>g: 0.9578 | 2.41               | DFOP                  |                                   |
| Speyer 2.1, sand                     | 6.5 <sup>(a)</sup>    | 20                  | 45                 | 8.3                 | 51.3                 | k1: 0.4736<br>k2: 0.0372<br>g: 0.3278               | 2.45               | DFOP                  |                                   |
| Speyer 2.2, loamy sand               | 6.2 <sup>(a)</sup>    | 20                  | 45                 | 18.7                | 428                  | α: 0.5770 β: 8.0642                                 | 4.04               | FOMC                  |                                   |
| Speyer 2.3, loamy sand               | 6.9 <sup>(a)</sup>    | 20                  | 45                 | 2.70                | 13.03                | k1: 0.3162<br>k2: 0.0494<br>g: 0.8355               | 7.45               | DFOP                  |                                   |
| Dupo, silt loam                      | 7.3 <sup>(b)</sup>    | 25                  | 75                 | 1.01                | 9.31                 | α: 1.01 β: 9.31                                     | 3.8                | FOMC                  |                                   |
| Speyer 2.2, loamy sand               | 6.0                   | 20                  | 40                 | 43.53               | 144.61               | k: 0.0159   | 6.95               | SFO                   |                                   |
| Speyer 2.1, sand                     | 6.9 <sup>(b)</sup>    | 20                  | 40                 | 11.11 <sup>\$</sup> | 144.25 <sup>\$</sup> | α: 0.7683 β: 7.5833                                 | 3.91               | FOMC <sup>\$</sup>    |                                   |
| Maximum* (n=15)                      |                       |                     |                    | 37.75               |                      | α: 0.45389<br>β:10.47275                            | Arrow FOMC         |                       |                                   |

<sup>(a)</sup> converted from given pH in CaCl<sub>2</sub> or KCl

<sup>(b)</sup> buffer solution unknown

<sup>\$</sup> labelled in the phosphonomethyl-glycine anion of glyphosate-trimesium

\* maximum, which would result to the highest PEC<sub>soil</sub>

**Table 8.3-2: Summary of aerobic degradation rates for Glyphosate - laboratory studies at 10°C**

| Glyphosate                   |                       | Aerobic conditions   |          |          |                                     |              |                       |                                   |
|------------------------------|-----------------------|----------------------|----------|----------|-------------------------------------|--------------|-----------------------|-----------------------------------|
| Persistence enpoints at 10°C |                       |                      |          |          |                                     |              |                       |                                   |
| Soil type                    | pH (H <sub>2</sub> O) | T (°C)/soil moisture | DT50 (d) | DT90 (d) | Kinetic parametes                   | Fit Chi2 (%) | Method of calculation | Evaluated on EU level y Reference |
| Speyer 2.3, loamy sand       | 6.9 <sup>(a)</sup>    | 10/45% MWHC          | 8.07     | 50.79    | k1: 0.300<br>k2: 0.036<br>g: 0.3756 | 2.31         | DFOP                  | EFSA, 2015                        |

<sup>[a]</sup> converted from given pH in CaCl<sub>2</sub> or KCl

### Endpoint in regard to P-criterion

**Table 8.3-3: Summary of aerobic degradation rates for Glyphosate - laboratory studies:  
Endpoint in regard to P-criterion**

| Glyphosate                        |               |                       | Aerobic conditions   |   |   |   |   |                                   |
|-----------------------------------|---------------|-----------------------|----------------------|---|---|---|---|-----------------------------------|
| Endpoint in regard to P-criterion |               |                       |                      |   |   |   |   |                                   |
| Soil type                         | Location      | pH (H <sub>2</sub> O) | T (°C)/soil moisture | Recalculated SFO DT <sub>50</sub> (days) actual | Normalised SFO DT <sub>50</sub> (days), 20°C, pF2 | Fit Chi 2 (%)   | Method of calculation                     | Evaluated on EU level y Reference |
| Loam                              | Gartenacker   | 7.1                   | 20/pF 2.5            | 16.95   | 15.2  | 3.0   | DFOP DT <sub>90</sub> /3.32               | EFSA, 2015                        |
| Sandy loam                        | Arrow         | 6.5 <sup>(a)</sup>    | 20/40% MWHC          | 500.3   | 427.8   | 2.31  | FOMC DT <sub>90</sub> /3.32               |                                   |
| Sandy loam                        | Soil B        | 6.7                   | 25/75% of 1/3 bar    | 6.27  | 6.7   | 6.9   | FOMC DT <sub>90</sub> /3.32               |                                   |
| Silt loam                         | Les Evouettes | 6.1 <sup>(b)</sup>    | 20/40% MWHC          | 25.28   | 22.6  | 5.96  | DFOP DT <sub>90</sub> /3.32               |                                   |
| Sandy Loam                        | Maasdjik      | 7.5 <sup>(a)</sup>    | 20/1/3 bar           | 18.7  | 14.1  | 0.84  | DFOP DT <sub>90</sub> /3.32               |                                   |
| Loam                              | Drusenheim    | 7.4                   | 20/pF 2.5            | 4.63  | 3.6   | 2.4   | DFOP DT <sub>90</sub> /3.32               |                                   |
| Loamy sand                        | Pappelacker   | 7.0                   | 20/pF 2.5            | 13.09   | 12.0  | 4.1   | FOMC DT <sub>90</sub> /3.32               |                                   |
| Clay loam                         | 18-Acres      | 5.7                   | 20/pF 2.5            | 141.9   | 133.8   | 2.9   | DFOP DT <sub>90</sub> /3.32               |                                   |
| Loamy sand                        | Speyer 2.3    | 6.9                   | 20/40% MWHC          | 6.6   | 6.6   | 2.41  | DFOP DT <sub>90</sub> /3.32               |                                   |
| Sand                              | Speyer 2.1    | 6.5 <sup>(a)</sup>    | 20/45% MWHC          | 15.45   | 15.45   | 2.45  | DFOP DT <sub>90</sub> /3.32               |                                   |
| Loamy sand                        | Speyer 2.2    | 6.2 <sup>(a)</sup>    | 20/45% MWHC          | 129   | 129   | 4.04  | FOMC DT <sub>90</sub> /3.32               |                                   |
| Loamy sand                        | Speyer 2.3    | 6.9 <sup>(a)</sup>    | 20/45% MWHC          | 3.93  | 3.93  | 7.45  | DFOP DT <sub>90</sub> /3.32               |                                   |
| Silt loam                         | Dupo          | 7.3 <sup>(b)</sup>    | 25/75% FC            | 2.80  | 3.70  | 3.8   | FOMC DT <sub>90</sub> /3.32               |                                   |
| Loamy sand                        | Speyer 2.2    | 6.0                   | 20/40% MWHC          | 43.53   | 40.6  | 6.95  | SFO                                       |                                   |
| Sand                              | Speyer 2.1    | 6.9 <sup>(b)</sup>    | 20/40% MWHC          | 43.06 <sup>\$</sup>                             | 43.06   | 3.91  | FOMC DT <sub>90</sub> /3.32 <sup>\$</sup> |                                   |
| Maximum (n=15)                    |               |                       |                      |   | 427.8   | according to EFSA DG SANCO working document on evidence needed to identify POP, PBT and vPvB properties for pesticides from 25.09.2012- rev.3 |   |                                   |
| Geometric mean (n=15)             |               |                       |                      |   | 19.74   |   |   |                                   |

<sup>[a]</sup> converted from given pH in CaCl<sub>2</sub> or KCl in order to allow pH dependency tests of the degradation

<sup>[b]</sup> buffer solution unknown

<sup>§</sup> labelled in the phosphonomethyl-glycine anion of glyphosate-trimesium

### Modelling endpoints

**Table 8.3-4: Summary of aerobic degradation rates for Glyphosate - laboratory studies: Modelling endpoints**

| Glyphosate               |                       | Aerobic conditions      |                                 |               |  |                                   |
|--------------------------|-----------------------|-------------------------|---------------------------------|---------------|--|-----------------------------------|
| Modelling endpoints      |                       |                         |                                 |               |  |                                   |
| Soil type                | pH (H <sub>2</sub> O) | T (°C)/ % soil moisture | DT <sub>50</sub> (d), 20°C, pF2 | Fit Chi 2 (%) | Method of calculation  | Evaluated on EU level y Reference |
| Gartenacker, loam        | 7.1                   | 20/pF 2.5               | 16.0                            | 4.6           | DT <sub>90</sub> FOMC/3.32   | EFSA, 2015                        |
| Arrow, sandy loam        | 6.5 <sup>(a)</sup>    | 20/40% MWHC             | 159.6                           | 3.52          | DFOP slow phase  |                                   |
| Soil B, sandy loam       | 6.7                   | 25/75% of 1/3 bar       | 6.6                             | 6.9           | DT <sub>90</sub> FOMC/3.32   |                                   |
| Les Evouettes, silt loam | 6.1 <sup>(b)</sup>    | 20/40% MWHC             | 93.3                            | 5.96          | DT <sub>90</sub> FOMC/3.32   |                                   |
| Maasdijk, sandy loam     | 7.5 <sup>(a)</sup>    | 20/1/3 bar              | 15.2                            | 0.84          | DT <sub>90</sub> FOMC/3.32   |                                   |
| Drusenheim, loam         | 7.4                   | 20/pF 2.5               | 4.2                             | 2.4           | DT <sub>90</sub> FOMC/3.32   |                                   |
| Pappelacker, loamy sand  | 7.0                   | 20/pF 2.5               | 12.0                            | 4.1           | DT <sub>90</sub> FOMC/3.32   |                                   |
| 18-Acres, caly loam      | 5.7                   | 20/pF 2.5               | 160.5                           | 2.9           | DFOP slow phase  |                                   |
| Speyer 2.3, loamy sand   | 6.9                   | 20/40% MWHC             | 7.2                             | 2.41          | DT <sub>90</sub> FOMC/3.32   |                                   |
| Speyer 2.1, sand         | 6.5 <sup>(a)</sup>    | 20/45% MWHC             | 19.5                            | 2.45          | DT <sub>90</sub> FOMC/3.32   |                                   |
| Speyer 2.2, loamy sand   | 6.2 <sup>(a)</sup>    | 20/45% MWHC             | 72.2                            | 4.04          | DFOP slow phase  |                                   |
| Speyer 2.3, loamy sand   | 6.9 <sup>(a)</sup>    | 20/45% MWHC             | 3.76                            | 7.45          | DT <sub>90</sub> FOMC/3.32   |                                   |
| Dupo, silt loam          | 7.3 <sup>(b)</sup>    | 25/75% FC               | 3.70                            | 3.8           | DT <sub>90</sub> FOMC/3.32   |                                   |
| Speyer 2.2, loamy sand   | 6.0                   | 20/40% MWHC             | 40.6                            | 6.95          | SFO  |                                   |
| Speyer 2.1, sand         | 6.9 <sup>(b)</sup>    | 20/40% MWHC             | 43.06                           | 3.91          | DT <sub>90</sub> FOMC/3.32   |                                   |
| Geometric mean (n = 15)  |                       |                         | 20.51                           | -             | Endpoint for modelling of PEC <sub>GW</sub> and PEC <sub>sw</sub> / PEC <sub>Sed</sub> |                                   |
| pH dependency            |                       |                         | No                              | -             |  |                                   |

<sup>[a]</sup> converted from given pH in CaCl<sub>2</sub> or KCl

<sup>[b]</sup> buffer solution unknown

<sup>\$</sup> labelled in the phosphonomethyl-glycine anion of glyphosate-trimesium

## Persistence endpoints at 20 and 25°C

**Table 8.3-5: Summary of aerobic degradation rates for AMPA - laboratory studies: Persistence endpoints at 20 and 25°C**

| Metabolite AMPA                      |                       |                       | Aerobic conditions |          |               |                        |                                   |
|--------------------------------------|-----------------------|-----------------------|--------------------|----------|---------------|------------------------|-----------------------------------|
| Persistence endpoints at 20 and 25°C |                       |                       |                    |          |               |                        |                                   |
| Soil type                            | pH (H <sub>2</sub> O) | T(°C)/% soil moisture | DT50 (d)           | DT90 (d) | Fit Chi 2 (%) | Method of calc.        | Evaluated on EU level y Reference |
| Gartenacker, loam                    | 7.1                   | 20/pF 2.5             | 120.07             | 398.9    | 9.2           | DFOP (par) – SFO (met) | EFSA, 2015                        |
| Soil B, sandy loam                   | 6.7                   | 25/75% of 1/3 bar     | 99.1               | 329      | 6.98          | FOMC (par) – SFO (met) |                                   |
| Les Evouettes, silt loam             | 6.1 <sup>(b)</sup>    | 20/40% MWHC           | 300.71             | 998.9    | 16.06         | DFOP (par) – SFO (met) |                                   |
| Drusenheim, loam                     | 7.4                   | 20/pF 2.5             | 38.98              | 129.5    | 3.3           | DFOP (par) – SFO (met) |                                   |
| Pappelacker, loamy sand              | 7.0                   | 20/pF 2.5             | 126.57             | 420.5    | 6.2           | FOMC (par) – SFO (met) |                                   |
| Speyer 2.3, loamy sand               | 6.9                   | 20/40% MWHC           | 77.50              | 257.43   | 10.18         | DFOP (par) – SFO (met) |                                   |
| Speyer 2.3, loamy sand               | 6.9 <sup>(a)</sup>    | 20/45% MWHC           | 41.87              | 139.1    | 16.23         | DFOP (par) – SFO (met) |                                   |
| Dupo, silt loam                      | 7.3 <sup>(b)</sup>    | 25/75% FC             | 48.32              | 160.5    | 7.57          | FOMC (par) – SFO (met) |                                   |
| Speyer 2.1, sand                     | 6.1 <sup>(b)</sup>    | 20/40% MWHC           | 230.7              | 766      | 4.29          | FOMC (par) – SFO (met) |                                   |
| Maximum (n=9)                        |                       |                       | 300.71             | 998.9    |               | SFO                    |                                   |

<sup>[a]</sup> converted from given pH in CaCl<sub>2</sub> or KCl

<sup>[b]</sup> buffer solution unknown

## Modelling endpoints

**Table 8.3-6: Summary of aerobic degradation rates for AMPA - laboratory studies: Modelling endpoints**

| Metabolite AMPA     |                       | Aerobic conditions     |  |                         |                    |                       |                                   |
|---------------------|-----------------------|------------------------|--|-------------------------|--------------------|-----------------------|-----------------------------------|
| Modelling endpoints |                       |                        |  |                         |                    |                       |                                   |
| Soil type           | pH (H <sub>2</sub> O) | T (°C)/% soil moisture | f.f. (k <sub>par</sub> →k <sub>met</sub> ) | DT50 (d) 20°C pF2/10kPa | Fit Chi2 error (%) | Method of calculation | Evaluated on EU level y Reference |
| Gartenacker, loam   | 7.1                   | 20/pF 2.5              | 0.1817                                     | 119.9                   | 8.9                | FOMC (par) SFO (met)  | EFSA 2015                         |
| Soil B, sandy loam  | 6.7                   | 25/75% of 1/3 bar      | 0.2646                                     | 106.2                   | 6.98               | FOMC (par) SFO (met)  |                                   |
| Les Evouettes, silt | 6.1 <sup>(b)</sup>    | 20/40%                 | 0.3618                                     | 300.9                   | 14.0               | FOMC (par)            |                                   |

| Metabolite AMPA         |                       | Aerobic conditions     |  |                         |                    |                       |                                   |
|-------------------------|-----------------------|------------------------|--|-------------------------|--------------------|-----------------------|-----------------------------------|
| Modelling endpoints     |                       |                        |  |                         |                    |                       |                                   |
| Soil type               | pH (H <sub>2</sub> O) | T (°C)/% soil moisture | f.f. (k <sub>par</sub> →k <sub>met</sub> ) | DT50 (d) 20°C pF2/10kPa | Fit Chi2 error (%) | Method of calculation | Evaluated on EU level y Reference |
| loam                    |                       | MWHC                   |  |                         |                    | SFO (met)             |                                   |
| Drusenheim, loam        | 7.4                   | 20/pF 2.5              | 0.2578                                     | 36.8                    | 2.1                | FOMC (par) SFO (met)  |                                   |
| Pappelacker, loamy sand | 7.0                   | 20/pF 2.5              | 0.1835                                     | 116.3                   | 6.2                | FOMC (par) SFO (met)  |                                   |
| 18-Acres, clay loam     | 5.7                   | 20/pF 2.5              | 0.2169 <sup>1)</sup>                       | ┐ <sup>1)</sup>         | ┐ <sup>1)</sup>    | FOMC (par) SFO (met)  |                                   |
| Speyer 2.3, loamy sand  | 6.9                   | 20/40% MWHC            | 0.3435                                     | 70.92                   | 11.41              | FOMC (par) SFO (met)  |                                   |
| Speyer 2.1, sand        | 6.5 <sup>(a)</sup>    | 20/45% MWHC            | 0.520 <sup>1)</sup>                        | ┐ <sup>1)</sup>         | ┐ <sup>1)</sup>    | DFOP (par) SFO (met)  |                                   |
| Speyer 2.2, loamy sand  | 6.2 <sup>(a)</sup>    | 20/45% MWHC            | 0.6076 <sup>1)</sup>                       | ┐ <sup>1)</sup>         | ┐ <sup>1)</sup>    | FOMC (par) SFO (met)  |                                   |
| Speyer 2.3, loamy sand  | 6.9 <sup>(a)</sup>    | 20/45% MWHC            | 0.4283                                     | 42.14                   | 16.48              | FOMC (par) SFO (met)  |                                   |
| Dupo, silt loam         | 7.3 <sup>(b)</sup>    | 25/75% FC              | 0.3637                                     | 30.5                    | 7.57               | FOMC (par) SFO (met)  |                                   |
| Speyer 2.1, sand        | 6.9 <sup>(b)</sup>    | 20/40% MWHC            | 0.5851                                     | 230.7                   | 4.29               | FOMC (par) SFO (met)  |                                   |
| Geometric mean (n=9)    |                       |                        | -  | 88.4                    |                    |                       |                                   |
| pH dependency           |                       |                        | -  | No                      |                    |                       |                                   |
| Aritmethic mean (n=12)  |                       |                        | 0.3595                                     |                         |                    |                       |                                   |

[a] converted from given pH in CaCl<sub>2</sub> or KCl

[b] buffer solution unknown

1) Acceptable visual fit for formation phase of AMPA, however no statistically acceptable fit for AMPA could be obtained in this pathway

### 8.3.2 Anaerobic degradation in soil (KCP 9.1.1.1)

No study was provided during the EU Review of Glyphosate.

## 8.4 Field studies (KCP 9.1.1.2)

### 8.4.1 Soil dissipation testing on a range of representative soils (KCP 9.1.1.2.1)

#### Persistence endpoints

**Table 8.4-1: Summary of aerobic degradation rates for Glyphosate - field studies: Persistence endpoints**

| Glyphosate, Field studies – Persistence endpoints |                     |                       |            |                                |                                |                                   |                       |                       |                                   |
|---|---------------------|-----------------------|------------|--------------------------------|--------------------------------|-----------------------------------|-----------------------|-----------------------|-----------------------------------|
| Soil type   | Location            | pH (H <sub>2</sub> O) | Depth (cm) | DT <sub>50</sub> (days) actual | DT <sub>90</sub> (days) actual | Kinetic parameters                | St. (x <sup>2</sup> ) | Method of calculation | Evaluated on EU level y Reference |
| Sandy clay  | Diegten Switzerland | 7.1                   | 0-30       | 6.1                            | 116.1                          | k1 0.1437<br>k2 0.0033<br>g 0.854 | 4.96                  | DFOP                  | EFSA, 2015                        |
| Sandy loam  | Menslage Germany    | 4.7                   | 0-30       | 5.7                            | 200.8                          | k1 0.1786<br>k2 0.0041<br>g 0.771 | 9.4                   | DFOP                  |                                   |
| Loamy sand  | Buchen Germany      | 6.4                   | 0-30       | 40.9                           | 187.3                          | k1 0.019<br>k2 2.3E-14            | 6.6                   | DFOP                  |                                   |

| Glyphosate, Field studies – Persistence endpoints                                       |                        |                       |            |                                |                                |   |                    |                       |                                   |
|---|------------------------|-----------------------|------------|--------------------------------|--------------------------------|---|--------------------|-----------------------|-----------------------------------|
| Soil type   | Location               | pH (H <sub>2</sub> O) | Depth (cm) | DT <sub>50</sub> (days) actual | DT <sub>90</sub> (days) actual | Kinetic parameters  | St. ( $\sigma^2$ ) | Method of calculation | Evaluated on EU level y Reference |
|   |                        |                       |            |                                |                                | g 0.927   |                    |                       |                                   |
| Sandy loam  | Kleinzecher Germany    | 7.0                   | 0-30       | 38.3                           | 386.6                          | k1 0.0384<br>k2 0.0037<br>g 0.575                                   | 11.7               | DFOP                  |                                   |
| Loam  | Unzhurst Germany       | 6.7                   | 0-30       | 27.7                           | 122.3                          | k1 0.0280<br>k2 8.9E-4<br>g 0.922                                   | 8.4                | DFOP                  |                                   |
| Silt loam   | Rohrbach germany       | 8.5                   | 0-30       | 20.1                           | 66.9                           | k 0.0344  | 3.8                | SFO Top down          |                                   |
| Clay loam   | Herrngiersdorf Germany | 8.0                   | 0-30       | 33.7                           | 111.9                          | k 0.0206  | 10.6               | SFO                   |                                   |
| Silt loam   | Wang-Inzkofen Germany  | 7.2                   | 0-30       | 17.8                           | 165.5                          | alpha 0.975<br>beta 17.207  | 8.7                | FOMC                  |                                   |
| Worst case kinetic for PEC <sub>soil</sub> and as trigger for higher tier studies (n=8) |                        |                       |            | 38.3                           | 386.6                          | k1 0.0384<br>k2 0.0037<br>g 0.575<br>DFOP                           |                    |                       |                                   |
| Maximum with regard to P-criterion (n+8)  |                        |                       |            | 116.4                          | 386.6                          | Maximum overall DT <sub>90</sub> (DFOP)/3.32**<br>Trial Kleinzecher |                    |                       |                                   |
| Geomean with regard to P-criterion (n=8)  |                        |                       |            | 45.2                           | 149.96                         | Based on averall DT <sub>90</sub> /3.32**                           |                    |                       |                                   |

\* Glyphosat-trimesium as test substance

\*\* according to EFSA DG SANCO working document on evidence needed to identify POP, PBT and vPvB properties for pesticides from 25.09.2012- rev.3

**Table 8.4-2: Summary of aerobic degradation rates for AMPA - field studies: Persistence endpoints**

| AMPA, Field studies – Persistence endpoints |                        |                       |            |                    |                 |       |                    |                       |                 |                                   |
|---|------------------------|-----------------------|------------|--------------------|-----------------|-------|--------------------|-----------------------|-----------------|-----------------------------------|
| Soil type                                   | Location               | pH (H <sub>2</sub> O) | Depth (cm) | DissT50 (d) actual | DT90 (d) actual | f.f.  | Kinetic parameters | St. (x <sup>2</sup> ) | Method of calc. | Evaluated on EU level y Reference |
| Sandy loam                                  | Kleinzecher Germany    | 7.0                   | 0-30       | 514.9              | >1000           | 0.508 | -                  | 15.9                  | DFOP-SFO        | EFSA, 2015                        |
| Loam  | Unzhurst Germany       | 6.7                   | 0-30       | 633.1              | >1000           | 0.332 | -                  | 13.3                  | DFOP-SFO        |                                   |
| Silt loam                                   | Rohrbach Germany       | 8.5                   | 0-30       | 374.9              | >1000           | n.d.  | -                  | 8.6                   | SFO Top down    |                                   |
| Clay loam                                   | Herrngiersdorf Germany | 8.0                   | 0-30       | 288.4              | 958.1           | n.d.  | -                  | 10.9                  | SFO Top down    |                                   |

|                      |                          |     |      |       |       |       |                          |      |          |  |
|----------------------|--------------------------|-----|------|-------|-------|-------|--------------------------|------|----------|--|
| Silt loam            | Wang-Inzkofen<br>Germany | 7.2 | 0-30 | 283.6 | 942.3 | 0.547 | -                        | 15.6 | FOMC-SFO |  |
| Maximum (n=5)        |                          |     |      | 633.1 | >1000 | -     | SFO<br>Unzhorst, Germany |      |          |  |
| Arithmetic mean (=3) |                          |     |      | -     | -     | 0.462 | -                        |      |          |  |

#### 8.4.2 Soil accumulation testing (KCP 9.1.1.2.2)

No experimental data, calculation of plateau concentration, see  $PEC_{Soil}$ .

#### 8.5 Mobility in soil (KCP 9.1.2)

Studies on mobility in soil with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substance.

**Table 8.5-1: Summary of soil adsorption/desorption for Glyphosate**

| Glyphosate             |                 |        |                       |             |                  |         |                                   |
|------------------------|-----------------|--------|-----------------------|-------------|------------------|---------|-----------------------------------|
| Soil name              | Soil type       | OC (%) | pH (H <sub>2</sub> O) | Kf (mL/g)   | Kfoc/Kdoc (mL/g) | 1/n (-) | Evaluated on EU level y Reference |
| Drummer                | Silty clay loam | 1.45   | 6.5                   | 324.0       | 22300            | 0.92    | EFSA, 2015                        |
| Dupo                   | Silt loam       | 0.87   | 7.4                   | 33.0        | 3800             | 0.80    |                                   |
| Spinks                 | Loamy sand      | 1.10   | 5.2                   | 660.0       | 60000            | 1.16    |                                   |
| Greenan sand           | Sand            | 0.80   | 5.7                   | 32838 (Koc) | 32838            | 1.00    |                                   |
| Auchincruive           | Sand loam       | 1.60   | 7.1                   | 50660(Koc)  | 50660            | 1.00    |                                   |
| Headley Hall           | Sandy clay loam | 1.40   | 7.8                   | 3598 (Koc)  | 3598             | 1.00    |                                   |
| Californian sandy soil | Loamy sand      | 0.60   | 8.3                   | 884 (Koc)   | 884              | 1.00    |                                   |
| Les Evouettes II       | Silt loam       | 1.40   | 6.1                   | 3404 (Koc)  | 3404             | 1.00    |                                   |
| Darnconner sediment    | Loam (sediment) | 3.00   | 7.1                   | 17010 (Koc) | 17010            | 1.00    |                                   |
| Lilly field            | Sand            | 0.29   | 5.7                   | 64.0        | 2200             | 0.75    |                                   |
| Visalia                | Sandy loam      | 0.58   | 8.4                   | 9.4         | 1600             | 0.72    |                                   |
| Wisbrought Green       | Silty clay loam | 2.26   | 5.7                   | 470.0       | 21000            | 0.93    |                                   |
| Champaign              | Silty clay loam | 2.15   | 6.2                   | 700.0       | 33000            | 0.94    |                                   |
| 18-Acres               | Sandy loam      | 1.80   | 7.4                   | 90.0        | 5000             | 0.76    |                                   |
| Speyer 2.1             | Sand            | 0.62   | 6.5                   | 29.5        | 4762             | 0.84    |                                   |
| Speyer 2.2             | Loamy sand      | 2.32   | 6.2                   | 71.7        | 3091             | 0.84    |                                   |
| Speyer 2.3             | Loamy sand      | 1.22   | 6.9                   | 37.7        | 3092             | 0.84    |                                   |

| Glyphosate             |            |        |          |            |                  |         |                                   |
|------------------------|------------|--------|----------|------------|------------------|---------|-----------------------------------|
| Soil name              | Soil type  | OC (%) | pH (H2O) | Kf (mL/g)  | Kfoc/Kdoc (mL/g) | 1/n (-) | Evaluated on EU level y Reference |
| Soil 2.1               | Sand       | 0.70   | 5.9      | 9486 (Koc) | 9486             | 1.00    |                                   |
| Soil 2.3               | Loamy sand | 1.34   | 6.3      | 5709 (Koc) | 5709             | 1.00    |                                   |
| Soil F3                | Sandy loam | 1.20   | 7.3      | 4533 (Koc) | 4533             | 1.00    |                                   |
| Arithmetic mean (n=20) |            |        |          |            | 15388            | 0.93    |                                   |
| pH-dependency          |            |        |          |            | No               |         |                                   |

**Table 8.5-2: Summary of soil adsorption/desorption for AMPA**

| AMPA                   |                  |                     |                   |                      |                    |                   |                                   |  |
|------------------------|------------------|---------------------|-------------------|----------------------|--------------------|-------------------|-----------------------------------|--|
| Soil Name              | Soil Type        | OC (%)              | pH (-)            | Kf (mL/g)            | Kfoc (mL/g)        | 1/n (-)           | Evaluated on EU level y Reference |  |
| SLI Soil#1             | Clay loam        | 2.09                | 7.7               | 77.1                 | 3640               | 0.79              | EFSA, 2015                        |  |
| SLI Soil#2             | Sand             | 18.68 <sup>1)</sup> | 4.7 <sup>1)</sup> | 1570.0 <sup>1)</sup> | 8310 <sup>1)</sup> | 0.9 <sup>1)</sup> |                                   |  |
| SLI Soil#4             | Sand             | 1.33                | 7.4               | 15.7                 | 1160               | 0.75              |                                   |  |
| SLI Soil#5             | Clay loam        | 0.93                | 7.6               | 53.9                 | 5650               | 0.79              |                                   |  |
| SLI Soil#9             | Loamy sand       | 1.57                | 6.3               | 73.0                 | 24800              | 0.79              |                                   |  |
| SLI Soil#11            | Sand             | 0.29                | 5.7               | 133.0                | 45900              | 0.86              |                                   |  |
| Lilly field            | Sand             | 0.29                | 5.7               | 133.0                | 45900              | 0.86              |                                   |  |
| Visalia                | Sandy loam       | 0.58                | 8.4               | 10.0                 | 1720               | 0.78              |                                   |  |
| Wisborough Green       | Silty clay loam  | 2.26                | 5.7               | 509.0                | 22500              | 0.91              |                                   |  |
| Champaign              | Silty clay loam  | 2.15                | 6.2               | 237.0                | 11100              | 0.86              |                                   |  |
| 18-Acres               | Sandy loam       | 1.80                | 7.4               | 74.2                 | 4130               | 0.84              |                                   |  |
| Schwalbach             | Silt loam        | 1.59                | 6.1               | 137.4                | 8642               | 0.98              |                                   |  |
| Hofheim                | Silt loam        | 1.24                | 6.1               | 87.9                 | 7089               | 0.92              |                                   |  |
| Bergen-Enkheim         | Silt clay        | 2.25                | 8.3               | 33.9                 | 1507               | 0.91              |                                   |  |
| Soil 2.1               | Sand             | 0.90                | 5.8               | 16.7                 | 1861               | 0.6650            |                                   |  |
| Soil 2.2               | Loamy sand       | 2.30                | 6.2               | 189.7                | 8248               | 0.5506            |                                   |  |
| Soil 3A                | Sandy silty loam | 2.60                | 7.6               | 29.1                 | 1119               | 0.67109           |                                   |  |
| Arithmetic mean (n=16) |                  |                     |                   |                      | 9749               | 0.81              |                                   |  |
| pH-dependency y/n      |                  |                     |                   |                      | No                 |                   |                                   |  |



1) Not included for calculation of statistics (mean values, correlations) due to high OC - content

### 8.5.1 Column leaching (KCP 9.1.2.1)

|                              |  |
|------------------------------|--|
| Column leaching (EFSA, 2015) | <p>1<sup>st</sup> study (glyphosate):<br/>7 soils, Eluation : 508 mm water<br/>Leachate: 0.03 - 6.56% of applied radioactivity in leachate</p> <p>2<sup>nd</sup> study (glyphosate):<br/>3 soils, Eluation: 200 mm water<br/>Leachate: 0.12 - 1.45% of applied radioactivity in leachate</p> <p>3<sup>rd</sup> study (glyphosate):<br/>3 soils<br/>Leachate: &lt;1 µg/L - 2.6 µg/L glyphosate derivatives</p> <p>4<sup>th</sup> study (glyphosate trimesium):<br/>3 soils, Eluation: 200 mm water<br/>Leachate: &lt;2% of applied glyphosate-trimesium</p> |
|------------------------------|--|

### 8.5.2 Lysimeter studies (KCP 9.1.2.2)

|                                    |   |
|------------------------------------|---|
| Aged residue leaching (EFSA, 2015) | <p>1<sup>st</sup> study (glyphosate):<br/>1 sand soil<br/>Aged for (d): 8 days<br/>Eluation (mm): 380mm over 48 h<br/><sup>14</sup>C distribution after 8 days: Glyphosate: 48.6% of applied radioactivity, AMPA: 21.45% of applied radioactivity, non-extractable: 1.65% of applied radioactivity, CO<sub>2</sub>: 2.35% of applied radioactivity</p> <p>2<sup>nd</sup> study (glyphosate-trimesium):<br/>1 sand soil<br/>Aged for (d): 30 d<br/>Eluation (mm): 200 mm water over 48 h<br/><sup>14</sup>C distribution after 30 days: Glyphosate-<sup>14</sup>C: 52 % extractable (AMPA 26 %), 12 % unextractable, 33 % CO<sub>2</sub>; TMS-<sup>14</sup>C: 10 % extractable, 21 % unextractable, 57 % CO<sub>2</sub><br/>0.1% / 0.5% (Glyphosate /TMS) of applied radioactivity in leachate</p> |
|------------------------------------|---|

### 8.5.3 Field leaching studies (KCP 9.1.2.3)

No lysimeter or field leaching studies was provided during the EU Review of Glyphosate.

## 8.6 Degradation in the water/sediment systems (KCP 9.2, KCP 9.2.1, KCP 9.2.2, KCP 9.2.3)

Studies on degradation in water/sediment systems with the formulation were not performed, since it is possible to extrapolate from data obtained with the active substance.

**Table 8.6-1: Summary of degradation in water/sediment of Glyphosate – Persistence endpoints at Level P-I**

| Glyphosate Distribution (max. sediment 61.4 % after 14 days) |                       |                                       |                                       |   |                       |   |
|--|-----------------------|---------------------------------------|---------------------------------------|---|-----------------------|---|
| System   | Persistence Endpoints |                                       |                                       |   | Persistence Endpoints |   |
|  | At Level P-I          |                                       |                                       |   | At Level P-I          |   |
|  | Model                 | DT <sub>50</sub> <sup>4)</sup> (days) | DT <sub>90</sub> <sup>4)</sup> (days) | SFO DT <sub>50</sub> <sup>4)</sup> (days) | Model                 | SFO DT <sub>50</sub> <sup>4)</sup> (days) |
| <b>Glyphosate (total system)</b>                             |                       |                                       |                                       |   |                       |   |
| Cache  | FOMC                  | 8.47                                  | 45.89                                 | 13.82 <sup>5)</sup>                       | FOMC                  | 13.82 <sup>1)</sup>                       |
| Putah  | DFOP                  | 210.66                                | 976.54                                | 294.14 <sup>5)</sup>                      | DFOP                  | 329.85 <sup>2)</sup>                      |
| Loamy sediment   | FOMC                  | 70.48                                 | ∞                                     | _ <sup>6)</sup>                           | _ <sup>3)</sup>       | _ <sup>3)</sup>                           |
| Sandy sediment   | HS                    | 16.03                                 | 346.81                                | 104.46 <sup>5)</sup>                      | HS                    | 154.19 <sup>2)</sup>                      |
| Creek  | SFO                   | 16.78                                 | 55.74                                 | 16.78                                     | SFO                   | 16.78                                     |
| Pond   | HS                    | 67.45                                 | 281.39                                | 84.76 <sup>5)</sup>                       | HS                    | 92.42 <sup>2)</sup>                       |
| TNO  | FOMC                  | 93.06                                 | >1000                                 | >301.20- <sub>5)</sub>                    | _ <sup>3)</sup>       | _ <sup>3)</sup>                           |
| Kromme Rijn  | DFOP                  | 28.86                                 | 232.92                                | 70.16 <sup>5)</sup>                       | DFOP                  | 88.67 <sup>2)</sup>                       |
| Minimum  |                       | -                                     | -                                     | 13.82                                     | -                     | 13.82                                     |
| Maximum  |                       | -                                     | -                                     | 301.20                                    | -                     | 329.85                                    |
| Geometric mean (n=7/6 <sup>8)</sup> )                        |                       | -                                     | -                                     | 74.52                                     | -                     | 67.74                                     |
| <b>Glyphosate (water phase)</b>                              |                       |                                       |                                       |   |                       |   |
| Cache  | HS                    | 4.98                                  | 26.84                                 | 8.08 <sup>5)</sup>                        | SFO                   | 6.94                                      |
| Putah  | FOMC                  | 8.25                                  | 72.40                                 | 21.81 <sup>5)</sup>                       | FOMC                  | 21.81 <sup>1)</sup>                       |
| Loamy sediment   | FOMC                  | 1.06                                  | 24.11                                 | 7.26 <sup>5)</sup>                        | FOMC                  | 7.26 <sup>1)</sup>                        |
| Sandy sediment   | DFOP                  | 2.03                                  | 22.63                                 | 6.82 <sup>5)</sup>                        | DFOP                  | 6.82 <sup>1)</sup>                        |
| Creek  | SFO                   | 13.15                                 | 43.67                                 | 13.15                                     | SFO                   | 13.15                                     |
| Pond   | HS                    | 1.00                                  | 26.89                                 | 8.10 <sup>5)</sup>                        | HS                    | 8.10 <sup>1)</sup>                        |
| TNO  | _ <sup>3)</sup>       | _ <sup>3)</sup>                       | _ <sup>3)</sup>                       | _ <sup>3)</sup>                           | _ <sup>3)</sup>       | _ <sup>3)</sup>                           |
| Kronmme Rijn   | _ <sup>3)</sup>       | _ <sup>3)</sup>                       | _ <sup>3)</sup>                       | _ <sup>3)</sup>                           | _ <sup>3)</sup>       | _ <sup>3)</sup>                           |
| Minimum  |                       | -                                     | -                                     | 6.82                                      | -                     | 6.82                                      |
| Maximum  |                       | -                                     | -                                     | 21.81                                     | -                     | 21.81                                     |
| Geometric mean (n=6)   |                       | -                                     | -                                     | 9.88                                      | -                     | 9.63                                      |
| <b>Glyphosate (sediment phase)</b>                           |                       |                                       |                                       |   |                       |   |
| Cache  | SFO                   | 4.05                                  | 113.10                                | 34.05                                     | SFO                   | 34.05                                     |

|                      |      |        |          |       |     |       |
|----------------------|------|--------|----------|-------|-----|-------|
| Putah                | _3)  | _3)    | _3)      | _3)   | _3) | _3)   |
| Loamy sediment       | _3)  | _3)    | _3)      | _3)   | _3) | _3)   |
| Sandy sediment       | FOMC | 383.86 | $\infty$ | _6)   | _3) | _3)   |
| Creek                | _3)  | _3)    | _3)      | _3)   | _3) | _3)   |
| Pond                 | _3)  | _3)    | _3)      | _3)   | _3) | _3)   |
| TNO                  | _3)  | _3)    | _3)      | _3)   | _3) | _3)   |
| Kronmme Rijn         | SFO  | 75.61  | 251.16   | 75.61 | SFO | 75.61 |
| Minimum              | -    | -      | -        | 34.05 | -   | 34.05 |
| Maximum              | -    | -      | -        | 75.61 | -   | 75.61 |
| Geometric mean (n=2) | -    | -      | -        | _7)   | -   | _7)   |

1) Back-calculated from DT90 of bi-phasic model (DT90/3.32)

2) Calculated from slower k-rate

3) no reliable fit achieved

4) DT50 = degradation DT50 for total system, Dissipation DT50 for water and sediment phase

5) Back-calculated SFO to derive endpoints for P criteria (SFO DT50 = DT90/3.32)

6) Back-calculation of SFO DT50 not possible

7) Not calculated, since a sufficient number of DT50 values were not available

8) Number of values for deriving persistence endpoint (SFO DT50) and the modelling endpoint

**Table 8.6-2: Summary of observed metabolites**

| AMPA<br>Water/sediment<br>system | Distribution: max. 15.7 % AR in water after 14 d, max. 18.7 % AR in sediment after 58 d |  |  |  |                                       |  | Evaluated<br>on EU<br>level y<br>Reference |
|----------------------------------|---|--|--|--|---------------------------------------|--|--|
| System                           | Persistence Endpoints<br>At Level P-I   |  |  |  | Persistence Endpoints<br>At Level P-I |  |  |
|                                  | Model   | DT <sub>50</sub> <sup>4)</sup><br>(days) | DT <sub>90</sub> <sup>4)</sup><br>(days) | SFO DT <sub>50</sub> <sup>4)</sup><br>(days) | Model                                 | SFO DT <sub>50</sub> <sup>4)</sup><br>(days) |  |
| AMPA ( total system)             |   |  |  |  |                                       |  |  |
| Rückhaltebecken                  | FOMC  | 13.80                                    | 1513.00                                  | 455.72 <sup>5)</sup>                         | DFOP                                  | 102.87 <sup>2)</sup>                         | EFSA,<br>2015                              |
| Schäphysen                       | _3)   | _3)                                      | _3)                                      | _3)  | _3)                                   | _3)  | EFSA,<br>2015                              |
| Bickenbach                       | HS  | 10.54                                    | 191.25                                   | 57.61 <sup>5)</sup>                          | HS                                    | 77.83 <sup>2)</sup>                          | EFSA,<br>2015                              |
| Unter-<br>Widdersheim            | HS  | 77.36                                    | 307.19                                   | 92.53 <sup>5)</sup>                          | HS                                    | 98.98 <sup>2)</sup>                          | EFSA,<br>2015                              |
| Bickenbach                       | HS  | 44.53                                    | 205.21                                   | 61.81 <sup>5)</sup>                          | HS                                    | 69.31 <sup>2)</sup>                          | EFSA,<br>2015                              |
| Unter-<br>Widdersheim            | FOMC  | 20.13                                    | 885.03                                   | 266.58 <sup>5)</sup>                         | _3)                                   | _3)  | EFSA,<br>2015                              |
| A                                | _3)   | _3)                                      | _3)                                      | _3)  | _3)                                   | _3)  | EFSA,<br>2015                              |
| B                                | _6)   | _6)                                      | _6)                                      | _6)  | _6)                                   | _6)  | EFSA,<br>2015                              |

|                                       |  |               |               |                     |               |                                |
|---------------------------------------|--|---------------|---------------|---------------------|---------------|--------------------------------|
| Minimum                               | -  | -             | 131.97        | -                   | 86.09         | EFSA, 2015                     |
| Maximum                               | -  | -             | 455.72        | -                   | 102.87        | EFSA, 2015                     |
| Geometric mean (n=5/4 <sup>7)</sup> ) | -  | -             | 131.97        | -                   | 86.09         | EFSA, 2015                     |
| AMPA (Water phase)                    |  |               |               |                     |               |                                |
| Rückhaltebecken                       | FOMC   | 2.20          | 22.50         | 6.78 <sup>5)</sup>  | FOMC          | 6.78 <sup>1)</sup> EFSA, 2015  |
| Schäphysen                            | FOMC   | 1.00          | 7.80          | 2.35 <sup>5)</sup>  | FOMC          | 2.35 <sup>1)</sup> EFSA, 2015  |
| Bickenbach                            | DFOP   | 2.54          | 47.57         | 14.33 <sup>5)</sup> | DFOP          | 14.33 <sup>1)</sup> EFSA, 2015 |
| Unter-Widdersheim                     | FOMC   | 2.13          | 26.31         | 7.92 <sup>5)</sup>  | FOMC          | 7.92 <sup>1)</sup> EFSA, 2015  |
| Bickenbach                            | DFOP   | 6.59          | 51.47         | 15.50 <sup>5)</sup> | DFOP          | 15.50 <sup>1)</sup> EFSA, 2015 |
| Unter-Widdersheim                     | HS   | 2.02          | 17.15         | 5.17 <sup>5)</sup>  | HS            | 5.17 <sup>1)</sup> EFSA, 2015  |
| A                                     | FOMC   | 0.69          | 8.87          | 2.67 <sup>5)</sup>  | FOMC          | 2.67 <sup>1)</sup> EFSA, 2015  |
| B                                     | DFOP   | 1.28          | 6.87          | 2.07 <sup>5)</sup>  | DFOP          | 2.07 <sup>1)</sup> EFSA, 2015  |
| Minimum                               | -  | -             | 2.07          | -                   | 2.07          | EFSA, 2015                     |
| Maximum                               | -  | -             | 15.50         | -                   | 15.50         | EFSA, 2015                     |
| Geometric mean (n=8)                  | -  | -             | 5.47          | -                   | 5.47          | EFSA, 2015                     |
| AMPA (sediment phase)                 |  |               |               |                     |               |                                |
| Rückhaltebecken                       | <sub>3)</sub>  | <sub>3)</sub> | <sub>3)</sub> | <sub>3)</sub>       | <sub>3)</sub> | EFSA, 2015                     |
| Schäphysen                            | <sub>3)</sub>  | <sub>3)</sub> | <sub>3)</sub> | <sub>3)</sub>       | <sub>3)</sub> | EFSA, 2015                     |
| Bickenbach                            | <sub>8)</sub>  | <sub>8)</sub> | <sub>8)</sub> | <sub>8)</sub>       | <sub>8)</sub> | EFSA, 2015                     |
| Unter-Widdersheim                     | <sub>8)</sub>  | <sub>8)</sub> | <sub>8)</sub> | <sub>8)</sub>       | <sub>8)</sub> | EFSA, 2015                     |
| Bickenbach                            | <sub>3)</sub>  | <sub>3)</sub> | <sub>3)</sub> | <sub>3)</sub>       | <sub>3)</sub> | EFSA, 2015                     |
| Unter-Widdersheim                     | <sub>3)</sub>  | <sub>3)</sub> | <sub>3)</sub> | <sub>3)</sub>       | <sub>3)</sub> | EFSA, 2015                     |
| A                                     | <sub>3)</sub>  | <sub>3)</sub> | <sub>3)</sub> | <sub>3)</sub>       | <sub>3)</sub> | EFSA, 2015                     |
| B                                     | <sub>6)</sub>  | <sub>6)</sub> | <sub>6)</sub> | <sub>6)</sub>       | <sub>6)</sub> | EFSA, 2015                     |
| <b>HMPA</b>                           | Distribution: 10.0 % & 7.5 % max. in water after 61 & 100 d (consecutive data) |               |               |                     |               | EFSA,                          |

|                              |         |      |
|------------------------------|---------|------|
| <b>Water/sediment system</b> | points) | 2015 |
|------------------------------|---------|------|

- 1) Back-calculated from DT90 of bi-phasic model (DT90/3.32)
- 2) Calculated from slower k-rate
- 3) no reliable fit achieved
- 4) DT50 = DegT50 for total system but DT50 for water and sediment phase
- 5) Back-calculated SFO to derive endpoints for P criteria (SFO DT50 = DT90/3.32)
- 6) excluded from kinetic evaluation due to analytical problems
- 7) Number of values for deriving persistence endpoint (SFO DT50) and the modelling endpoint
- 8) excluded from kinetic evaluation due to different amounts of AMPA in the sediment reported in the study

## 8.7 Predicted Environmental Concentrations in soil (PEC<sub>soil</sub>) (KCP 9.1.3)

| Evaluator's<br>Comments:                              | Calculations of PEC <sub>s</sub> for active substance, its metabolite and formulation were accepted.   |                        |       |             |      |            |      |             |                        |  |  |                                  |       |       |       |  |  |  |       |       |   |
|---|--|------------------------|-------|-------------|------|------------|------|-------------|------------------------|--|--|----------------------------------|-------|-------|-------|--|--|--|-------|-------|---|
|   | For PEC soil assessment used endpoints were agreed at the EU level. Based on proposed pattern use:   |                        |       |             |      |            |      |             |                        |  |  |                                  |       |       |       |  |  |  |       |       |   |
|   | <ul style="list-style-type: none"><li>• Winter cereals, oilseed rape, spring barley, sunflower and maize: application rate 1 x 1890 g a.s./ha, interception 0%;</li><li>• Winter wheat: rate 1 x 1080 g a.s./ha, interception 80%;</li><li>• Pome fruit, grapevine and stone fruit: rate 1 x 1890 g a.s./ha, interception 0%</li></ul>   |                        |       |             |      |            |      |             |                        |  |  |                                  |       |       |       |  |  |  |       |       |   |
|   | The risk envelope approach was considered.   |                        |       |             |      |            |      |             |                        |  |  |                                  |       |       |       |  |  |  |       |       |   |
|   | The relevant metabolite AMPA and its parameters have been taken according to List of Endpoints.  |                        |       |             |      |            |      |             |                        |  |  |                                  |       |       |       |  |  |  |       |       |   |
|   | The initial PEC <sub>s</sub> for active substance, its metabolite and formulation values are presented in the table below.   |                        |       |             |      |            |      |             |                        |  |  |                                  |       |       |       |  |  |  |       |       |   |
|   | <table><tr><th rowspan="2">Rate</th><th>Glyphosate</th><th>AMPA</th><th>Formulation</th></tr><tr><th colspan="3">PECs<br/>mg a.s/kg soil</th></tr><tr><td rowspan="3">1 x 3.5 L/ha<br/>interception 0%.</td><td>2.520</td><td>0.891</td><td>5.774</td></tr><tr><th colspan="3">PEC<sub>accum</sub><br/>mg a.s/kg soil</th></tr><tr><td>2.895</td><td>2.703</td><td>-</td></tr></table> |                        |       |             | Rate | Glyphosate | AMPA | Formulation | PECs<br>mg a.s/kg soil |  |  | 1 x 3.5 L/ha<br>interception 0%. | 2.520 | 0.891 | 5.774 | PEC <sub>accum</sub><br>mg a.s/kg soil |  |  | 2.895 | 2.703 | - |
|   | Rate   | Glyphosate             | AMPA  | Formulation |      |            |      |             |                        |  |  |                                  |       |       |       |  |  |  |       |       |   |
|   |  | PECs<br>mg a.s/kg soil |       |             |      |            |      |             |                        |  |  |                                  |       |       |       |  |  |  |       |       |   |
|   | 1 x 3.5 L/ha<br>interception 0%.   | 2.520                  | 0.891 | 5.774       |      |            |      |             |                        |  |  |                                  |       |       |       |  |  |  |       |       |   |
| PEC <sub>accum</sub><br>mg a.s/kg soil                |  |                        |       |             |      |            |      |             |                        |  |  |                                  |       |       |       |  |  |  |       |       |   |
| 2.895   |  | 2.703                  | -     |             |      |            |      |             |                        |  |  |                                  |       |       |       |  |  |  |       |       |   |
| These values will be used in further risk assessment. |  |                        |       |             |      |            |      |             |                        |  |  |                                  |       |       |       |  |  |  |       |       |   |

### 8.7.1 Justification for new endpoints

There is not deviation from the EU agreed endpoints.

### 8.7.2 Active substance(s) and relevant metabolite(s)

**Table 8.7-1: Input parameters related to application for PEC<sub>soil</sub> calculations**

|   |  |              |   |
|---|--|--------------|---|
| Use No.   | 1, 3, 4, 5, 6  | 2            | 7, 8 and 9  |
| Crop  | Winter cereals, Oilseed rape, Spring barley, sunflower and maize | Winter wheat | Pome fruit, grapevine and stone fruit                             |
| Application rate (g as/ha)                                    | 1890   | 1080         | 1890  |
| Number of applications/interval                               | 1  | 1            | 1   |
| Crop interception (%)   | 0  | 80           | 0 (application to the soil)                                       |
| Depth of soil layer (relevant for plateau concentration) (cm) | 20 cm for PEC <sub>plateau</sub> concentration for annual crops  |              | 5 cm for PEC <sub>plateau</sub> concentration for permanent crops |

**Table 8.7-2: Input parameter for active substance(s) and relevant metabolite(s) for PEC<sub>soil</sub> calculation**

| Compound   | Molecular weight (g/mol) | Max. occurrence (%) | Method of calculation   | Value in accordance to EU endpoint y/n/ Reference |
|------------|--------------------------|---------------------|---|---|
| Glyphosate | 169                      | -                   | ESCAPE 2.0: input parameters<br>k1 0.0384 (DT <sub>50 fast</sub> (d): 18.05 days)<br>k2 0.0037 (DT <sub>50 slow</sub> (d): 187.34 days )<br>g 0.575<br>Kinetics: DFOP (best fit, trial Kleinzecher/ Germany)<br>Field: worst case kinetics (best fit) from field studies (not normalized) | EFSA, 2015  |
| AMPA       | 111                      | 53.8                | DT <sub>50</sub> (d): 633 days (k 0.0013)<br>Kinetics: SFO (best fit, trial Unzhorst/ Germany)<br>Field: Maximum value from field studies (not normalized)  | EFSA, 2015  |

**Table 8.7-3: PEC<sub>soil</sub> for Glyphosate on Pome/stone fruits and grape vine as worst case**

| PEC <sub>soil</sub><br>(mg/kg)   |      | Pome/stone fruits and grape vine |       |                       |     |
|--|------|----------------------------------|-------|-----------------------|-----|
|  |      | Single application               |       | Multiple applications |     |
|  |      | Actual                           | TWA   | Actual                | TWA |
| Initial  |      | 2.520                            | -     | -                     | -   |
| Short term   | 24h  | 2.462                            | 2.491 | -                     | -   |
|  | 2d   | 2.405                            | 2.462 | -                     | -   |
|  | 4d   | 2.298                            | 2.407 | -                     | -   |
| Long term  | 7d   | 2.151                            | 2.328 | -                     | -   |
|  | 14d  | 1.863                            | 2.165 | -                     | -   |
|  | 21d  | 1.638                            | 2.025 | -                     | -   |
|  | 28d  | 1.460                            | 1.905 | -                     | -   |
|  | 50d  | 1.103                            | 1.622 | -                     | -   |
|  | 100d | 0.771                            | 1.265 | -                     | -   |
| Plateau concentration (5 cm) after year 10   |      | 0.375                            | -     | -                     | -   |
| PEC <sub>accumulation</sub><br>(PEC <sub>act</sub> + PEC <sub>soil plateau</sub> ) |      | 2.895                            |       | -                     | -   |

### PEC<sub>soil</sub> of metabolites

**Table 8.7-4: PEC<sub>soil</sub> for AMPA on Pome/Stone fruits and grape vine as worst case**

| PEC <sub>soil</sub><br>(mg/kg)   |      | Pome/stone fruits and grape vine |       |                       |     |
|--|------|----------------------------------|-------|-----------------------|-----|
|  |      | Single application               |       | Multiple applications |     |
|  |      | Actual                           | TWA   | Actual                | TWA |
| Initial  |      | 0.891                            | -     | -                     | -   |
| Short term   | 24h  | 0.890                            | 0.890 | -                     | -   |
|  | 2d   | 0.889                            | 0.890 | -                     | -   |
|  | 4d   | 0.889                            | 0.889 | -                     | -   |
| Long term  | 7d   | 0.884                            | 0.887 | -                     | -   |
|  | 14d  | 0.877                            | 0.884 | -                     | -   |
|  | 21d  | 0.8703                           | 0.880 | -                     | -   |
|  | 28d  | 0.864                            | 0.877 | -                     | -   |
|  | 50d  | 0.843                            | 0.867 | -                     | -   |
|  | 100d | 0.798                            | 0.844 | -                     | -   |
| Plateau concentration (5 cm)<br>after year 10                                      |      | 1.812                            |       | -                     | -   |
| PEC <sub>accumulation</sub><br>(PEC <sub>act</sub> + PEC <sub>soil plateau</sub> ) |      | 2.703                            |       | -                     | -   |

### 8.7.2.1 PEC<sub>soil</sub> of Glyphosate 54% SL

**Table 8.7-5: PEC<sub>soil</sub> for Glyphosate 54% SL on winter cereals, winter wheat, oilseed rape, spring barley, sunflower, maize, pome fruit, stone fruit and grapevine**

| Active substance/<br>preparation | Application rate (g/ha) | PEC <sub>act</sub> (mg/kg) |
|----------------------------------|-------------------------|----------------------------|
| Glyphosate / Glyphosate 54% SL   | 4330.55*                | 5.774                      |

\*Based on a density of 1.2373



## 8.8 Predicted Environmental Concentrations in groundwater (PEC<sub>gw</sub>) (KCP 9.2.4)

|                              |   |
|------------------------------|---|
| <p>Evaluator's Comments:</p> | <p>The calculations submitted by Applicant were accepted. The following applications were considered:</p> <ul style="list-style-type: none"> <li>• Winter cereals: rate 1 x 1890 g a.s./ha;</li> <li>• Winter wheat: rate 1 x 1080 g a.s./ha;</li> <li>• Oilseed rape: rate 1 x 1890 g a.s./ha;</li> <li>• Spring barley: rate 1 x 1890 g a.s./ha;</li> <li>• Sunflower: rate 1 x 1890 g a.s./ha;</li> <li>• Maize: rate 1 x 1890 g a.s./ha;</li> <li>• Pome and stone fruit: rate 1 x 1890 g a.s./ha;</li> <li>• Grapevine: rate 1 x 1890 g a.s./ha.</li> </ul> <p>The calculations have been done according to FOCUS Groundwater guidelines. Models FOCUS-PEARL and FOCUS-PELMO have been used.</p> <p>All parameters have been taken according to List of Endpoints.<br/>             The application dates were submitted.</p> <p><b>Glyphosate.</b> For winter/spring cereals and oilseed rape the PEC<sub>gw</sub> values were below 0.001 µg a.s./L, below the trigger value of 0.1 µg/L.<br/>             The relevant metabolite and parameters have been taken according to List of Endpoints.</p> <p><b>AMPA:</b> the PEC<sub>gw</sub> values are below the trigger value 0.1 µg/L.</p> <p>For national authorization in Poland the scenarios Châteaudun, Hamburg, Kremsmünster are obligatory. In case of spring oilseed rape and sunflower the surrogate crop winter oilseed rape and maize, respectively, were taken into consideration.</p> <p>No further data are needed.</p> |
|------------------------------|---|

### 8.8.1 Justification for new endpoints

There is not deviation from the EU agreed endpoints.

## 8.8.2 Active substance(s) and relevant metabolite(s) (KCP 9.2.4.1)

**Table 8.8-1: Input parameters related to application for PEC<sub>gw</sub> calculations**

| Use No.                                   | 1                                      | 2             | 3                                      | 4             | 5         | 6     | 7 and 8                  | 9         |
|---|--|---------------|--|---------------|-----------|-------|--------------------------|-----------|
| Crop                                      | Winter cereals**                       | Winter wheat* | Oilseed rape<br>(Winter and<br>spring) | Spring barley | Sunflower | Maize | Pome and stone<br>fruits | Grapevine |
| Foliar interception<br>(Steps 1/2)        | No interception                        | Full canopy   | No interception                        |               |           |       |                          |           |
| Application rate (g<br>as/ha)             | 1890                                   | 1080          | 1890                                   |               |           |       |                          |           |
| Number of<br>applications/interval<br>(d) | 1/-                                    |               |  |               |           |       |                          |           |
| Relative application<br>date              | 14 days before emergence               |               |  |               |           |       | 14 days after emergence  |           |
| Crop interception<br>(%)                  | 0                                      | 80            | 0                                      |               |           |       |                          |           |
| Frequency of<br>application               | Annual                                 |               |  |               |           |       |                          |           |
| Models used for<br>calculation            | FOCUS PEARL v4.4.4, FOCUS PELMO v5.5.3 |               |  |               |           |       |                          |           |

\*Covered by use 1

\*\*Chooosed as surrogate crop in order to cover all key CEU scenarios for all crops.

|   |   |                |
|---|---|----------------|
| Use No.   | 1, 3, 4, 5, 6, 7, 8 and 9   | 2              |
| Crop  | Winter cereals, Oilseed rape,<br>Spring barley, sunflower,<br>maize, pome fruit, grapevine<br>and stone fruit | Winter wheat   |
| Used scenarios for PEC <sub>gw</sub> calculations according to<br>PEARL and PELMO | Winter cereals*   | Winter cereals |

|                                     |  |      |
|-------------------------------------|--|------|
| Application rate (g as/ha)          | 1890                                   | 1080 |
| Number of applications/interval (d) | 1                                      | 1    |
| Crop interception (%)               | 0                                      | 80   |
| Frequency of application            | Annual                                 |      |
| Models used for calculation         | FOCUS PEARL v4.4.4, FOCUS PELMO v5.5.3 |      |

\*Worse case

**Table 8.8-2: Application dates used for groundwater risk assessment**

| Crop           | Scenario     | Application dates (absolute) |                  |                  |                     |
|----------------|--------------|------------------------------|------------------|------------------|---------------------|
|                |              | Autumn                       | Winter (BBCH 21) | Spring (BBCH 30) | Summer*** (BBCH 80) |
| Winter cereals | Châteaudun   | 14 days before emergence     | 22/12            | 21/04            | 30/06               |
|                | Hamburg      |                              | 27/12            | 19/04            | 18/07               |
|                | Jokioinen    |                              | 04/12            | 25/05            | 29/07               |
|                | Kremsmünster |                              | 27/12            | 19/04            | 18/07               |
|                | Okehampton   |                              | 13/12            | 15/04            | 06/07               |
|                | Piacenza     |                              | 13/01            | 10/04            | 14/06               |
|                | Porto        |                              | 12/01            | 30/03            | 14/06               |
|                | Sevilla      |                              | 21/12            | 15/04*           | 31/05**             |
|                | Thiva        |                              | 01/01            | 30/03            | 30/05               |

\*BBCH 75

\*\*BBCH 90

\*\*\*used for winter wheat scenario

**Table 8.8-3: Input parameters related to active substance Glyphosate and AMPA for PEC<sub>gw</sub> calculations**

| Compound                                 | Glyphosate   | AMPA  | Value in accordance with EU endpoint y/n/ Reference* |
|--|--|---|--|
| Molecular weight (g/mol)                 | 169  | 111   | EFSA, 2015   |
| Water solubility (mg/L):                 | 10500 (at 20°C pH 2)                                   | 1000 at 20°C (default)                                  | EFSA, 2015   |
| Saturated vapour pressure (Pa):          | 0.7 x 10 <sup>-6</sup> (at 20°C)                       | 0 (default)   | EFSA, 2015   |
| DT <sub>50</sub> in soil (d)             | 20.51d (normalisation to 20°C and pF2 with Q10 = 2.58) | 88.84 d (normalisation to 20°C and pF2 with Q10 = 2.58) | EFSA, 2015   |
| K <sub>foc</sub> (mL/g)/K <sub>fom</sub> | 15388 / 8925.75  | 9749 / 5654.87  | EFSA, 2015   |
| 1/n                                      | 0.93   | 0.81  | EFSA, 2015   |
| Plant uptake factor                      | 0  | 0   | -  |
| Formation fraction                       | -  | 0.36  | -  |

**Table 8.8-4: PEC<sub>gw</sub> for Glyphosate and AMPA on winter cereals (autumn) (with FOCUS PEARL 4.4.4/PELMO 5.5.3)**

| Crop           | Scenario   | 80 <sup>th</sup> Percentile PEC <sub>gw</sub> at 1 m Soil Depth (µg/L) |         |            |         |
|----------------|------------|--|---------|------------|---------|
|                |            | PEARL  |         | PELMO      |         |
|                |            | Glyphosate   | AMPA    | Glyphosate | AMPA    |
| Winter cereals | Châteaudun | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                | Hamburg    | < 0.001  | < 0.001 | < 0.001    | < 0.001 |

|          |              |         |         |         |         |
|----------|--------------|---------|---------|---------|---------|
| (autumn) | Jokioinen    | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
|          | Kremsmünster | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
|          | Okehampton   | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
|          | Piacenza     | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
|          | Porto        | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
|          | Sevilla      | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
|          | Thiva        | < 0.001 | < 0.001 | < 0.001 | < 0.001 |

**Table 8.8-5: PEC<sub>gw</sub> for Glyphosate and AMPA on winter cereals (winter) (with FOCUS PEARL 4.4.4/PELMO 5.5.3)**

| Crop                    | Scenario     | 80 <sup>th</sup> Percentile PEC <sub>gw</sub> at 1 m Soil Depth (µg/L) |         |            |         |
|-------------------------|--------------|--|---------|------------|---------|
|                         |              | PEARL  |         | PELMO      |         |
|                         |              | Glyphosate   | AMPA    | Glyphosate | AMPA    |
| Winter cereals (winter) | Châteaudun   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Hamburg      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Jokioinen    | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Kremsmünster | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Okehampton   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Piacenza     | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Porto        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Sevilla      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Thiva        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |

**Table 8.8-6: PEC<sub>gw</sub> for Glyphosate and AMPA on winter cereals (spring) (with FOCUS PEARL 4.4.4/PELMO 5.5.3)**

| Crop                    | Scenario     | 80 <sup>th</sup> Percentile PEC <sub>gw</sub> at 1 m Soil Depth (µg/L) |         |            |         |
|-------------------------|--------------|--|---------|------------|---------|
|                         |              | PEARL  |         | PELMO      |         |
|                         |              | Glyphosate   | AMPA    | Glyphosate | AMPA    |
| Winter cereals (spring) | Châteaudun   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Hamburg      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Jokioinen    | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Kremsmünster | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Okehampton   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Piacenza     | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Porto        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Sevilla      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Thiva        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |

**Table 8.8-7: PEC<sub>gw</sub> for Glyphosate and AMPA on winter cereals (summer) (with FOCUS PEARL 4.4.4/PELMO 5.5.3)**

| Crop                    | Scenario     | 80 <sup>th</sup> Percentile PEC <sub>gw</sub> at 1 m Soil Depth (µg/L) |         |            |         |
|-------------------------|--------------|--|---------|------------|---------|
|                         |              | PEARL  |         | PELMO      |         |
|                         |              | Glyphosate   | AMPA    | Glyphosate | AMPA    |
| Winter cereals (summer) | Châteaudun   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Hamburg      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Jokioinen    | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Kremsmünster | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Okehampton   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Piacenza     | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Porto        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Sevilla      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                         | Thiva        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |

**Table 8.8-8: PEC<sub>gw</sub> for Glyphosate and AMPA on winter oilseed rape (with FOCUS PEARL 4.4.4/PELMO 5.5.3)**

| Crop                | Scenario     | 80 <sup>th</sup> Percentile PEC <sub>gw</sub> at 1 m Soil Depth (µg/L) |         |            |         |
|---------------------|--------------|--|---------|------------|---------|
|                     |              | PEARL  |         | PELMO      |         |
|                     |              | Glyphosate   | AMPA    | Glyphosate | AMPA    |
| Winter oilseed rape | Châteaudun   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                     | Hamburg      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                     | Kremsmünster | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                     | Okehampton   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                     | Piacenza     | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                     | Porto        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |

**Table 8.8-9: PEC<sub>gw</sub> for Glyphosate and AMPA on spring oilseed rape (with FOCUS PEARL 4.4.4/PELMO 5.5.3)**

| Crop                | Scenario   | 80 <sup>th</sup> Percentile PEC <sub>gw</sub> at 1 m Soil Depth (µg/L) |         |            |         |
|---------------------|------------|--|---------|------------|---------|
|                     |            | PEARL  |         | PELMO      |         |
|                     |            | Glyphosate   | AMPA    | Glyphosate | AMPA    |
| Spring oilseed rape | Jokioinen  | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                     | Okehampton | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                     | Porto      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |

**Table 8.8-10: PEC<sub>gw</sub> for Glyphosate and AMPA on spring cereals (with FOCUS PEARL 4.4.4/PELMO 5.5.3)**

| Crop           | Scenario     | 80 <sup>th</sup> Percentile PEC <sub>gw</sub> at 1 m Soil Depth (µg/L) |         |            |         |
|----------------|--------------|--|---------|------------|---------|
|                |              | PEARL  |         | PELMO      |         |
|                |              | Glyphosate   | AMPA    | Glyphosate | AMPA    |
| Spring cereals | Châteaudun   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                | Hamburg      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                | Jokioinen    | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                | Kremsmünster | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                | Okehampton   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|                | Porto        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |

**Table 8.8-11: PEC<sub>gw</sub> for Glyphosate and AMPA on sunflowers (with FOCUS PEARL 4.4.4/PELMO 5.5.3)**

| Crop       | Scenario | 80 <sup>th</sup> Percentile PEC <sub>gw</sub> at 1 m Soil Depth (µg/L) |         |            |         |
|------------|----------|--|---------|------------|---------|
|            |          | PEARL  |         | PELMO      |         |
|            |          | Glyphosate   | AMPA    | Glyphosate | AMPA    |
| Sunflowers | Piacenza | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|            | Sevilla  | < 0.001  | < 0.001 | < 0.001    | < 0.001 |

**Table 8.8-12: PEC<sub>gw</sub> for Glyphosate and AMPA on maize (with FOCUS PEARL 4.4.4/PELMO 5.5.3)**

| Crop  | Scenario     | 80 <sup>th</sup> Percentile PEC <sub>gw</sub> at 1 m Soil Depth (µg/L) |         |            |         |
|-------|--------------|--|---------|------------|---------|
|       |              | PEARL  |         | PELMO      |         |
|       |              | Glyphosate   | AMPA    | Glyphosate | AMPA    |
| Maize | Châteaudun   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Hamburg      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Kremsmünster | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Okehampton   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Piacenza     | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Porto        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Sevilla      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Thiva        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |

**Table 8.8-13: PEC<sub>gw</sub> for Glyphosate and AMPA on apple (with FOCUS PEARL 4.4.4/PELMO 5.5.3)**

| Crop  | Scenario     | 80 <sup>th</sup> Percentile PEC <sub>gw</sub> at 1 m Soil Depth (µg/L) |         |            |         |
|-------|--------------|--|---------|------------|---------|
|       |              | PEARL  |         | PELMO      |         |
|       |              | Glyphosate   | AMPA    | Glyphosate | AMPA    |
| Apple | Châteaudun   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Hamburg      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Jokioinene   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Kremsmünster | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Okehampton   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Piacenza     | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Porto        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Sevilla      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|       | Thiva        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |

**Table 8.8-14: PEC<sub>gw</sub> for Glyphosate and AMPA on grapevine (with FOCUS PEARL 4.4.4/PELMO 5.5.3)**

| Crop      | Scenario     | 80 <sup>th</sup> Percentile PEC <sub>gw</sub> at 1 m Soil Depth (µg/L) |         |            |         |
|-----------|--------------|--|---------|------------|---------|
|           |              | PEARL  |         | PELMO      |         |
|           |              | Glyphosate   | AMPA    | Glyphosate | AMPA    |
| Grapevine | Châteaudun   | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|           | Hamburg      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|           | Kremsmünster | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|           | Piacenza     | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|           | Porto        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|           | Sevilla      | < 0.001  | < 0.001 | < 0.001    | < 0.001 |
|           | Thiva        | < 0.001  | < 0.001 | < 0.001    | < 0.001 |

## 8.9 Predicted Environmental Concentrations in surface water (PEC<sub>sw</sub>) (KCP 9.2.5)

|                       |  |
|-----------------------|--|
| Evaluator's Comments: | <p>The PEC<sub>SW/SED</sub> assessment submitted by Applicant was accepted.</p> <p>The calculations have been done according to FOCUS Surface water guidelines. STEP 1 &amp; 2 were used for PEC<sub>SW</sub> and PEC<sub>SED</sub> assessment.</p> <p>The following applications were considered:</p> <ul style="list-style-type: none"> <li>• Winter cereals: rate 1 x 1890 g a.s./ha, no interception;</li> <li>• Winter wheat: rate 1 x 1080 g a.s./ha, full canopy;</li> <li>• Oilseed rape: rate 1 x 1890 g a.s./ha, no interception;</li> <li>• Spring barley: rate 1 x 1890 g a.s./ha, no interception;</li> <li>• Sunflower: rate 1 x 1890 g a.s./ha, no interception;</li> </ul> |
|-----------------------|--|



- Maize: rate 1 x 1890 g a.s./ha, no interception;
- Pome and stone fruit: rate 1 x 1890 g a.s./ha;
- Grapevine: rate 1 x 1890 g a.s./ha.

For pome/stone fruits and grapevine only the hand application and plant height less than 50 cm was considered.

All parameters have been taken according to List of Endpoints. Drift as an exposure route have been considered.

The metabolites AMPA and HMPA were taken for consideration.

Results of max PEC<sub>sw</sub> calculated in Step 2 for active substance are presented in the table below:

| <b>Crop</b>                                  | <b>Glyphosate<br/>max PEC<sub>sw</sub><br/>µg/L</b> |
|--|---|
| <b>Winter cereals</b>                        | 17.38   |
| <b>Winter wheat</b>                          | 9.93  |
| <b>Winter/spring oilseed rape</b>            | 17.38   |
| <b>Spring barley</b>                         | 17.38   |
| <b>Sunflower</b>                             | 17.38   |
| <b>Maize</b>                                 | 17.38   |
| <b>Pome and stone fruit<br/>h &lt; 50 cm</b> | 17.38   |
| <b>Grapevine</b>                             | 17.38   |

Additionally, the PEC<sub>sed</sub> value based on formulation application was calculated and is presented below.

| <b>Crop</b>     | <b>max PEC<sub>sed</sub><br/>[µg/kg dw]<br/>1 m</b> |
|-----------------|---|
| Winter cereals* | 113.31  |

\* as the worst case

The relevant PEC<sub>sw</sub> and PEC<sub>sed</sub> will be used in risk assessment.

### 8.9.1 Justification for new endpoints

There is no deviation from the EU agreed endpoints.

## 8.9.2 Active substance(s), relevant metabolite(s) and the formulation (KCP 9.2.5)

**Table 8.9-1: Input parameters related to application for PEC<sub>SW/SED</sub> calculations**

|                                     |                     |               |                                    |               |           |       |                                 |           |
|-------------------------------------|---------------------|---------------|------------------------------------|---------------|-----------|-------|---------------------------------|-----------|
| Plant protection product            | Glyphosate 54% SL   |               |                                    |               |           |       |                                 |           |
| Use No.                             | 1                   | 2             | 3                                  | 4             | 5         | 6     | 7 and 8                         | 9         |
| Crop                                | Winter cereals      | Winter wheat* | Oilseed rape (Winter and spring)   | Spring barley | Sunflower | Maize | Pome and stone fruits           | Grapevine |
| Foliar interception (Steps 1/2)     | No interception     | Full canopy   | No interception                    |               |           |       |                                 |           |
| Application rate (kg as/ha)         | 1.89                | 1.08          | 1.89                               |               |           |       |                                 |           |
| Number of applications/interval (d) | 1/-                 |               |                                    |               |           |       |                                 |           |
| Application window                  | Oct-Feb             | June-Sep*     | Oct-Feb (WOSR)<br>March-May (SOSR) | March-May     |           |       |                                 |           |
| Application method                  | Ground spray        |               |                                    |               |           |       | Application hand (crop < 50 cm) |           |
| CAM (Chemical application method)   | CAM 2               |               |                                    |               |           |       |                                 |           |
| Soil depth (cm)                     | 4                   |               |                                    |               |           |       |                                 |           |
| Models used for calculation         | FOCUS STEP 1/2 v3.1 |               |                                    |               |           |       |                                 |           |

\*Covered by use 1.

|                          |                   |   |   |   |   |   |         |   |
|--------------------------|-------------------|---|---|---|---|---|---------|---|
| Plant protection product | Glyphosate 54% SL |   |   |   |   |   |         |   |
| Use No.                  | 1                 | 2 | 3 | 4 | 5 | 6 | 7 and 8 | 9 |

|                                     |                                |               |                                   |                |            |        |                                 |            |
|-------------------------------------|--------------------------------|---------------|-----------------------------------|----------------|------------|--------|---------------------------------|------------|
| Crop                                | Winter cereals                 | Winter wheat* | Oilseed rape*                     | Spring barley* | Sunflower* | Maize* | Pome and stone fruits*          | Grapevine* |
| Foliar interception (Steps 1/2)     | No interception                | Full canopy   | No interception                   |                |            |        |                                 |            |
| Application rate (kg as/ha)         | 1.89                           | 1.08          | 1.89                              | 1.89           | 1.89       | 1.89   | 1.89                            | 1.89       |
| Number of applications/interval (d) | 1                              | 1             | 1                                 | 1              | 1          | 1      | 1                               | 1          |
| Application window                  | Oct-Feb<br>Mar-May<br>June-Sep | June-Sep*     | Oct-Feb*<br>Mar-May*<br>June-Sep* |                |            |        |                                 |            |
| Application method                  | Ground spray                   |               |                                   |                |            |        | Application hand (crop < 50 cm) |            |
| CAM (Chemical application method)   | CAM-2                          |               |                                   |                |            |        |                                 |            |
| Soil depth (cm)                     | 4                              |               |                                   |                |            |        |                                 |            |
| Models used for calculation         | FOCUS STEP 1/2 v3.1            |               |                                   |                |            |        |                                 |            |

\*For Steps 1 & 2: uses covered by winter cereals no interception scenario (use 1) considering lower drift value

**Table 8.9-2: Input parameters related to active substance Glyphosate, AMPA and HMPA for PEC<sub>sw/sed</sub> calculations STEP 1/2**

| Compound   | Glyphosate  | AMPA  | HMPA                                 | Value in accordance to EU endpoint y/n/ Reference |
|--|---|---|--------------------------------------|---|
| Molecular weight (g/mol)   | 169   | 111   | 112                                  | EFSA, 2015  |
| Water solubility (mg/L)  | 10500 (at 20°C pH 2)  | 1000 (default)  | 1000 (default)                       | EFSA, 2015  |
| K <sub>foc</sub> (mL/g)  | 15844   | 9749  | 1 (default)                          | EFSA, 2015  |
| DT <sub>50,soil</sub> (d)  | 20.51 days (Laboratory, geometric mean, SFO at 20°C and pH 2) | 88.84 days (Laboratory, geometric mean, SFO at 20°C and pH 2) | 1000 (default)                       | EFSA, 2015  |
| DT <sub>50,water</sub> (d)   | 67.74 d (SFO, geometric mean at 20°C)                         | 1000 d (default)  | 1000 (default)                       | EFSA, 2015  |
| DT <sub>50,sed</sub> (d)   | 67.74 d (DT <sub>50</sub> value of total system)              | 86.09 days (DT <sub>50</sub> value of total system)           | 1000 (default)                       | EFSA, 2015  |
| DT <sub>50,whole system</sub> (d)                                      | 67.74 d (SFO, geometric mean at 20°C)                         | 86.09 days (SFO, geometric mean, n = 5)                       | 1000 (default)                       | EFSA, 2015  |
| Maximum occurrence observed (% molar basis with respect to the parent) | Sediment: 61.4  | Soil: 53.8<br>Total system: 27.1                              | Soil: 0.00001%*<br>Total system: 10% | EFSA, 2015  |
| Formation fraction in soil:  | -   |   |                                      |   |

\*This is not a soil metabolite, percentage used to run the program

#### PEC<sub>sw/sed</sub>

**Table 8.9-3: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for Glyphosate following single of Glyphosate 54% SL to all-crops (winter cereals\*1 x 1890 g a.s./ha, no interception)**

| Scenario        | Waterbody   | Max PEC <sub>sw</sub> (µg/L)                  | Dominant entry route | 21 d- PEC <sub>sw,twa</sub> (µg/L)          | Max PEC <sub>sed</sub> (µg/kg)*                |
|-----------------|---|---|----------------------|---|--|
| FOCUS           |   |   |                      |   |  |
| Step 1          | ---   | 45.86   | --                   | 26.72                                       | 4590   |
| Step 2          | --  | --  | --                   | --  | --   |
| Northern Europe | <del>March-May</del><br><del>June-Sept</del><br>Oct-Feb | <del>17.38</del><br><del>17.38</del><br>17.38 | Runoff/drainage      | <del>5.34</del><br><del>5.34</del><br>11.06 | <del>903.84</del><br><del>903.84</del><br>2090 |
| Southern Europe | <del>March-May</del><br><del>June-Sept</del><br>Oct-Feb | <del>17.38</del><br><del>17.38</del><br>17.38 | Runoff/drainage      | <del>9.15</del><br><del>7.24</del><br>9.15  | <del>1690</del><br><del>1300</del><br>1690     |

\* Worst case

**Table 8.9-4: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for Glyphosate following single of Glyphosate 54% SL to winter oilseed rape**

| Scenario           | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |           |                                 |                         |  |                                   |
| Step 1             | ---       | 45.86                           | --                      | 26.72                                  | 4590                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | Oct-Feb   | 17.38                           | Runoff/drainage         | 11.06                                  | 2090                              |
| Southern<br>Europe |           |                                 |                         | 9.15                                   | 1690                              |

**Table 8.9-5: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for Glyphosate following single of Glyphosate 54% SL to spring oilseed rape**

| Scenario           | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |           |                                 |                         |  |                                   |
| Step 1             | ---       | 45.86                           | --                      | 26.72                                  | 4590                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 17.38                           | Runoff/drainage         | 5.34                                   | 903.84                            |
| Southern<br>Europe |           |                                 |                         | 9.15                                   | 1690                              |

**Table 8.9-6: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for Glyphosate following single of Glyphosate 54% SL to spring cereals**

| Scenario           | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |           |                                 |                         |  |                                   |
| Step 1             | ---       | 45.86                           | --                      | 26.72                                  | 4590                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 17.38                           | Runoff/drainage         | 5.34                                   | 903.84                            |
| Southern<br>Europe |           |                                 |                         | 9.15                                   | 1690                              |

**Table 8.9-7: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for Glyphosate following single of Glyphosate 54% SL to sunflower**

| Scenario | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|----------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS    |           |                                 |                         |  |                                   |
| Step 1   | ---       | 45.86                           | --                      | 26.72                                  | 4590                              |
| Step 2   |           |                                 |                         |  |                                   |

| Scenario           | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 17.38                           | Runoff/drainage         | 5.34                                   | 903.84                            |
| Southern<br>Europe |           |                                 |                         | 9.15                                   | 1690                              |

**Table 8.9-8: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for Glyphosate following single of Glyphosate 54% SL to maize**

| Scenario           | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |           |                                 |                         |  |                                   |
| Step 1             | ---       | 45.86                           | --                      | 26.72                                  | 4590                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 17.38                           | Runoff/drainage         | 5.34                                   | 903.84                            |
| Southern<br>Europe |           |                                 |                         | 9.15                                   | 1690                              |

**Table 8.9-9: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for Glyphosate following single of Glyphosate 54% SL to pome fruits and grapevine (hand application to crop < 50 cm)**

| Scenario           | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |           |                                 |                         |  |                                   |
| Step 1             | ---       | 45.86                           | --                      | 26.72                                  | 4590                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 17.38                           | Runoff/drainage         | 5.34                                   | 903.84                            |
| Southern<br>Europe |           |                                 |                         | 9.15                                   | 1690                              |

### Metabolites of Glyphosate

**Table 8.9-102: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for AMPA following single of Glyphosate 54% SL to all-crops (winter cereals\* 1 x 1890 g a.s./ha, no interception)**

| Scenario           | Waterbody              | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|------------------------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |                        |                                 |                         |  |                                   |
| Step 1             | ---                    | 27.01                           | --                      | 22.27                                  | 2330                              |
| Step 2             | --                     | --                              | --                      | --                                     | --                                |
| Northern<br>Europe | March-May<br>June-Sept | 4.82<br>4.82                    | Runoff/drainage         | 4.38<br>4.38                           | 457.04<br>457.04                  |

| Scenario<br>FOCUS  | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
|                    | Oct-Feb   | 11.55                           |                         | 10.64                                  | 1110                              |
| Southern<br>Europe | March-May | 9.30                            | Runoff/drainage         | 8.55                                   | 894.02                            |
|                    | June-Sept | 7.06                            |                         | 6.46                                   | 675.53                            |
|                    | Oct-Feb   | 9.30                            |                         | 8.55                                   | 894.02                            |

\* **Worst case**

**Table 8.9-11: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for AMPA following single of Glyphosate 54% SL to winter oilseed rape**

| Scenario<br>FOCUS  | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| Step 1             | ---       | 27.01                           | --                      | 22.27                                  | 2330                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | Oct-Feb   | 11.55                           | Runoff/drainage         | 10.64                                  | 1110                              |
| Southern<br>Europe |           | 9.30                            |                         | 8.55                                   | 894.02                            |

**Table 8.9-12: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for AMPA following single of Glyphosate 54% SL to spring oilseed rape**

| Scenario<br>FOCUS  | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| Step 1             | ---       | 27.01                           | --                      | 22.27                                  | 2330                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 4.82                            | Runoff/drainage         | 4.38                                   | 457.04                            |
| Southern<br>Europe |           | 9.30                            |                         | 8.55                                   | 894.02                            |

**Table 8.9-13: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for AMPA following single of Glyphosate 54% SL to spring cereals**

| Scenario<br>FOCUS  | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| Step 1             | ---       | 27.01                           | --                      | 22.27                                  | 2330                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 4.82                            | Runoff/drainage         | 4.38                                   | 457.04                            |
| Southern<br>Europe |           | 9.30                            |                         | 8.55                                   | 894.02                            |

**Table 8.9-13: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for AMPA following single of Glyphosate 54% SL to sunflower**

| Scenario           | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |           |                                 |                         |  |                                   |
| Step 1             | ---       | 27.01                           | --                      | 22.27                                  | 2330                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 4.82                            | Runoff/drainage         | 4.38                                   | 457.04                            |
| Southern<br>Europe |           | 9.30                            |                         | 8.55                                   | 894.02                            |

**Table 8.9-14: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for AMPA following single of Glyphosate 54% SL to maize**

| Scenario           | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |           |                                 |                         |  |                                   |
| Step 1             | ---       | 27.01                           | --                      | 22.27                                  | 2330                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 4.82                            | Runoff/drainage         | 4.38                                   | 457.04                            |
| Southern<br>Europe |           | 9.30                            |                         | 8.55                                   | 894.02                            |

**Table 8.9-15: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for AMPA following single of Glyphosate 54% SL to pome fruits and grapevine (hand application to crop < 50 cm)**

| Scenario           | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |           |                                 |                         |  |                                   |
| Step 1             | ---       | 27.01                           | --                      | 22.27                                  | 2330                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 4.82                            | Runoff/drainage         | 4.38                                   | 457.04                            |
| Southern<br>Europe |           | 9.30                            |                         | 8.55                                   | 894.02                            |

**Table 8.9-16: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for HMPA following single of Glyphosate 54% SL to all-crops (winter cereals\* 1 x 1890 g a.s./ha, no interception)**

| Scenario | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 2 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|----------|-----------|---------------------------------|-------------------------|---------------------------------------|-----------------------------------|
| FOCUS    |           |                                 |                         |                                       |                                   |
| Step 1   | ---       | 42.85                           | --                      | 42.54                                 | 0.42                              |
| Step 2   | --        | --                              | --                      | --                                    | --                                |



| Scenario<br>FOCUS  | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 2 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|---------------------------------------|-----------------------------------|
| Northern<br>Europe | March-May | 8.43                            | Runoff/drainage         | 8.43                                  | 0.08                              |
|                    | June-Sept | 8.43                            |                         | 8.43                                  | 0.08                              |
|                    | Oct-Feb   | 19.36                           |                         | 19.35                                 | 0.19                              |
| Southern<br>Europe | March-May | 15.72                           | Runoff/drainage         | 15.71                                 | 0.16                              |
|                    | June-Sept | 12.07                           |                         | 12.07                                 | 0.12                              |
|                    | Oct-Feb   | 15.72                           |                         | 15.71                                 | 0.16                              |

\* Worst case

**Table 8.9-17: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for HMPA following single of Glyphosate 54% SL to winter oilseed rape**

| Scenario<br>FOCUS  | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| Step 1             | ---       | 42.85                           | --                      | 42.54                                  | 0.43                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | Oct-Feb   | 19.36                           | Runoff/drainage         | 19.22                                  | 0.19                              |
| Southern<br>Europe |           | 15.72                           |                         | 15.60                                  | 0.16                              |

**Table 8.9-18: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for AMPA following single of Glyphosate 54% SL to spring oilseed rape**

| Scenario<br>FOCUS  | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| Step 1             | ---       | 42.85                           | --                      | 42.54                                  | 0.43                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 8.43                            | Runoff/drainage         | 8.37                                   | 0.08                              |
| Southern<br>Europe |           | 15.72                           |                         | 15.60                                  | 0.16                              |

**Table 8.9-19: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for AMPA following single of Glyphosate 54% SL to spring cereals**

| Scenario<br>FOCUS  | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| Step 1             | ---       | 42.85                           | --                      | 42.54                                  | 0.43                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 8.43                            | Runoff/drainage         | 8.37                                   | 0.08                              |

| Scenario           | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |           |                                 |                         |  |                                   |
| Southern<br>Europe |           | 15.72                           |                         | 15.60                                  | 0.16                              |

**Table 8.9-20: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for AMPA following single of Glyphosate 54% SL to sunflower**

| Scenario           | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |           |                                 |                         |  |                                   |
| Step 1             | ---       | 42.85                           | --                      | 42.54                                  | 0.43                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 8.43                            | Runoff/drainage         | 8.37                                   | 0.08                              |
| Southern<br>Europe |           | 15.72                           |                         | 15.60                                  | 0.16                              |

**Table 8.9-21: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for AMPA following single of Glyphosate 54% SL to maize**

| Scenario           | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |           |                                 |                         |  |                                   |
| Step 1             | ---       | 42.85                           | --                      | 42.54                                  | 0.43                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 8.43                            | Runoff/drainage         | 8.37                                   | 0.08                              |
| Southern<br>Europe |           | 15.72                           |                         | 15.60                                  | 0.16                              |

**Table 8.9-22: FOCUS Step 1, 2 PEC<sub>sw</sub> and PEC<sub>sed</sub> for AMPA following single of Glyphosate 54% SL to pome fruits and grapevine (hand application to crop < 50 cm)**

| Scenario           | Waterbody | Max PEC <sub>sw</sub><br>(µg/L) | Dominant entry<br>route | 21 d- PEC <sub>sw, twa</sub><br>(µg/L) | Max PEC <sub>sed</sub><br>(µg/kg) |
|--------------------|-----------|---------------------------------|-------------------------|--|-----------------------------------|
| FOCUS              |           |                                 |                         |  |                                   |
| Step 1             | ---       | 42.85                           | --                      | 42.54                                  | 0.43                              |
| Step 2             |           |                                 |                         |  |                                   |
| Northern<br>Europe | March-May | 8.43                            | Runoff/drainage         | 8.37                                   | 0.08                              |
| Southern<br>Europe |           | 15.72                           |                         | 15.60                                  | 0.16                              |

### 8.9.2.1 PEC<sub>sw/sed</sub> of Glyphosate 54% SL

The PEC<sub>sw</sub> for Glyphosate 54% SL was calculated using the following equation:

$$PEC_{sw} (\mu g/L) = \frac{\%Drift_{90th\%ile} \times Application\ rate\ (g/ha)}{Water\ depth\ (cm) \times 10}$$

The application of Glyphosate 54% SL is 3.5 L, corresponding to 4330.55 g/ha (taking into account a density of 1.2373 g/cm<sup>3</sup>) for winter cereals, oilseed rape, spring barley, sunflower, maize, pome fruit, grapevine and stone fruit. The depth of the static water body was assumed to be 30 cm. The resulting maximum instantaneous PEC<sub>sw</sub> value is presented in the table 8.9-227.

**Table 8.9-227: PEC<sub>sw</sub> for Glyphosate 54% SL following single application to several crops**

| Crop            | Distance (m) | Drift (%) | Max PEC <sub>sw</sub> (μg/l) |
|-----------------|--------------|-----------|------------------------------|
| Winter cereals* | 1            | 2.77      | 39.99                        |

\*Worst case

The PEC<sub>sed</sub> for Glyphosate 54% SL was calculated using the following equation:

$$PEC_{sed} (\mu g/kgdw) = \frac{\%Drift_{90th\%ile} \times Application\ rate\ (g/ha) \times \%Active\ substance\ in\ sediment}{1000 \times sediment\ density\ (g/cm^3) \times sediment\ height\ (cm)}$$

The application of Glyphosate 54% SL is 3.5 L, corresponding to 4330.55 g/ha (taking into account a density of 1.2373 g/cm<sup>3</sup>) for winter cereals, oilseed rape, spring barley, sunflower, maize, pome fruit, grapevine and stone fruit. The maximum percentage of Glyphosate in the sediment is 61.4. The height of the sediment was assumed to be 5 cm and the sediment density was assumed to be 1.3 g/cm<sup>3</sup>. The resulting maximum instantaneous PEC<sub>sed</sub> value is presented in the table 8.9-238.

**Table 8.9-238: PEC<sub>sed</sub> for Glyphosate 54% SL following single application to several crops**

| Crop            | Distance (m) | Drift (%) | % of Glyphosate | Max PEC <sub>sed</sub> (μg/l) (based on maximum occurrence) |
|-----------------|--------------|-----------|-----------------|---|
| Winter cereals* | 1 m          | 2.77      | 61.4            | 113.31  |

\*Worst case

## 8.10 Fate and behaviour in air (KCP 9.3, KCP 9.3.1)

**Table 8.10-1 Summary of atmospheric degradation and behaviour**

|   |  |
|---|--|
| Compound                                    | Glyphosate   |
| Direct photolysis in air                    | Not studied – no data requested  |
| Quantum yield of direct phototransformation | Not determined   |
| Photochemical oxidative degradation in air  | DT <sub>50</sub> (h): 1.6 h derived by the Atkinson model(version 1.92). OH (12h) concentration assumed = 1.5x10 <sup>6</sup> cm <sup>-3</sup> |
| Volatilisation                              | Volatilization from plants and soil surfaces (BBA guideline): not detectable after 24 hours (n = 2)  |
| Metabolites                                 | -  |

The vapour pressure at 25°C of the active substance Glyphosate is between  $10^{-5}$  and  $10^{-4}$  Pa. Hence the active substance Glyphosate is regarded as semi-volatile (volatilisation only from plant surfaces). Therefore exposure of adjacent surface waters and terrestrial ecosystems by the active substance Glyphosate due to volatilization with subsequent deposition should not be considered because it is not detectable after 24 h.

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

#### **Appendix 2 Detailed evaluation of the new Annex II studies**

No new study was provided.

#### **Appendix 3 Additional information provided by the applicant (e.g. detailed modelling data)**

No additional information was provided.