# Evaluation Manual for the Authorisation of Plant protection products and Biocides according to Regulation (EC) No 1107/2009

## NL part

## Plant protection products

## Chapter 7 Ecotoxicology: terrestrial; non target arthropods and plants

**version 2.7; February 2023**

ctgb

**Board for the Authorisation of Plant protection products and Biocides**

# Chapter 7 Ecotoxicology; terrestrial; non target arthropods and plants

Category: Plant Protection Products



**Changes in the Evaluation Manual**

| Evaluation manual PPP NL part<br>Chapter 7 Non targets arthropods and plants | | | |
|---|---|---|---|
| **Version** | **Date** | **Paragraph** | **Changes** |
| 2.0 | January 2014 | | |
| 2.1 | October 2016 | 2.3 NTA/NTP | A number of changes in the Dutch drift figures; see section 2.3 in both Chapters. |
| 2.2 | January 2018 | 2.3 NTA/NTP | Consequences of change in Activity Decree (entry into force January 2018) have been implemented:<br><br>Drift values for individual techniques have been replaced with drift values per DRT class, conform the *DRT klassenlijst* and using the deposition values that are derived using the reference techniques per class as established by WUR-WPR.<br>During the transitional period laid down in the Activity Decree concerning some techniques in fruit and lane tree cultivation, Ctgb will take the drift deposition values for these techniques into account when |

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|---|---|---|---|
| | | | performing the risk assessment. |
| | | 2.3 NTA/NTP | Other changes with regard to drift values:<br>- clarification that for non-professional use by manual spraying in lane trees and fruit trees the default values for the professional use are used in the absence of spray drift data for hand-held equipment used in upward and sideways spraying. |
| | | 2.3 NTP | Use of a MAF in the risk assessment for non-target terrestrial plants in case of a seedling emergence test and of a vegetative vigour test. |
| | | 2.3 NTP | Use of the Lower Limit of the HR5 value in the risk assessment for non-target terrestrial plants in certain cases. |
| 2.3 | March 2019 | 2 | Bgb link updated |
| | | ToC | Page numbers update |
| | | All paragraphs | Links updated |
| 2.4 | June 2020 | 2.3 NTA/NTP<br><br>2.3 NTA | Drift from applications of herbicides on field edges<br><br>Use of VDF in the off-field risk assessment: only for foliar arthropods. |
| 2.5 | August 2021 | 2.3 NTA/NTP | **PLEASE NOTE THAT THE CHANGES MADE TO THE AUGUST 2021 VERSION OF THE EVALUATION MANUAL WILL ENTER INTO FORCE FOR DOSSIERS SUBMITTED FROM JANUARY 2022 ONWARDS**<br><br>Implementation of the Wageningen Drift Calculator, including drift differentiation for downward sprayed crops and an update of the drift database.<br><br>Other changes to the section on national spray drift values:<br>- Clarification of drift deposition values and mitigation for uses not covered by the agricultural part (3.5) of the Activity Decree<br>- Clarification of the starting position of the assessment for soft fruits etc. |
| 2.6 | July 2022 | 2.3 | Addition of strip cultivation for the warning sentence on the WG about possible harm for natural enemies when using a product |
| 2.7 | February 2023 | | Further clarification added on the use of the VDF. |

## GENERAL INTRODUCTION

This chapter describes the data requirements for estimation of the effects on terrestrial organisms of a Plant protection product and its active substance in the NL framework (§2 - §2.5).

This chapter consists of two parts: a part about non-target arthropods (I) and a part about non-target plants (II).

# I NON TARGET ARTHROPODS

## 2 NL FRAMEWORK

The NL framework (§2 - §2.5) describes the authorisation procedure for plant protection products based on existing substances, included Commission Implementing Regulation (EU) No 540/2011 and new active substances. A new substance is a substance not authorised in any of the Member States of the EU on 25 July 1993.

The plant protection product that contains such substances may be authorised if the criteria laid down in the Regulation (EC) No 1107/2009 are met, also taking into account the national stipulations described in the Bgb (Plant protection products and Biocides Decree) . The evaluation dossiers must meet the requirements in Commission Regulation (EU) No 283/2013 and Commission Regulation (EU) No 284/2013 implementing Regulation (EC) No 1107/2009 (see Application Form and corresponding instructions).

A Member State may deviate from the EU evaluation on the basis of agricultural, phytosanitary and ecological, including climatological, conditions which are specific for the Netherlands.

The NL framework describes the data requirements (§2.2), evaluation methodologies (§2.3), criteria and trigger values (§2.4) for which specific rules apply in the national approval framework or when the national framework has been elaborated in more detail than the EU framework.

The NL procedure described in §2 - §2.5 of this chapter can also be used for evaluation of a substance for approval, and consequently inclusion in Commission Implementing Regulation (EU) No 540/2011 in case no European procedure has been described.

### 2.1 Introduction

This chapter describes the data for arthropods for which specific rules apply in the national approval framework or when the national framework has been elaborated in more detail than the EU framework.

A NL-specific methodology deviating from the EU evaluation methodology, is followed for the aspect arthropods as regards the estimation of off-field exposure. This concerns the use of national drift percentages as well as a national system of drift-reducing measures.
This serves to meet the specific NL conditions (climatological conditions; specific standard drift-reducing measures packages from the Activity Decree (expected January 2017).
This is elaborated in §2.3.

The other points described in this chapter concern further elaborations of the EU procedure. This in particular concerns the risk assessment for arthropods that are used as natural enemies in integrated pest management (IPM) (see §2.3).

A decision tree with corresponding explanatory notes is presented in Appendix 1.
This decision tree shows the decision scheme for arthropods in integrated pest management systems.

## 2.2 Data requirements

The data requirements for chemical Plant protection products are in agreement with the provisions in EU framework (see §1.2 of the EU part).

Experiments carried out after the 25th of July 1993 must have been carried out under GLP.

There may be no doubt about the identity of the tested product or the purity of the tested substance for each study.

## 2.3 Risk assessment

The evaluation methodologies for chemical Plant protection products comply with the description under EU framework (see §1.3 of the EU part).

Some NL-specific aspects (drift, natural enemies, VDF), however, are considered nationally:

*Drift*
National drift figures can be applied on the basis of article 8f of the Bgb (Plant protection product and Biocides Decree). Ctgb bases the exposure assessment on average spray drift values determined by WPR (Wageningen Plant Research, formerly WUR-PRI).

*Artikel 8f. Driftcijfers*

Bij de risicobeoordeling voor waterorganismen, vogels, zoogdieren, niet-doelwitarthropoden, niet-doelwitplanten of oppervlaktewater bestemd voor de bereiding van drinkwater, hanteert het college specifieke driftcijfers. Het college stelt deze cijfers vast en maakt hen bekend op zijn website.

**General**
The proposed spray drift percentages are derived from research by the Wageningen UR division Plant Research (WUR-PRI).

On an individual basis an applicant/registration holder can request Ctgb to consider additional spray drift-mitigation measures and corresponding spray drift percentages for a particular application. These spray drift percentages must be supported by reliable scientific data.
The additional measures should be realistic and enforceable. Below, specific mitigation options are described per crop/application type.

***Change in Activity Decree and introduction of DRT classes***
A major general change affecting the use of spray drift values in the assessment of plant protection products is the Entry into force of the new Activity Decree (Activiteitenbesluit), per January 2018, including the introduction of drift reducing technology (DRT) classes. Individual techniques are classified into groups of techniques with a minimum drift reduction. The list of these DRT classes and techniques that fall into these classes is available at Helpdesk Water (Dutch version only).

The standard requirement for field applications (downward sprayed crops, fruit culture and lane tree cultivation) is the use of a 75% reducing technique on the whole field.
Please note that Ctgb considers that in view of the changed definition in the Activity Decree any additional drift reduction resulting from the authorisation assessment also applies to the

whole field in line with the recommendations of the working group Eenduidige voorschriften.
**Implementation of the Wageningen Drift Calculator (obligatory for dossiers submitted from January 2022 onwards, accepted from August 2021 onwards)**

*Description/aim and scope*
In 2021 the Wageningen Drift Calculator (WDC) was released by WPR commissioned by the Ministry of Agriculture, Nature and Food Quality. This tool integrates the drift deposition values from all available Dutch drift measurements of WPR for agricultural crops (downward sprayed arable crops, fruit culture and lane tree cultivation) for the different non-target zones (surface water/aquatic organisms, terrestrial non-target organisms). The full drift dataset has been re-fitted to generate drift curves for each DRT class.

The tool allows for selecting additional DRT classes and additional crop free buffer zones so that tailored refined drift deposition values can be proposed for authorisation for use in the exposure/risk assessment and for inclusion on the label. This hence replaces the former procedure of submitting tailor-made drift reports for specific situations in which a refinement of the generic drift deposition values was required.

For downward sprayed crops, a differentiation in minimum crop free zones (not relevant for NTA and NTP since the evaluation zone is based on a fixed distance from the last crop row) and the position of the last nozzle with respect to the last crop row is implemented.

As a result of the implementation of the WDC including the latest drift database, the drift deposition values have changed (and for downward sprayed arable crops also differentiated). Therefore the tables in the Evaluation Manual presenting the default drift deposition values for the various DRT classes to be used in the exposure assessment have been updated. Further drift refinement options including crop free buffer zones (with steps of (a multiple of) 25 cm) can now be looked up in the WDC.

Please note that currently policy developments take place that will include a decision on the upper limits with regard to crop free (buffer) zone and DRT class that can be used for the authorisation of plant protection products. Awaiting the outcome of those policy developments, the following boundary with regard to the maximum allowable crop free zone is to be taken into account, based on current practice:

- The maximum allowable crop free zone for downward sprayed arable crops is 4 meter, as it is based on expert judgement of Dutch agronomic circumstances and common sense not realistic to assume that wider crop free zones will be applied in Dutch agriculture. See also Assessment of topics with regard to specific agricultural use in the Netherlands | Assessment framework PPP | Board for the Authorisation of Plant Protection Products and Biocides (ctgb.nl) (issue 2). .

*Applicability*
**The drift deposition values included in the WDC are valid for professional uses in crops that are agriculturally cultivated and cannot be applied to other professional non-agricultural uses of plant protection products, nor non-professional use.**
The tool provides drift values for the reference/benchmark technique for DRT classes and does not provide drift deposition values for individual techniques.

For professional non-agricultural uses, a default conservative estimate drift deposition value is extrapolated from the conventional technique for downward spraying of agricultural crops in the absence of data. This value can be used as a first step in exposure/risk assessment. However, if refinements of these values is required a substantiation should be provided accounting for the specific application techniques for that use. See the separate section on

*Field crops and uses not covered by the Activity Decree.*

The WDC does not include drift deposition for non-professional uses. For handheld spraying (mostly used for non-professional uses, but also potentially used in specific manual applications for professional use) refer to the separate section on *Handheld application.*

For further information on the tool, please refer to the WDC manual.

**Explanation per crop/application**

For all crop types the following applies in case additional crop free zones are necessary: the 'off-field' area only starts after the crop-free zone and the drift percentage should be determined at a distance as large as the crop-free zone. In case natural objects have been placed to reduce the amount of drift (e.g., wind hedge) this object should not be considered as part of the off-field area that needs to be protected. It must be kept in mind that those crop-free zones and natural objects in many cases are only applied on those parts of fields which border watercourses.

***Crops/applications regulated in the Activity Decree***

**Downward sprayed field crops (including downward sprayed forest trees and hedging plants, and flower bulbs)**
Drift deposition values are used to estimate the exposure on the off-field evaluation zone for non-target arthropods. This is the amount of drift at 1 m from the centre of the last crop row (evaluation zone is 0.5 – 1.5 m). With the entry into force of the revised Activiteitenbesluit (2018, Activity Decree) a 75% drift reducing technique on the whole field has to be applied.

For applications in which no drift reduction is requested in principle the boundary conditions defined by the Activity Decree apply. The aim laid down in the Activity Decree for downward sprayed crops is 75% spray drift reduction. This drift reduction can be achieved by applying spray techniques of a certain drift reduction class (DRT class). These DRT classes have been established by the TCT (Technische Commissie Techniekbeoordeling) in collaboration with WPR (Wageningen Plant Research) within the framework of the Activity Decree.
If further spray drift reduction than 75% is necessary to meet the ecotoxicological threshold values, the use of refined drift deposition values can be proposed. Those refinements can exist of further drift mitigation by using higher (i.e. more reducing) DRT classes or a crop free buffer zone or a combination of both. If a combination of a DRT class and an additional crop free zone is needed to achieve an acceptable risk then the WDC tool can be further consulted.

For each DRT class a benchmark (reference) technique has been assigned on the basis of their spray drift reduction percentage. Reference techniques for downward spraying are defined in WPR report 419[1].

With regard to the drift deposition values for non-target arthropods, a distinction is made on the basis of the position of the last spraying nozzle with respect to the last crop row, which can be positioned at 25 cm inside the crop, exactly above the last crop row, or 12.5 cm outside the crop, depending on the specific cultivation characteristics. Additionally, there are two different

[1] Zande, J.C van de, H.J Holterman & J.F.M Huijsmans. 2012. Spray drift for the assessment of exposure of aquatic organisms to plant protection products in the Netherlands. Part 1: field crops and downward spraying . WUR-WPR Report 419, Wageningen. Table 4, page 18.

drift deposition curves available for two contrasting crop situations: bare soil/short crop (early BBCH stages, crop height < 20 cm) and established crop (higher BBCH stages, crop height ≥ 20 cm). For each arable crop in the DTG list the WDC contains an entry for the BBCH stage at which the transition of the bare soil/low crop stage to the established crop stage takes place. Depending on the crop stage the values from the applicable drift curve should be selected. In cases in which the application window exceeds the boundary at which the crop height is 20 cm, the most conservative drift deposition value of the two drift curves should be used for the assessment.

Spray drift deposition values for the different drift reducing technique classes are presented in Table 1a (bare soil/short crop stage) and 1b (established crop stage).

Please note that the drift reduction percentage was established on the basis of the drift deposition at the evaluation zone for surface water in the DRT classification methodology. Therefore the DRT classes do not always correspond to the reduction that is achieved at the evaluation zone for non-target arthropods, which is closer to the crop.
This has been considered in the WDC (see WDC manual, section 2.5) by comparing the drift deposition values for different DRT classes and if this leads to an inconsistent pattern (e.g., increasing DRT class does not lead to lower drift deposition values but instead to higher ones) then always the most conservative value is used for all classes in which the inconsistency is noted. Due to this approach, a higher DRT class does not always lead to a lower drift deposition value.

**Table 1a: Spray drift values for DRT classes in arable crops– downward spraying, bare soil/short crop stage (< 20 cm)**

| DRT class | Last nozzle position | NTA standard evaluation zone (50-150 cm) |
|---|---|---|
| DRT75 | -25 cm | 5.1 |
| DRT90 | | 5.1 |
| DRT95 | | 5.1 |
| DRT97.5 | | 1.6 |
| DRT99 | | 1.6 |
| DRT75 | 0 cm | 9.9 |
| DRT90 | | 9.9 |
| DRT95 | | 9.9 |
| DRT97.5 | | 6.0 |
| DRT99 | | 6.0 |
| DRT75 | 12.5 cm | 13.8 |
| DRT90 | | 13.8 |
| DRT95 | | 13.8 |
| DRT97.5 | | 10.3 |
| DRT99 | | 10.3 |

**Table 1b: Spray drift values for DRT classes in arable crops– downward spraying, established crop stage (≥ 20 cm)**

| DRT class | Last nozzle position | NTA standard evaluation zone (50-150 cm) |
|---|---|---|
| DRT75 | -25 cm | 8.8 |
| DRT90 | | 8.8 |
| DRT95 | | 8.8 |

| | | |
|---|---|---|
| DRT97.5 | | 1.6 |
| DRT99 | | 1.6 |
| DRT75 | 0 cm | 17.4 |
| DRT90 | | 17.4 |
| DRT95 | | 17.4 |
| DRT97.5 | | 7.7 |
| DRT99 | | 7.7 |
| DRT75 | 12.5 cm | 23.6 |
| DRT90 | | 23.6 |
| DRT95 | | 23.6 |
| DRT97.5 | | 14.4 |
| DRT99 | | 14.4 |

It is possible to combine DRT classes with an additional crop-free zone. If for example the evaluation zone lies at 50 – 150 cm and drift reduction measures are only sufficient at a distance of 100 – 200 cm, an additional crop-free zone of 0.5 m may be added. Keep in mind that crop-free zones are rounded to multiples of 25 cm (e.g. an additional crop-free zone of 60 cm becomes 75 cm).

If an additional crop-free zone is chosen as a drift reduction measure, the total crop-free zone must be determined (measured from the middle of the last crop row till the edge of the parcel). The standard crop-free zone is 1.0 m. Hence, in the case of an additional crop-free zone of 0.5 m the total crop-free zone is 1.5 m. For further clarity, an example for text on the label is given below:
*- Een techniek uit tenminste de klasse DRT75 in combinatie met een teeltvrije zone van tenminste 150 centimeter (gemeten vanaf het midden van de laatste gewasrij of de laatste plant in de rij tot aan de perceelgrens) op het gehele perceel.*

**Fruit crops (including soft fruit, tree nuts and hop cultivation)**

***Upward and sideways spraying***

***Large fruit (pome- and stone fruit/top fruit, DTG crop group 3.1)***
The aim laid down in the Activity Decree for fruit culture is 75% spray drift reduction when applying a crop free zone of 4.5 meter, or 90% spray drift reduction when applying a crop free zone of 3 meter. This drift reduction can be achieved by applying spray techniques of a certain drift reduction class (DRT class).
For each DRT class a benchmark (reference) technique has been assigned on the basis of their spray drift reduction percentage. Reference techniques for each DRT class are defined in WUR-WPR report 564[2].
The absolute spray drift deposition values for those reference techniques are used for the exposure assessment and are presented in table 2a.

For applications for which no drift reduction is requested the boundary conditions defined by the Activity Decree apply. For the non-target arthropods assessment for fruit this comes down

[2] Zande, J.C. van de, H.J. Holterman, J.F.M. Huijsmans & M. Wenneker. 2019. Spray drift for the assessment of exposure of aquatic organisms to plant protection products in the Netherlands. Part 2: Sideways and upward sprayed fruit and tree crops. Wageningen UR, WPR Report 564, Wageningen. 2019.

to the use of the spray drift deposition values of DRT90 in combination with 3 m crop free for the full leaf stage (3.9% spray drift deposition), and the spray drift deposition values of DRT75 in combination with a crop free zone of 4.5 meter for the dormant stage (13.1% spray drift deposition).

An exception to the rules of the Activity Decree is the biological cultivation, which may use a crop free zone of 3 meter with a spray drift reduction of 75%. If for a product for which an application for authorisation is made it is clearly indicated on the label (instructions for use) to be applicable for biological cultivation, Ctgb will use the spray drift values relevant for this situation. Any required additional mitigation should then be stated on the label.
These values are valid for *fungicide* and *insecticide* treatments. See Table 2a.

***Soft fruit (berries and grapes, DTG crop group 3.2.2 (excluding cranberry), 3.2.3, 3.2.4)***
Based on an inventory report by WUR-WPR[3] it was decided in 2014 that for sideways or upwards sprayed soft fruit (grapes and berries) the large fruit spray drift values are used. For all application periods, only the full-leaf values are used. This is done to acknowledge the difference between large fruit and small fruit as established by Rautmann and Ganzelmeier (basis for EU spray drift values) to some extent.
With regard to the crop-free zone it is concluded in the WUR-WPR 398 report that although according to the Activity Decree the obligatory distance to the ditch for small fruit is only 0.5 m, in practice the distance is about 3 meter. This is in line with the minimum distance set for large fruit. Therefore the use of the spray drift values of large fruit (minimal crop-free zone 3 m) is defensible at this stage.
However it should be noted that for soft fruit the Activity Decree only prescribes the use of DRT75. Therefore the starting position for the exposure assessment is not -like for large fruit- a combination of DRT90 and 3 meter crop free zone OR a combination of DRT75 and 4.5 meter crop free zone. Instead for soft fruit that is sprayed upward or sideways the starting point is DRT75 with 3 meter crop free zone. See Table 2a.
As the minimum crop free zone of 3 meter is not explicitly stated in the Activity Decree, but is the basis for the drift deposition values used for the assessment, the crop free zone should always be specified on the label.

Please note that with regard to spray drift mitigation not all techniques are realistic for application in soft fruit, which is often cultivated under certain types of coverage (please note this also applies to cherry). Applicants should take this into account when proposing the use of certain DRT classes and make sure that an appropriate technique for soft fruit is available in that class. For instance, the use of KWH 3-row sprayers is not feasible for soft fruit like berries.

The use of the full-leaf spray drift values for large fruit also for small fruit must be seen as a transition phase until sufficient actual measurements leading to separate spray drift values for soft fruit are available.

***Tree nuts and other fruits (DTG crop group 3.3 and 3.4)***
The same issue as for soft fruit is valid for tree nuts and other fruits (DTG crop group 3.3, 3.4) : the Activity Decree only prescribes the use of DRT75. Therefore the starting position for the exposure assessment is not a combination of DRT90 and 3 meter crop free zone OR a combination of DRT75 and 4.5 meter crop free zone, as it is for large fruit.
Therefore also for tree nuts and other fruits the starting point is DRT75 with 3 meter crop free

[3] Van de Zande J.C., M. Wenneker, A. de Bruine. 2011. Inventarisatie kleinfruitteelten en afleiden driftdepositie en maatregelpakketten. WPR report 398.

zone, as described above for soft fruit.
However for tree nuts and other fruits both the dormant stage and the full-leaf stage drift deposition values are used. See Table 2a.
As the minimum crop free zone of 3 meter is not explicitly stated in the Activity Decree, but is the basis for the drift deposition values used for the assessment, the crop free zone should always be specified on the label.

***Hop cultivation (under DTG crop group 1.11.1)***
For the sideways and upward application in hop no spray drift deposition values are available.
Hop cultivation in The Netherlands is usually 3-4 meter high (Limburg)
For the assessment, the values applicable to tall fruit in the dormant stage are used, based on expert judgement of WPR (personal communication, 2014).
The same issue as for soft fruit is valid for hop the Activity Decree only prescribes the use of DRT75. Therefore the starting position for the exposure assessment is not a combination of DRT90 and 3 meter crop free zone OR a combination of DRT75 and 4.5 meter crop free zone, as it is for large fruit. Therefore also for hop the starting point is DRT75 with 3 meter crop free zone. See Table 2a.
As the minimum crop free zone of 3 meter is not explicitly stated in the Activity Decree, but is the basis for the drift deposition values used for the assessment, the crop free zone should always be specified on the label.
Please note that with regard to spray drift mitigation not all techniques are realistic for application in hop. For instance the use of drift reducing nozzles that lead to very coarse droplets is not recommended, since they will not reach the top of the crop. Applicants should take this into account when proposing the use of certain DRT classes and make sure that an appropriate technique for hop cultivation is available in that class.

*Spray drift mitigation techniques and spray drift deposition values*
See Table 2a and 2b for a description of the spray drift deposition values belonging to the various DRT classes for large fruit (upwards/sideways spraying and downward spraying). These values are valid for non-target arthropods and non-target plants since the evaluation zone is the same.

Spray drift deposition values for the different drift reducing technique classes are presented in the table below for the standard crop free zones (3 meter and 4.5 meter). If a combination of a DRT class and an additional crop free zone is needed to achieve an acceptable risk then the WDC tool can be further consulted.

**Table 2a: Spray drift values for DRT classes for upwards/sideways spraying in fruit crops for non-target arthropods and non-target plants**

| **Spray drift percentage [%]** | | | | |
|---|---|---|---|---|
| **Individual techniques/DRT classes** | **Crop-free zone of 3 m** | | **Crop-free zone of 4.5 m** | |
| | Without leaves (dormant) | with leaves (full-leaf) | Without leaves | with leaves |
| Standard orchard sprayer* | 32.0 | 17.9 | 24.5 | 13.7 |
| DRT75 | 20.9**,*** | 6.9**,**** | **13.1** | 3.5 |
| DRT90 | 9.5 | **3.9** | 4.2 | 1.9 |
| DRT95 | 9.4 | 2.3 | 2.5 | 0.70 |

| | | | | |
|---|---|---|---|---|
| DRT97.5 | 9.4 | 0.67 | 2.5 | 0.22 |
| DRT99 | 4.6 | 0.36 | 1.0 | 0.12 |

* relevant for non-professional use in the absence of drift values for knapsack/ready to use upward-sideways spraying as a first conservative estimate

** relevant for biological production (see Activity Decree, article 3.80, 4c, sub 3, will be used when relevant)

*** relevant for upward/sideways spraying of hop (under DTG crop group 1.11.1) since the Activity Decree only prescribes DRT75 for this crop (not under large fruit), in combination with a minimum crop free zone of 50 cm (other crops). In practice the crop free zone in these cultivations will be 3 meter (expert judgement on the agronomic minimum crop free zone), therefore the use of DRT75 in combination with 3 meter CFZ will be the starting point for the assessment. Also relevant for nut trees and other fruits (DTG crop group 3.3 and 3.4) when in dormant stage

**** relevant for soft fruit (grapes, berries etc., DTG crop group 3.2.2 (excluding cranberry), 3.2.3 and 3.2.4) since the Activity Decree only prescribes DRT75 for these crops (not under large fruit), in combination with a minimum crop free zone of 50 cm (other crops). In practice the crop free zone in these cultivations will be 3 meter (expert judgement on the agronomic minimum crop free zone), therefore the use of DRT75 in combination with 3 meter CFZ will be the starting point for the assessment. Also relevant for nut trees and other fruits (DTG crop group 3.3 and 3.4) when in full leaf stage

**Downward spraying (herbicides)**

For *herbicide* use in fruit cultivation, downward spraying –complying to a minimum drift reduction of 75%- is applicable.

For the herbicide application in orchards the values remain unchanged (not included in the WDC), see Table 2b.

**Table 2b: Spray drift values for DRT classes for downward spraying in fruit crops for non-target arthropods and non-target plants**

| **Herbicide use in orchards (downward spraying)** | | | |
|---|---|---|---|
| | | **3 m crop free zone** | **4.5 m crop free zone** |
| “Zwartstroken” (bare soil surface strip underneath tree) | **DRT75** | **0.014** | **0.010** |
| | **DRT90** | 0.007 | 0.007 |
| “Grasstroken” (grass surface area in orchard up till 0.50 m from edge of surface water) | **DRT75** | **2.0** | **2.0** |
| | **DRT90** | 0.05 | 0.05 |

As in practice it cannot be excluded that this application is performed using normal tractor mounted spraying equipment, the following restriction sentence should be stated when the risk assessment is based on these specific drift deposition values:

*Om …. te beschermen, is toepassing in de teelt van […] (op percelen die [niet] grenzen aan oppervlaktewater) uitsluitend toegestaan indien op het gehele perceel gebruik wordt gemaakt van een techniek voor neerwaartse onkruidbestrijding in fruitteelt en boomteelt (followed by the mentioning of the DRT class, if DRT75 does not suffice).*

There are no specific drift rates for non-professional use in fruit crops.

## Lane trees

### *Upward and sideways spraying*

For the growth of lane trees, separate drift percentages are used based on research by WUR-WPR, A distinction is made between high lane trees, the growth of “spillen” (spindles; closely spaced trees) and “opzetters” (transplanted trees; widely spaced trees) because of the differences in tree shape, and the resulting differences in drift emission. Spindles form dense rows (plant distance 30 cm), whilst transplanted trees are planted further apart (1 m plant distance), are taller, and often have bare lower trunk.

See Table 3a for a description of the spray drift deposition values for lane tree cultivation. These values are valid for fungicide and insecticide treatments (sideways and upwards).
The aim laid down in the Activity Decree for lane tree cultivation is 75% spray drift reduction. This drift reduction can be achieved by applying techniques of a certain spray drift reduction class (DRT class). These DRT classes have been established by the TCT in collaboration with WPR within the framework of the Activity Decree.
For each DRT class a benchmark (reference) technique has been assigned on the basis of their spray drift reduction percentage. Reference techniques are defined in WPR report 564[4].

The absolute spray drift deposition values for those reference techniques are used for the exposure assessment and are presented in the below table.
For applications in which no spray drift reduction is requested the boundary conditions defined by the Activity Decree apply. For the assessment for lane trees this comes down to the use of the spray drift deposition values of DRT75.

Please note that currently there are no DRT75 techniques approved for spindles and transplanted trees, only for high lane trees. This means that for spindles and transplanted trees the farmer should in practice use DRT90, since it is obliged to comply with the Activity Decree. For risk assessment, however, the following approach applies, since it cannot be excluded that DRT75 techniques will be developed in the (near) future:

- The initial assessment can be based on the values for the standard application technique and the standard crop-free zone. If this leads to an acceptable risk, then no restriction is required on the label.
- If a DRT90 technique is required to arrive at an acceptable risk, then this technique should be stated on the label, since it is more than the requirement from the Activity Decree.
- If a higher reduction is required (*i.e.*, a higher DRT class and/or additional crop-free zone) then this should also be on the label.

[4] Zande, J.C. van de, H.J. Holterman, J.F.M. Huijsmans & M. Wenneker. 2019. Spray drift for the assessment of exposure of aquatic organisms to plant protection products in the Netherlands. Part 2: Sideways and upward sprayed fruit and tree crops. Wageningen UR, WPR Report 564, Wageningen. 2019.

Please note that the reduction percentage was established on the basis of the drift deposition at the evaluation zone for surface water. Therefore the DRT classification does not always correspond to the reduction that is achieved at the evaluation zone for non-target arthropods and non-target plants, which is clearly demonstrated by the drift figures for the 1.5/2m distances in Table 3a.

For applications in which no spray drift reduction is requested the boundary conditions defined by the Activity Decree apply. For the assessment for lane trees this comes down to the use of the spray drift deposition values of DRT75 (not available for all lane tree stages).
In this table also a distinction is made between drift percentages corresponding with a crop-free zone of 5 meter (according to the Activity Decree) and a crop-free zone of 1.5/2 meter, which is the agronomic minimum. This has been done, since a crop-free zone of 5 meter is only obliged in the case of field edges bordering surface water. Hence, on all edges of the field not bordering surface water only a crop-free zone of 1.5 (spindle trees) or 2 meter (transplanted trees and high lane trees) is necessary. This means that in practice in risk assessments the drift percentages at 1.5 or 2 meter must be used, because in the great majority of cases not all edges of a field will border surface water.

If more than 75% drift mitigation is required to achieve an acceptable risk, this will always lead to a restriction sentence:
*Om niet tot de doelsoorten behorende insecten/geleedpotigen/terrestrische planten te beschermen is toepassing in de teelt van […] uitsluitend toegestaan indien op het gehele perceel gebruik wordt gemaakt van een techniek uit tenminste de klasse DRTxx [in combinatie met een teeltvrije zone van tenminste xx centimeter gemeten vanaf het midden van de laatste bomenrij of de laatste boom in de rij tot aan de perceelgrens].*

Spray drift deposition values for the different drift reducing technique classes are presented in the table below, when available. These values are valid for non-target arthropods and non-target plants since the evaluation zone is the same.

If a combination of a DRT class and an additional crop free zone is needed to achieve an acceptable risk then the WDC tool can be further consulted.

**Table 3a: Spray drift values for DRT classes (and separate techniques on the basis of transitional measures laid down in the Activity Decree) for upwards/sideways spraying in lane trees for non-target arthropods and non-target plants**

| **Spray drift-mitigation technique lane trees** | **Crop-free zone of 5 m ( Activity Decree)** | **Crop-free zone of 1.5/2 m (agronomic minimum zone)*** |
|---|---|---|
| **Type of lane trees (stage)** | **NTA/NTP: field borders adjacent to surface water** | **NTA/NTP: field borders not adjacent to surface water** |
| **High lane trees (>5 meter)** | | |
| standard sprayer ** | 12.0 | 37.8 |
| DRT75 | 2.6 | 5.4 |
| DRT90 | - | - |
| DRT95 | 0.65 | 2.7 |
| **Transplanted trees** | | |
| standard sprayer ** | 5.6 | 27.7 |
| DRT75 | - | - |
| DRT90 | 0.88 | 23.6 |
| **Spindle trees** | | |

| | | |
|---|---|---|
| standard sprayer ** | 1.2 | 9.2 |
| DRT75 | - | - |
| DRT90 | 0.09 | 9.2 |

* 1.5 m for spindle trees and 2 m for transplanted trees and high lane trees

** relevant for non-professional use in the absence of drift values for knapsack/ready to use upward-sideways spraying as a first conservative estimate. Also relevant for spindle trees and transplanted trees as starting point of the assessment, in the absence of a technique of the class DRT75

**Downward spraying (herbicides)**
For *herbicide* use in lane trees, downward spraying –complying to a minimum drift reduction of 75%- is applicable.
For the herbicide application in lane tree cultivation the values remain unchanged (not included in the WDC), see Table 3b.

**Table 3b: Spray drift values for DRT classes for downward spraying in lane trees for non-target arthropods and non-target plants**

| Herbicide use in tree nursery (downward spraying) | | NDA/NDP |
|---|---|---|
| soil surface underneath trees and up till 0.50 m from edge of surface water | **DRT75** | **2.0** |
| | **DRT90** | 0.05 |

As in practice it cannot be excluded that this application is performed using normal tractor mounted spraying equipment, the following restriction sentence should be stated when the risk assessment is based on these specific drift deposition values:
*Om …. te beschermen, is toepassing in de teelt van […] (op percelen die [niet] grenzen aan oppervlaktewater) uitsluitend toegestaan indien op het gehele perceel gebruik wordt gemaakt van een techniek voor neerwaartse onkruidbestrijding in fruitteelt en boomteelt (followed by the mentioning of the DRT class, if DRT75 does not suffice).*

When it concerns a handheld spraying boom a drift percentage of 3.3% is used.

There are no specific drift rates for non-professional use in tree nursery.

**Field crops and uses not covered by the Activity Decree (non-agricultural uses)**
Several uses that can be applied for in authorisation applications do not fall within the scope of the Activity Decree (section 3.5, agricultural activities). For those uses a conservative first tier estimate in the absence of drift measurements is used, based on the value for a conventional downward spraying technique in agriculture as an approximation.
For downward sprayed professional applications (not hand held equipment) not regulated in the Activity Decree a drift percentage of 10% (based on WUR-PRI 149[5]) is used for the off-crop assessment of non-target arthropods.
However, if for these uses further mitigation is required a substantiation should be submitted in which proposed drift deposition values are relevant for the used techniques in the pertinent use and underpinned by experimental data or statements. DRT classes cannot be used unless it is demonstrated that the proposed DRT class contains a relevant and custom application technique for that use.

[5] Van de Zande et al. 2007. Spray drift and off-crop evaluation of agrochemicals in the Netherlands. WUR-PRI 149.

This concerns the following DTG crop (sub) groups:
7.6 (Marsh and water plants)
8 (8.1 Managed amenity turf*, 8.2 Woody plantings, 8.3 Herbaceous plantings)
9 (forestry)
10 (Uncultivated land)

- *please note that a small part of this use group, i.e., temporarily uncultivated land ('braakliggend land', under 10.1 temporarily uncultivated terrain ) is mentioned in the Activity Decree section 3.5*

11 (Water courses) – for direct application to 11.3 (*Water courses which contain water*) and 11.5 (*Ponds)* a drift deposition of 100% should be used
12 (Reed and osier crops)
13 (Refuse heaps).

** In case that drift mitigation measures are necessary, the following special restriction sentence should be applied: Om niet tot de doelsoorten behorende insecten/geleedpotigen te beschermen is toepassing van dit middel uitsluitend toegestaan indien op het gehele perceel gebruikt gemaakt wordt van een techniek uit tenminste de klasse DRTxx in combinatie met een afstand van tenminste xxx centimeter waarin geen bespuiting mag plaatsvinden, gemeten vanaf de rand van de grasmat tot aan de zone waar zich niet-doelwit insecten/geleedpotigen bevinden.*

**Handheld application**
Drift deposition values for handheld equipment are extrapolated from a specific spraying technique, which is often used in specific regions (i.e. on small parcels in the Boskoop region (tree nursery crops, forest trees and hedging plants)), *i.e.*, a hand-held spray boom sprayer with a crop free zone of 0.50 m.
From those field experiments (IMAG Nota 98-31[6]) the following spray drift values are available for knapsack application (*rugspuit/spuitlans*):
- 3.46 % for standard nozzle.
- 1.15 % for 50 % spray drift reducing nozzle or a shielded standard spray nozzle.

These spray drift values are used for assessments of handheld applications by non-professional users. However, in some cases also in professional uses handheld application is performed. In principle the same values apply (for downward spraying).

- Professional applications, handheld equipment, knapsack application (*rugspuit/spuitlans*)
  Handheld applications are not regulated in the Activity Decree. For professional applications with handheld equipment a drift percentage of 3.46% applies. Drift reduction is possible by applying a protection shield or a 50% nozzle; the drift is then reduced to 1.15% (based on a crop-free zone of 0.50 m).
- Non-professional applications
  Handheld equipment will particularly be relevant for applications by non-professional users. Also in this case a drift percentage of 3.46% applies when using a *rugspuit/spuitlans.*
  When a small spraying can (*e.g.,* ready-to-use bottle) is used a value of 1.73% is used. This value is half of the value used for hand held equipment without mitigation (see above). However, in the case of non-professional applications drift reduction measures are not prescribed, because these measures cannot be enforced and it is questionable if users really apply these measures.

Please note that these values for handheld equipment are only to be used in downward

[6] Driftreductie in de lage boomteelt bij een bespuiting met een handgeduwde spuitboom, een afgeschermde spuitboom en een dichte afscherming op de perceelsrand, IMAG nota 98-31

sprayed crops. If application is made sideways or upward e.g. in fruit trees or lane trees, these values do not apply. In the absence of estimates for drift deposition values in fruit and lane trees for the use of a knapsack or small spraying cans a conservative value is used on the basis of the standard techniques for these crops. Refer to tables 2a and 3a above.

**Applications of herbicides on field edges**

These applications can be considered as done in the off-crop area and the exposure of the off-crop area will be much higher than for regular applications.
It concerns the following applications (based on DTG-list):

| Gewas | Crop |
|---|---|
| 8.1 Grasvegetatie<br>**- Grasbermen** | 8.1 Managed amenity turf<br>**Grassy verges** |
| 8.2 Houtige beplanting<br>**- Windsingels en -schermen en –hagen**<br>**- Overige houtige beplantingen (bosplantsoen en wegbeplanting)** | 8.2 Woody plantings<br>- **Shelter belts, windbreaks and hedgerows**<br>**- Other woody plantings (forest trees and roadside verges)** |
| 10.1 Tijdelijk onbeteeld terrein<br>- **Akkerranden** | 10.1 Temporarily uncultivated terrain<br>- **Buffer areas of fields** |
| 10.2 Permanent onbeteeld terrein<br>- **Onverhard terrein** | 10.2 Permanently uncultivated land<br>- **Unpaved surfaces** |
| 11.1 (droog) Talud | 11.1 (dry) slope |

Below a pragmatic approach is described how to deal with the drift percentages of these applications on the evaluation zone for non-target arthropods:

For non-target arthropods the regular assessment of the off-field risk is done on an evaluation zone close to the crop (0.5 - 1.5 meter from the middle of the last crop row or the last plant in the row). It can be assumed that for applications on the field edges the spraying occurs in the evaluation zone. For that reason the drift to be used in the risk assessment for non-target arthropods should be 100%. Note that although drift is assumed to be 100%, the evaluation zone is still considered as off-field, i.e. the off-field criteria for risk assessment still apply. Drift reduction measures are not applicable.

**Applications without drift**

A drift percentage of 0% applies for:
1) Enclosed spaces (not greenhouses):
   a. storage cells and
   b. shower rooms and comparable enclosed spaces;
2) witloof/chicory (forcing)
3) Specific field applications:
   a. application of granules using a specially mounted granule sprinkler,
   b. drenching,
   c. dipping,
   d. foaming,
   e. placing of bait,
   f. injection of soil/plant,
   g. treatment of plant base
   h. smearing,
   i. jointing,
   j. treatment of furrow,

k. dosing pistol or comparable apparatus, and
l. seed treatment.

*Natural enemies*
The decision scheme and risk-mitigation measures mentioned in EU context (Guidance Document on Terrestrial Ecotoxicology (Sanco/10329/2002 rev 2 final)) apply for non-target arthropods in general. Other 'in-field' criteria apply where natural enemies ('beneficials') in integrated pest management systems (such as greenhouse crops, fruit growing, tree nursery crops) are concerned and when strip cultivation is applied (in vegetable and arable crops).

Effects on beneficials higher than or equal to 30% in the first tier and effects higher than or equal to 25% for higher tiers are in that case not acceptable, even if recovery occurs at short term. This means that in case of exceedance of the criteria a warning phrase must be included in the WG (Statutory Use Instructions), to avoid damage to natural enemies when used by the grower.

*Combination toxicity*
Combination toxicity must be determined when plant protection products contain several active substances. The issue of combined toxicity is further described in Appendix A.

*Use of VDF in the risk assessment - value*
In the ESCORT 2 Guidance Document, a vegetation distribution factor (VDF) is used in the exposure calculations for the off-field risk. As stated in the EU-part of this EM Chapter 7, for EU-active substance assessments and for zonal product assessments (core assessment), the VDF of 10 has to be applied until the guidance has been updated. For assessments in national addenda it is depending on the Member State if a VDF of 5 or 10 is applied. Therefore, below an explanation is given on the VDF-value that will be used by Ctgb in the NL-addendum.

The ESCORT 2 Guidance Document states as follows:

*The drift values given under note 'd' were determined over a non-vegetated area and only under windy conditions. However, the field boundary (crop edge) and the crop-relevant default drift distance is typically vegetated and serves as a filter strip trapping some drifted material. In addition, consistently high wind speeds and the repeated exposure of the same off-field site with maximum drift rates are very much worst-case estimates. Therefore, the overestimated exposure given by the 90th -percentile drift values should be corrected by a "vegetation distribution factor" to have a more realistic but still worst-case deposit estimation for off-field habitats. For the time being, a vegetation distribution factor of 10 was considered to be appropriate. At the meeting it was pointed out that research in the area of off-field drift estimation for the terrestrial environment is urgently needed and at the time when such field validated models are available these data should be used for the calculation of off-field drift values. As different countries may develop their own off-field drift models adapted to specific agronomic practices and environmental conditions, some regulators prefer to have the flexibility to incorporate such data into the equation.*

Especially the text section on the drift rates is of importance for the NL-addendum, since Ctgb uses national drift figures which are 50$^{th}$-percentile drift values and not 90$^{th}$-percentile values. Hence, there is no question of 'overestimated exposure'.

In addition, the 'urgently needed research in the area of off-field drift estimation' is already available for some time. It is noted that also the Guidance Document on Terrestrial Ecotoxicology (Sanco/10329/2002) states about the VDF of 10: "However, *this figure is considered unreliable, therefore more appropriate data should be used as soon as they become available (a research project is currently under way)."* There have been several reviews of the VDF and attempts for deriving an appropriate default figure for the VDF. All these evaluations were presented in EFSA scientific opinion on the state of science on risk

assessment of plant protection products for non-target arthropods (EFSA Journal 2015; 13(2):3996), Appendix E. The proposed VDF values range from 3 (DEFRA, 2001) to 5 (UBA, 2006). Based on test results from 2D/3D (extended) laboratory studies, EFSA derived a VDF estimate of 3. All these evaluations indicate, that a VDF of 10 is not appropriate.

Furthermore, EFSA sees a more general problem regarding the VDF, i.e. (mainly) that the implicit dilution of exposure in field studies via vegetation distribution was not considered during calibration of the Hazard Quotient (HQ) trigger values. HQs were calibrated using 3D (semi-)field studies and already implicitly consider dilution of exposure via vegetation, so an additional VDF may consider exposure dilution twice. EFSA (2015) therefore recommends “to stop using the VDF as a refinement of off-field exposure.” However, this general conceptual problem only applies to Tier 1 risk assessments, which are based on empirically calibrated HQs.

Hence, looking at all the available data and concerns raised it is clear that a VDF of 10 is too high. A VDF of 5, which was chosen by the majority of MSs in the Recurring Issues meeting in 2019 is still a value from the upper range, hence, not conservative.

Taking into account all the information presented above and the specific national drift measurements in the Netherlands (50$^{th}$-percentiles), Ctgb will use a **VDF of 5** for national risk assessment in their NL-addendum for applications submitted from 1$^{st}$ January 2020.

*Use of VDF in the risk assessment – foliar and soil exposure*
The VDF-value serves to take into account the 3-dimensional structure of the off-field vegetation. Therefore this factor can only be used when endpoints are based on 2-dimensional test systems (e.g. glassplates and leaf discs). According to Ctgb, the VDF can also only be used for foliar arthropods, but not for soil surface-dwelling arthropods, since the soil surface cannot be considered to be a 3-dimensional structure. If necessary, off-crop interception percentages can be used in the off-field risk assessment for soil surface-dwelling arthropods (see Evaluation Manual EU-part Chapter 7 Ecotoxicology; terrestrial; non-target arthropods and plants Appendix 1).

## 2.4 Approval

The evaluation of products on the basis of existing active substances already included in Commission Implementing Regulation (EU) No 540/2011 , or new substances, has been laid down in Regulation (EC) No 1107/2009. Where no European methodology is agreed upon, a national methodology is applied as described in the Bgb (Plant protection product and Biocides Decree).

### *2.4.1 Trigger values, criteria and decision on approval*

For the criteria and trigger values for non-target arthropods for the national authorisation reference is made to the EU framework (see §1.4 EU-chapter).

## 2.5 Developments

See EU-chapter (§1.5).

# II NON TARGET PLANTS

## 2 NL FRAMEWORK

The NL framework (§2 - §2.5) describes the authorisation procedure for plant protection products based on existing substances, included Commission Implementing Regulation (EU) No 540/2011 and new active substances. A new substance is a substance not authorised in any of the Member States of the EU on 25 July 1993.

The plant protection product that contains such substances may be authorised if the criteria laid down in the Regulation (EC) No 1107/2009 are met, also taking into account the national stipulations described in the Bgb (Plant protection products and Biocides Decree) . The evaluation dossiers must meet the requirements in Commission Regulation (EU) No 283/2013 and Commission Regulation (EU) No 284/2013 implementing Regulation (EC) No 1107/2009 (see Application Form and corresponding instructions).

A Member State may deviate from the EU evaluation on the basis of agricultural, phytosanitary and ecological, including climatological, conditions which are specific for the Netherlands.

The NL framework describes the data requirements (§2.2), evaluation methodologies (§2.3), criteria and trigger values (§2.4) for which specific rules apply in the national approval framework or when the national framework has been elaborated in more detail than the EU framework.

The NL procedure described in §2 - §2.5 of this chapter can also be used for evaluation of a substance for approval, and consequently inclusion in Commission Implementing Regulation (EU) No 540/2011 in case no European procedure has been described

### 2.1 Introduction

This chapter describes the data for non-target plants for which specific rules apply in the national approval framework or when the national framework has been elaborated in more detail than the EU framework.

There is for the aspect non-target plants a deviation from the EU evaluation methodology as regards estimation of the off-field exposure, for which an NL specific methodology is followed. This concerns the use of national drift percentages as well as a national system of drift-reducing measures to do justice to the specific NL conditions (climatological conditions; specific standard drift-reducing measures packages from the Activity Decree. See §2.3 for further details.

### 2.2 Data requirements

The data requirements for chemical Plant protection products comply with the provisions in EU framework (see §1.2 of the EU part). The question numbering of the NL Application Form has also been included in §1.2 of the EU part.

Experiments carried out after the 25$^{th}$ of July 1993 must have been carried out under GLP.

There may be no doubt about the identity of the tested product or the purity of the tested substance for each study.

## 2.3 Risk assessment

The evaluation methodologies for chemical Plant protection products comply with the description under EU framework (see §1.3 of the EU part).

The national evaluation is in line with the European risk assessment methodology for non target plants as elaborated in the Guidance Document on Terrestrial Ecotoxicology (Sanco/10329/2002 rev 2 final).

There are a few further interpretations on the following issues:

**Use of a MAF in the risk assessment for non-target terrestrial plants**

***Seedling-emergence test***

In case of a seedling-emergence test a fate-MAF as given in the Guidance Document on Terrestrial Ecotoxicology (Sanco/10329/2002 rev 2 final) (see ESCORT 2 document (Appendix III)) may be used, because the exposure is by the soil. The DT50 in soil can be taken into account. In case no soil DT50 is available the default values can be taken ((T1/2: spray interval = 6 : 1).

***Vegetative vigour test***

In case of a vegetative vigour test the exposure is not via an external medium, but directly on the leaves of the plants. The effect values from the study are determined by the behaviour of the substance on the plants and the toxicokinetics in the plants. In this case an effect-MAF is preferred.
In the EFSA Scientific opinion on NTTP (2014) a way to calculate such an effect-MAF is described. However, this approach is not taken up in a Guidance Document and is also not used by EFSA or Member States. Hence, it is too early to apply this approach in national/zonal assessments.
Therefore it is proposed from a pragmatic point of view to keep using the default values presented in Appendix III from the ESCORT 2 document (T1/2: spray interval = 2.3 : 1). However, because it concerns surrogate effect-MAF values and no fate-MAF values, refinements based on refinement of the DT50 on vegetation are not possible.

**Use of the Lower Limit of the HR5 value in the risk assessment for non-target terrestrial plants in certain cases**

In quite some cases the SSD-approach is applied in the risk assessment for NTTPs as a refinement of the risk. In most cases the HR5 value is below the lowest ER50 value. However, in cases that the lowest ER50 value is a lot lower than the other values, the HR5 may be higher than the lowest ER50 value. Because normally no additional safety factor is applied on the HC5 for NTTPs, the RA based on the HR5 is in these cases underprotective for at least the most sensitive species. To avoid this situation it is proposed to use the lower limit of the HR5 in these cases.

In addition, drift is a NL-specific aspect and elaborated nationally:

*Drift*

National drift figures can be applied on the basis of article 8f of the Bgb (Plant protection product and Biocides Decree). Ctgb bases the exposure assessment on average spray drift

values determined by WPR (Wageningen Plant Research, formerly WUR-WPR).

*Artikel 8f. Driftcijfers*

Bij de risicobeoordeling voor waterorganismen, vogels, zoogdieren, niet-doelwitarthropoden, niet-doelwitplanten of oppervlaktewater bestemd voor de bereiding van drinkwater, hanteert het college specifieke driftcijfers. Het college stelt deze cijfers vast en maakt hen bekend op zijn website.

For field crops the drift percentages are different from the percentages used for non-target arthropods because the evaluation zone is different. The drift percentages are presented below.

***Change in Activity Decree and introduction of DRT classes***
A major general change affecting the use of spray drift values in the assessment of plant protection products is the Entry into force of the new Activity Decree (Activiteitenbesluit), per January 2018, including the introduction of drift reducing technology (DRT) classes. Individual techniques are classified into groups of techniques with a minimum drift reduction. The list of these DRT classes and techniques that fall into these classes is available at Helpdesk Water (Dutch version only).

The standard requirement for field applications (downward sprayed crops, fruit culture and lane tree cultivation) is the use of a 75% reducing technique on the whole field.
Please note that Ctgb considers that in view of the changed definition in the Activity Decree any additional drift reduction resulting from the authorisation assessment also applies to the whole field in line with the recommendations of the working group Eenduidige voorschriften.

**Implementation of the Wageningen Drift Calculator (obligatory for dossiers submitted from January 2022 onwards, accepted from August 2021 onwards)**

*Description/aim and scope*
In 2021 the Wageningen Drift Calculator (WDC) was released by WPR commissioned by the Ministry of Agriculture, Nature and Food Quality. This tool integrates the drift deposition values from all the available Dutch drift measurements of WPR for agricultural crops (downward sprayed arable crops, fruit culture and lane tree cultivation) for the different non-target zones (surface water/aquatic organisms, terrestrial non-target organisms). The full drift dataset has been re-fitted to generate drift curves for each DRT class.

The tool allows for selecting additional DRT classes and additional crop free buffer zones so that tailored refined drift deposition values can be proposed for authorisation for use in the exposure/risk assessment and for inclusion on the label. This hence replaces the former procedure of submitting tailor-made drift reports for specific situations in which a refinement of the generic drift deposition values was required.

For downward sprayed crop, a differentiation in minimum crop free zones (not relevant for NTA and NTP since the evaluation zone is based on a fixed distance from the last crop row) and the position of the last nozzle with respect to the last crop row is implemented.

As a result of the implementation of the WDC including the latest drift, the drift deposition values have changed (and for downward sprayed arable crops also differentiated). Therefore the tables in the Evaluation Manual presenting the default drift deposition values for the

various DRT classes to be used in the exposure assessment have been updated for the situation representing the minimum obligatory crop free zone. Further drift refinement options including crop free buffer zones (with steps of (a multiple of) 25 cm) can now be looked up in the WDC.

Please note that currently policy developments take place that will include a decision on the upper limits with regard to crop free (buffer) zone and DRT class that can be used for the authorisation of plant protection products. Awaiting the outcome of those policy developments, the following boundary with regard to the maximum allowable crop free zone is to be taken into account, based on current practice:

- The maximum allowable crop free zone for downward sprayed arable crops is 4 meter, as it is based on expert judgement and common sense not realistic to assume that wider crop free zones will be applied in Dutch agriculture. See also Assessment of topics with regard to specific agricultural use in the Netherlands | Assessment framework PPP | Board for the Authorisation of Plant Protection Products and Biocides (ctgb.nl) (issue 2).

*Applicability*
**The drift deposition values included in the WDC are valid for professional uses in crops that are agriculturally cultivated and cannot be applied to other, non-agricultural, uses of plant protection products, nor non-professional use.**
The tool provides drift values for the reference/benchmark technique for DRT classes and does not provide drift deposition values for individual techniques.
For non-agricultural uses, a default conservative estimate drift deposition value is extrapolated from the conventional technique for downward spraying of agricultural crops in the absence of data. This value can be used as a first step in exposure/risk assessment. However, if refinements of these values is required a substantiation should be provided accounting for the specific application techniques for that use. See the separate section on *Field crops and uses not covered by the Activity Decree.*

The WDC does not include drift deposition for non-professional uses.
For handheld spraying (mostly used for non-professional uses, but also potentially used in specific manual applications for professional use) refer to the separate section on *Handheld application.*

For further information on the tool, please refer to the WDC manual.

**Explanation per crop/application**

For all crop types the following applies in case additional crop free zones are necessary: the ‘off-field’ area only starts after the crop-free zone and the drift percentage should be determined at a distance as large as the crop-free zone. In case natural objects have been placed to reduce the amount of drift (e.g., wind hedge) this object should not be considered as part of the off-field area that needs to be protected. It must be kept in mind that those crop-free zones and natural objects in many cases are only applied on those parts of fields which border watercourses.

***Crops/applications regulated in the Activity Decree***
**Field crops (including downward sprayed forest trees and hedging plants, and flower bulbs)**
Drift deposition values are used to estimate the exposure on the off-field evaluation zonefor non-target plants. For field crops this is now defined as the amount of drift at 1 m from the edge of the field. The drift percentage is determined by taking the mean drift percentage of the

zone 0.5 – 1.5 m from the edge of the field (off-field evaluation zone for non-target plants)). The edge of the field is defined as 1 meter from the centre of the last crop row. Hence, the total distance of the evaluation zone is 1.5 – 2.5 m from the centre of the last crop row.. With the entry into force of the revised Activity Decree (2018) 75% drift reduction on the whole field has to be applied.

For applications in which no drift reduction is requested in principle the boundary conditions defined by the Activity Decree apply. The aim laid down in the Activity Decree for downward sprayed crops is 75% spray drift reduction. This drift reduction can be achieved by applying spray techniques of a certain drift reduction class (DRT class). This drift reduction can be achieved by applying spray techniques of a certain drift reduction class (DRT class). These DRT classes have been established by the TCT in collaboration with WPR within the framework of the Activity Decree.
If further spray drift reduction than 75% is necessary to meet the ecotoxicological threshold values, the use of refined drift deposition values can be proposed. Those refinements can exist of further drift mitigation by using higher (i.e. more reducing) DRT classes or a crop free buffer zone or a combination of both. If a combination of a DRT class and an additional crop free zone is needed to achieve an acceptable risk then the WDC tool can be further consulted.

For each DRT class a benchmark (reference) technique has been assigned on the basis of their spray drift reduction percentage. Reference techniques for downward spraying are defined in WPR report 419[7].

With regard to the drift deposition values for non-target plants, a distinction is made on the basis of the position of the last spraying nozzle with respect to the last crop row, which can be positioned at 25 cm inside the crop, exactly above the last crop row, or 12.5 cm outside the crop, depending on the specific cultivation characteristics. Additionally, there are two different drift deposition curves available for two contrasting crop situations: bare soil/short crop (early BBCH stages, crop height < 20 cm) and established crop (higher BBCH stages, crop height ≥ 20 cm). For each arable crop in the DTG list the WDC contains an entry for the BBCH stage at which the transition of the bare soil/low crop stage to the established crop stage takes place. Depending on the crop stage the values from the applicable drift curve should be selected. In cases in which the application window exceeds the boundary at which the crop height is 20 cm, the most conservative drift deposition value of the two drift curves should be used for the assessment.

Spray drift deposition values for the different drift reducing technique classes are presented in Table 4a (bare soil/short crop stage) and 4b (established crop stage).

Please note that the drift reduction percentage was established on the basis of the drift deposition at the evaluation zone for surface water in the DRT classification methodology. Therefore the DRT classes do not always correspond to the reduction that is achieved at the evaluation zone for non-target plants, which is closer to the crop. This has been considered in the WDC (see WDC manual, section 2.5) by comparing the drift deposition values for different DRT classes and if this leads to an inconsistent pattern (e.g., increasing DRT class does not lead to lower drift deposition values but instead to higher ones) then always the most conservative value is used for all classes in which the inconsistency is noted. Due to this approach, a higher DRT class does not always lead to a lower drift deposition value.

[7] Zande, J.C van de, H.J Holterman & J.F.M Huijsmans. 2012. Spray drift for the assessment of exposure of aquatic organisms to plant protection products in the Netherlands. Part 1: field crops and downward spraying . WUR-PRI Report 419, Wageningen. Table 4, page 18.

**Table 4a: Spray drift values for DRT classes in arable crops– downward spraying, bare soil/short crop stage (< 20 cm)**

| DRT class | Last nozzle position | NTP standard evaluation zone (150-250 cm) |
|---|---|---|
| DRT75 | -25 cm | 0.89 |
| DRT90 | | 0.54 |
| DRT95 | | 0.51 |
| DRT97.5 | | 0.05 |
| DRT99 | | 0.03 |
| DRT75 | 0 cm | 1.2 |
| DRT90 | | 0.87 |
| DRT95 | | 0.87 |
| DRT97.5 | | 0.06 |
| DRT99 | | 0.05 |
| DRT75 | 12.5 cm | 1.4 |
| DRT90 | | 1.2 |
| DRT95 | | 1.2 |
| DRT97.5 | | 0.08 |
| DRT99 | | 0.08 |

**Table 4b: Spray drift values for DRT classes in arable crops– downward spraying, established crop stage (≥ 20 cm)**

| DRT class | Last nozzle position | NTP standard evaluation zone (150-250 cm) |
|---|---|---|
| DRT75 | -25 cm | 1.4 |
| DRT90 | | 0.97 |
| DRT95 | | 0.57 |
| DRT97.5 | | 0.09 |
| DRT99 | | 0.03 |
| DRT75 | 0 cm | 2.0 |
| DRT90 | | 1.5 |
| DRT95 | | 1.1 |
| DRT97.5 | | 0.11 |
| DRT99 | | 0.05 |
| DRT75 | 12.5 cm | 2.5 |
| DRT90 | | 1.8 |
| DRT95 | | 1.6 |
| DRT97.5 | | 0.14 |
| DRT99 | | 0.07 |

If an additional crop-free zone is chosen as a drift reduction measure, the total crop-free zone must be determined (measured from the middle of the last crop row till the edge of the parcel). The standard crop-free zone is 1.0 m. Hence, in the case of an additional crop-free zone of 0.5 m the total crop-free zone is 1.5 m. For further clarity an example is given below:
*- een techniek uit tenminste de klasse DRT75 in combinatie met een teeltvrije zone van tenminste 150 centimeter (gemeten vanaf het midden van de laatste gewasrij of de laatste plant in de rij tot aan de perceelgrens) op het gehele perceel.*

**<u>Fruit crops</u> (including soft fruit)**

For fruit crops the evaluation zone and hence the drift percentages for non-target plants are the same as for the non-target arthropods. Therefore reference is made to the chapter regarding non-target arthropods (section 2.3).

**Growth of lane trees**
For the growth of lane trees the evaluation zone and hence the drift percentages for non-target plants are the same as for the non-target arthropods. Therefore reference is made to the chapter regarding non-target arthropods (section 2.3).

**Field crops and uses not covered by the Activity Decree (non-agricultural uses)**
Several uses that can be applied for in authorisation applications do not fall within the scope of the Activity Decree (section 3.5, agricultural activities). For those uses a conservative first tier estimate in the absence of drift measurements is used, based on the value for a conventional downward spraying technique in agriculture as an approximation.
For downward sprayed professional applications (not hand held equipment) not regulated in the Activity Decree a drift percentage of 4.7% (based on WUR-PRI 149[8]) is used for the off-crop assessment of non-target plants.

However, if for these uses further mitigation is required a substantiation should be submitted in which proposed drift deposition values are relevant for the used techniques in the pertinent use and underpinned by experimental data or statements. DRT classes cannot be used unless it is demonstrated that the proposed DRT class contains a relevant and custom application technique for that use.

This concerns the following DTG crop (sub) groups:
7.6 (Marsh and water plants)
8 (8.1 Managed amenity turf*, 8.2 Woody plantings, 8.3 Herbaceous plantings)
9 (forestry)
10 (Uncultivated land)
- *please note that a small part of this use group, i.e., temporarily uncultivated land ('braakliggend land', under 10.1 temporarily uncultivated terrain ) is mentioned in the Activity Decree section 3.5*

11 (Water courses) – for direct application to 11.3 (*Water courses which contain water*) and 11.5 (*Ponds)* a drift deposition of 100% should be used
12 (Reed and osier crops)
13 (Refuse heaps).

** In case that drift mitigation measures are necessary, the following special restriction sentence should be applied: Om niet tot de doelsoorten behorende planten te beschermen is toepassing van dit middel uitsluitend toegestaan indien op het gehele perceel gebruikt gemaakt wordt van een techniek uit tenminste de klasse DRTxx in combinatie met een afstand van tenminste xxx centimeter waarin geen bespuiting mag plaatsvinden, gemeten vanaf de rand van de grasmat tot aan de zone waar zich niet-doelwitplanten bevinden.*

[8] Van de Zande et al. 2007. Spray drift and off-crop evaluation of agrochemicals in the Netherlands. WUR-PRI 149.

**Handheld application**
Drift deposition values for handheld equipment are extrapolated from a specific spraying technique, which is often used in specific regions (i.e. on small parcels in the Boskoop region (tree nursery crops, forest trees and hedging plants)), *i.e.*, a hand-held spray boom sprayer with a crop free zone of 0.50 m.
From those field experiments (IMAG Nota 98-31[9]) the following spray drift values are available for knapsack application (*rugspuit/spuitlans*):
- 3.46 % for standard nozzle.
- 1.15 % for 50 % spray drift reducing nozzle or a shielded standard spray nozzle.

These spray drift values are used for assessments of handheld applications by non-professional users. However, in some cases also in professional uses handheld application is performed. In principle the same values apply (for downward spraying).

- Professional applications, handheld equipment, knapsack application (*rugspuit/spuitlans*)
  Handheld applications are not regulated in the Activity Decree. For professional applications with handheld equipment a drift percentage of 3.46% applies. Drift reduction is possible by applying a protection shield or a 50% nozzle; the drift is then reduced to 1.15% (based on a crop-free zone of 0.50 m).
- Non-professional applications
  Handheld equipment will particularly be relevant for applications by non-professional users. Also in this case a drift percentage of 3.46% applies when using a knapsack *rugspuit/spuitlans.*
  When a small spraying can (*e.g.,* ready-to-use bottle) is used a value of 1.73% is used. This value is half of the value used for hand held equipment without mitigation (see above). However, in the case of non-professional applications drift reduction measures are not prescribed, because these measures cannot be enforced and it is questionable if users really apply these measures.

  Please note that these values for handheld equipment are only to be used in downward sprayed crops. If application is made sideways or upward e.g. in fruit trees or lane trees, these values do not apply. In the absence of estimates for drift deposition values in fruit and lane trees for the use of a knapsack or small spraying cans a conservative value is used on the basis of the standard techniques for these crops. Refer to tables 2a and 3a above.

**Applications of herbicides on field edges**

These applications can be considered as done in the off-crop area and the exposure of the off-crop area will be much higher than for regular applications.

It concerns the following applications (based on DTG-list):

| Gewas | Crop |
|---|---|
| 8.1 Grasvegetatie<br>**- Grasbermen** | 8.1 Managed amenity turf<br>**Grassy verges** |
| 8.2 Houtige beplanting<br>**- Windsingels en -schermen en –hagen** | 8.2 Woody plantings<br>**- Shelter belts,windbreaks and** |

[9] Driftreductie in de lage boomteelt bij een bespuiting met een handgeduwde spuitboom, een afgeschermde spuitboom en een dichte afscherming op de perceelsrand, IMAG nota 98-31

| | |
|---|---|
| **- Overige houtige beplantingen (bosplantsoen en wegbeplanting)** | **hedgerows - Other woody plantings (forest trees and roadside verges)** |
| 10.1 Tijdelijk onbeteeld terrein - **Akkerranden** | 10.1 Temporarily uncultivated terrain - **Buffer areas of fields** |
| 10.2 Permanent onbeteeld terrein - **Onverhard terrein** | 10.2 Permanently uncultivated land - **Unpaved surfaces** |
| 11.1 (droog) Talud | 11.1 (dry) slope |

Below a pragmatic approach is described how to deal with the drift percentages of these applications on the evaluation zone for non-target terrestrial plants:

For non-target terrestrial plants the evaluation zone in the regular assessment is somewhat further away from the crop than the one for non-target arthropods (1.5 – 2.5 meter from the middle of the last crop row or the last plant in the row). For herbicide applications on field edges it is assumed that spraying is occurring closer to that evaluation zone, but not in the zone. A pragmatic approach is to use the drift percentages for non-target arthropods in the case of downward spraying of crops (i.e. the drift value for 0.5-1.5 m from the last crop row or the last plant in the row). The default drift percentage is then 10% (not based on the Activity Decree, because these kind of applications are not regulated by the Activity Decree).
If handheld equipment is used (e.g. knapsack), a lower drift percentage is valid: without mitigation a value of 3.46% applies; when a protection shield or 50% nozzle is used, a value of 1.15% may be used.

**Applications without drift**
Reference is made to the chapter regarding non-target arthropods (section 2.3).

*Combination toxicity*
Combination products are formulated plant protection products that contain more than one active substance. The issue of combined toxicity is further described in Appendix A.

## 2.4 Approval
The evaluation of products on the basis of existing active substances already included in Commission Implementing Regulation (EU) No 540/2011 , or new substances, has been laid down in Regulation (EC) No 1107/2009. Where no European methodology is agreed upon, a national methodology is applied as described in the Bgb (Plant protection product and Biocides Decree).

### *2.4.1 Criteria and trigger values*
For the criteria and trigger values for non-target plants for the national authorisation reference is made to the EU framework (§1.4), in particular the Guidance Document on Terrestrial Ecotoxicology (Sanco/10329/2002 rev 2 final).

### *2.4.2 Decision on approval*
For decision-making as regards non-target plants for the national authorisation reference is made to the EU framework (§1.4).

## 2.5 Developments
See EU-chapter (§1.5).

## 3 REFERENCES

1. Van de Zande, J.C., J.M.G.P. Michielsen & H. Stallinga., Spray drift and off-field evaluation of agrochemicals in the Netherlands, Report 149, July 2007

# 4 APPENDICES

## Appendix 1 Explanatory notes decision tree risk to non-target arthropods

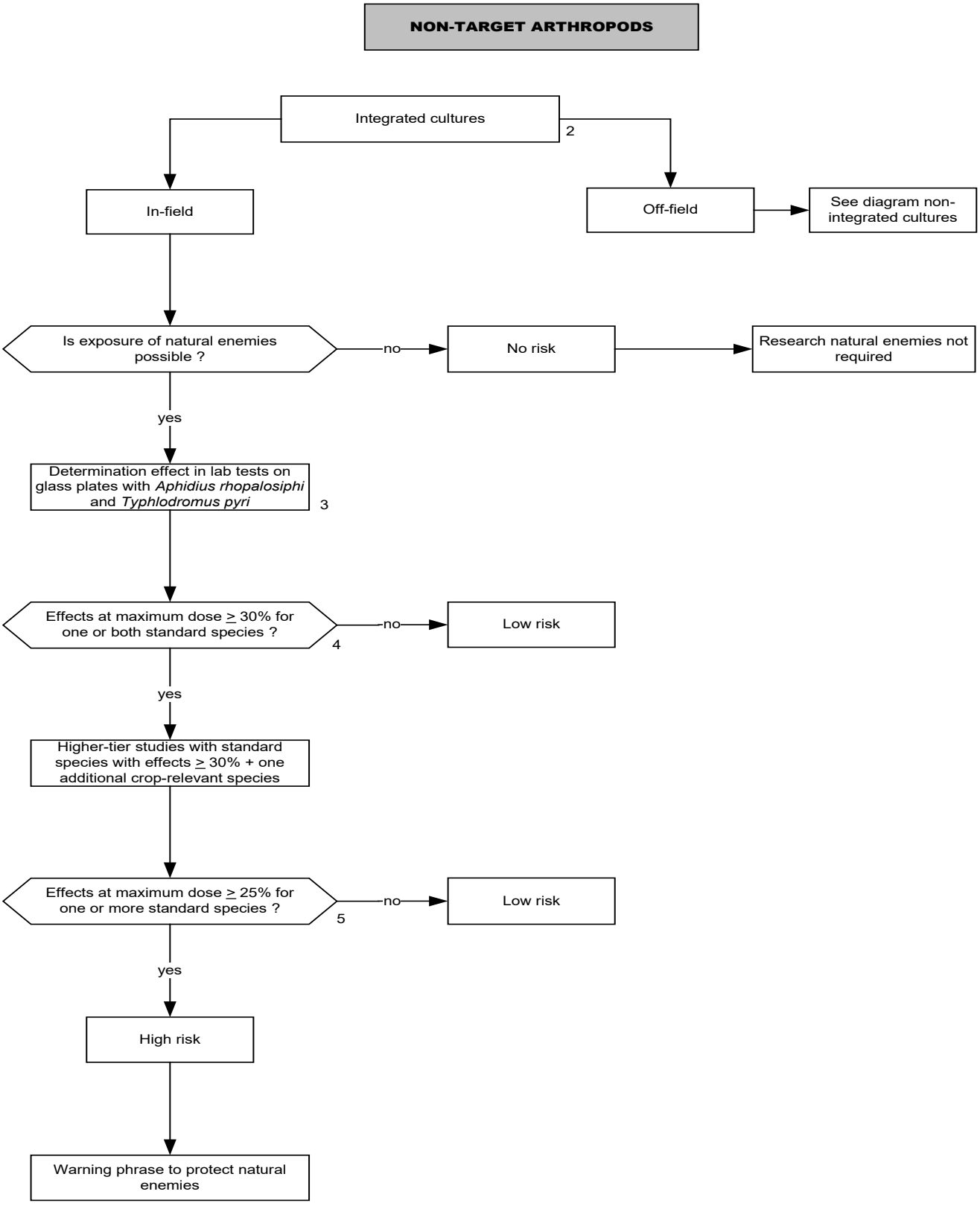
1) A distinction is made between integrated and non-integrated pest management systems because the evaluation for non-target arthropods for these two types of systems is essentially different. In the case of integrated pest management systems natural enemies are deliberately brought into the cropping system to control pests. In the case of non-integrated pest management systems the risk is estimated for non-target arthropods that are present by nature. The scheme for integrated pest management systems is included in this chapter. The scheme for non-integrated systems is dealt with in Appendix 1 to the EU-part of this chapter, with the note that some NL-specific aspects (drift, natural enemies, VDF) are considered nationally – see section 2.3 of this chapter for details. The numbering below starts with 2 due to the interconnectedness between these two decision trees.

2) For integrated pest management systems the 'in-field' risk to effects on natural enemies is evaluated. Examples of integrated pest management are: protected crops, fruit cultures, tree cultures. There is a tendency that more and more cultures are grown under integrated pest management. Also for strip cultivation in vegetable and arable crops the 'in-field' risk to effects on natural enemies is evaluated. Evaluation of the 'off-field' situation for integrated pest management and strip cultivation does not differ from non-integrated pest management. This then again concerns the naturally occurring non-target arthropods (see EU-part of this chapter).

3) Also in this case, the first step consists of the performance of glass plate tests with the standard test organisms *Aphidius rhopalosiphi and Typhlodromus pyri*. The evaluation criterion, however, differs from the criterion applied for non-integrated pest management in view of the fact that significant acute effects on populations of natural enemies are not accepted because these lead to a reduction of the controlling effect of these organisms.

4) The criterion is as follows: if the effects at the maximum dose are ≥ 30% for one or both standard species, the risk is unacceptable and higher-tier tests are required with the species for which a risk has been established and at least one additional crop-relevant species.

5) A high risk exists when the effects in the higher-tier tests at the maximum dose are ≥25% for one or more species. In that case a warning phrase must be included in the label to prevent unacceptable effects on natural enemies. This phrase reads: *'Let op: dit middel kan schadelijk zijn voor van nature voorkomende of uitgezette natuurlijke vijanden. Vermijd onnodige blootstelling. Indien u natuurlijke vijanden heeft uitgezet: raadpleeg deskundigen (uw leverancier van natuurlijke vijanden, de producent van dit middel, uw adviseur) over het gebruik van dit middel.'* In English: 'Attention: this product can be harmful for naturally occurring beneficials or released beneficials. Avoid unnecessary exposure. Seek consultation with experts (your supplier of beneficials, product supplier or consultant) about the use of this product in combination with use of natural enemies'.


NON-TARGET ARTHROPODS
Integrated cultures
2
In-field
Off-field
See diagram non-integrated cultures
Is exposure of natural enemies possible ?
no
No risk
Research natural enemies not required
yes
Determination effect in lab tests on glass plates with *Aphidius rhopalosiphi* and *Typhlodromus pyri*
3
Effects at maximum dose ≥ 30% for one or both standard species ?
no
Low risk
4
yes
Higher-tier studies with standard species with effects ≥ 30% + one additional crop-relevant species
Effects at maximum dose ≥ 25% for one or more standard species ?
no
Low risk
5
yes
High risk
Warning phrase to protect natural enemies