

Renewal Assessment Report

Dimethenamid-P

BAS 830 01 H

Volume 3 – B.3 Data on application and efficacy

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B.3 Data on application and efficacy

B.3.1 Field of use envisaged

Agriculture

B.3.2 Effects on harmful organisms

BAS 830 01 H is used in dose rates shown in Table B.3.3-1 for the control of annual dicotyledonous and annual monocotyledonous weeds. For that purpose the product is applied either pre or post emergence, but in any case before the target weeds are further developed (not more than 2 true leaves).

GAP rev., date: 2014-June-19

B.3.3 Details of intended use

Table B.3.3-1: GAP table - Summary of representative uses evaluated, for which all risk assessments needed to be completed

List of representative uses evaluated - BAS 830 01 H

PPP (product name/code)	BAS 830 01 H	Formulation type:	SE
active substance 1	DMTA-P	Conc. of as 1:	333 g/L
active substance 2	Quinmerac	Conc. of as 2:	167 g/L
active substance	n.a.	Conc. of as:	-
safener	n.a.	Conc. of safener:	n.a.
synergist	n.a.	Conc. of synergist:	n.a.
Applicant:	BASF	professional use	<input checked="" type="checkbox"/>
Zone(s):	northern/central/southern EU	non professional use	<input type="checkbox"/>

Verified by MS: yes

1	2	3	4	5	6	7	8	10	11	12	13	14
Use- No.	Member state(s)	Crop and/ or situation (crop destination / purpose of crop)	F G or I	Pests or Group of pests controlled (additionally: developmental stages of the pest or pest group)	Application			Application rate			PHI (days)	Remarks: e.g. safener/synergist per ha e.g. recommended or mandatory tank mixtures
					Method / Kind	Timing / Growth stage of crop & season	Max. number (min. interval between applications) a) per use b) per crop/ season	kg, L product / ha a) max. rate per appl. b) max. total rate per crop/season	g as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min / max		
Core												
1	EU	Winter Oilseed Rape - BRSNW	F	Annual monocotyledonous and dicotyledonous weeds	Spraying SP	BBCH 00-09	1	a) 1.5 b) 1.5	a) 500 ¹⁾ 250 ²⁾ b) 500 ¹⁾ 250 ²⁾	100-400	F	Range 0.8-1.5 L/ha possible

1	2	3	4	5	6	7	8	10	11	12	13	14
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					Method / Kind	Timing / Growth stage of crop & season	Max. number (min. interval between applications) a) per use b) per crop/ season	kg, L product / ha a) max. rate per appl. b) max. total rate per crop/season	g as/ha a) max. rate per appl. b) max. total rate per crop/season	Water L/ha min / max		
2	EU	Winter Oilseed Rape - BRSNW	F	Annual monocotyledonous and dicotyledonous weeds	Spraying SP	BBCH 10-18	1	a) 1.5 b) 1.5	a) 500 ¹⁾ 250 ²⁾ b) 500 ¹⁾ 250 ²⁾	100-400	F	Range 0.8-1.5 L/ha possible

Remarks:

- (1) Numeration of uses in accordance with the application/as verified by MS
- (2) Member State(s) or zone for which use is applied for
- (3) For crops, the EU and Codex classifications (both) should be used; where relevant, the use situation should be described (e.g. fumigation of a structure)
- (4) Outdoor or field use (F), glasshouse application (G) or indoor application (I)
- (5) e.g. biting and suckling insects, soil born insects, foliar fungi, weeds, developmental stages
- (6) Method, e.g. high volume spraying, low volume spraying, spreading, dusting, drench
Kind, e.g. overall, broadcast, aerial spraying, row, individual plant, between the plants - type of equipment used must be indicated
- (7) Growth stage of treatment(s) (BBCH Monograph, Growth Stages of Plants, 1997, Blackwell, ISBN 3-8263-3152-4), including where relevant, information on season at time of application
- (8) The maximum number of applications possible under practical conditions of use for each single application and per year (permanent crops) or crop (annual crops) must be provided
- (8) Min. interval between applications (days) were relevant
- (10) The application rate of the product a) max. rate per appl. and b) max. total rate per crop/season must be given in metric units (e.g. kg or L product / ha)
- (11) The application rate of the active substance a) max. rate per appl. and b) max. total rate per crop/season must be given in metric units (e.g. g or kg / ha)
- (12) The range (min/max) of water volume under practical conditions of use must be given (L/ha)
- (13) PHI - minimum pre-harvest interval
- (14) Remarks may include: Extent of use/economic importance/restrictions/minor use etc.

B.3.4 Application rate and concentration of the active substance

BAS 830 01 H is at the moment under the evaluation process/in preparation of the registration in many EU countries for the registration in post and pre emergence use in winter oilseed rape. The herbicide is to be used with a dose rate of 1.5 L/ha (active substance 1 dimethenamid-P 500 g/ha; active substance 2 quinmerac 250 g/ha). There is no PHI applicable; the product is applied once per season. BAS 830 01H is applied by spraying by using a water carrier system in a rate of 100 – 400 L/ha.

B.3.5 Method of application

The intended method of application is spraying by means of each type of spraying equipment which is normally used for applying herbicides in practical plant production. The diluent is water.

B.3.6 Number and timing of applications and duration of protection

Maximum number of applications and their timings:

The maximum number of applications per cropping season is 1 (one).

Growth stages of crops or plants to be protected:

Application in winter oilseed rape from BBCH 00-18, the product can be applied in pre- or in post-emergence of the crop

Development stages of the harmful organism concerned:

The best application timing is depending on the development stages of the respective weeds.

Duration of protection afforded by each application:

Normally one application will give a sufficient, season long control against harmful weeds.

Duration of protection afforded by the maximum number of applications:

Normally one application will give a sufficient, season long control against harmful weeds.

B.3.7 Necessary waiting periods or other precautions to avoid phytotoxic effects on succeeding crops

The proposed following-crop recommendations for BAS 830 01 H were based on a series of trials that considered following crops in a crop failure / re-drill situation, which were then extrapolated to give guidance on following crops after a normal harvest situation. After a normal cropping season, no special attention is needed for the selection of the following crop. For all crops groups presented in the study, the minimum waiting period is shorter than required for the typical cultivation period for a winter sown oilseed rape crop even with minimal soil cultivation.

Following crop failure, no special attention is needed for the planting of oilseed rape, cabbage, soybean, onion or maize. For the oats (and via extrapolation, other winter cereals), replanting would require a minimum interval of 60 days, unless some form of cultivation is conducted. Spring planted crops of carrot, lettuce or tomato may be sown following cultivation to 5 cm after 120, 195 and 165 days. For ryegrass a waiting period of 165 days is required. The waiting period can be reduced if additional cultivation techniques are used.

B.3.8 Proposed instructions for use

The herbicide BAS 830 01H is used for the control of annual dicotyledonous and annual monocotyledonous weeds in winter oilseed rape in pre (BBCH 00-09) and post emergence (BBCH 10-18) of the crop. The weeds that are controlled have to be between the growth stages BBCH 00 and 12 (depending on the species). The product is to be used with a dose rate of 1.5 L/ha (active substance 1 dimethenamid-P 500 g/ha; active substance 2 quinmerac 250 g/ha). There is no PHI applicable; the product is applied once per season. BAS 830 01 H is applied by spraying by using a water carrier system in a rate of 100 – 400 L/ha.

Over the before mentioned things, in general no special recommendations needed for the use of BAS 830 01 H that go above the already before and later on mentioned points. On the specific country labels additional guidance for the use of the products in regard to filling and application, tank cleaning and field use are given according to the local requirements, that does not have to be mentioned within this document.

B.3.9 Effectiveness

The herbicide BAS 830 01 H containing dimethenamid-P and quinmerac has been tested in field development trials, which demonstrated efficacious activity of the product against weeds.

BAS 830 01 H is at the moment under the evaluation process/in preparation of the registration in many EU countries for the registration in post end pre emergence use in winter oilseed rape at a dose rate of 1.5 L/ha delivering 500 g/ha of dimethenamid-P and 250 g/ha of quinmerac.

This document summarises the information related to the efficacy of dimethenamid-P, which was included in Annex I by Commission Directive No 2003/32/EC of 11 April 2003 and for which a dossier is now submitted for renewal of the approval.

Dimethenamid-P acts as a selective herbicide against annual dicotyledonous and annual monocotyledonous weeds in many agricultural crops including oilseed rape. Quinmerac is used only in oilseed rape and sugar beet for the further increase of broadleaf weed control activity.

The application of both active substances is possible in pre and post emergence of the oilseed rape crop.

BAS 830 01 H, containing the active substances dimethenamid-P and quinmerac, is used in agriculture to control broadleaf weeds in winter oilseed rape. The uptake of the active substances is roots and hypocotyl of the plants. Also there is foliar uptake.

The timing of application is during the early development stages of the oilseed rape crop from BBCH 0 to 18, latest when all weeds have emerged but are still in the small development stages (maximum 2 true leaves).

The supported uses for BAS 830 01 H are summarised in Table B.3.3-1.

The use of BAS 830 01H is representative because:

- the wide geographic distribution, covering the southern, northern and central registration zone
- the application in oilseed rape in that is in the meanwhile broadly distributed
- the application in fall season.

The active substance dimethenamid-P was discovered by Sandoz. Dimethenamid-P was first introduced for the use in maize and cotton, followed by registration in other crops like soybeans, tobacco, potato, grain sorghum, peanuts, sunflowers, rice, beans, cereals and many others in the

following years. Quinmerac was discovered by BASF and is registered in oilseed rape, but also in sugar beets.

Overview of Current Registrations

BAS 830 01 H is intended to be registered within the many countries of the European Union under the process of a zonal submission (1107/2009) in the southern, central and northern zone. The submission in the central and southern zone is completed in 2014, the submission in the northern zone is done in 2015.

Harmful Organisms controlled and Crops treated

The crops included in that submission is only winter oilseed rape. Further information is given in the GAP table.

BAS 830 01 H is used in dose rates shown in Table B.3.3-1 for the control of annual dicotyledonous and annual monocotyledonous weeds. For that purpose the product is applied either pre or post emergence, but in any case before the target weeds are further developed (not more than 2 true leaves). An overview of the weeds controlled and the ideal application timing for control is given in the following Table B.3.9-1.

Table B.3.9-1: Overview of weed control and most susceptible weed growing stages at full dose rate of BAS 830 01 H from EU registration field trials in winter oilseed rape in pre and post-emergence application

Weed Name	Efficacy mean %/ min max % / N	Maximum susceptible growth stages of target weed
Speedwell, Common Field, <i>Veronica persica</i> (VERPE)	95 (66-100) 31	2 true leaves
Speedwell, Ivy-leaved, <i>Veronica hederifolia</i> (VERHE)	98 (94-100) 7	2 true leaves
Speedwell, Corn/wall, <i>Veronica arvensis</i> (VERAR)	92 (58-100) 7	2 true leaves
Speedwell, Field, <i>Veronica agrestis</i> (VERAG)	94 (94-94) 1	2 true leaves
Chickweed, <i>Stella media</i> , (STEME)	82 (17.5-100) 44	2 true leaves
Sowthistles, Perennial, <i>Sonchus arvensis</i> (SONAR)	97 (88-100) 3	Pre*
Sowthistles, Rough, <i>Sonchus asper</i> (SONAS)	100 (100-100) 1	Pre
Black nightshade, <i>Solanum nigrum</i> (SOLNI)	96 (93-98) 2	Pre
Sorrel, Common, <i>Rumex acetosella</i> (RUMAA)	92 (92-92) 2	1 true leaf*
Poppy, Common, <i>Papaver rhoeas</i> (PAPRH)	89 (53-100) 29	2 true leaves
Poppy, Long-headed, <i>Papaver dubium</i> (PAPDU)	99 (99-99) 1	Pre
Forget-me-knot, Field <i>Myosotis arvensis</i> (MYOAR)	83 (27.5-100) 6	Pre
Scented Mayweed, <i>Matricaria recutita</i> (MATCH)	92 (38-100) 28	2 true leaves
Scentless Mayweed, <i>Tripleurospermum maritimum</i> subsp. <i>inodorum</i> (MATIN)	90 (20-100) 35	2 true leaves
False Mayweed, <i>Tripleurospermum maritimum</i> (MATMA)	94 (66-100) 6	2 true leaves
Pineapple weed, <i>Matricaria discoidea</i> (MATMT)	78 (60-80) 3	2 true leaves
Field chamomile, <i>Anthemis arvensis</i> (ANTAR)	83 (70-95) 5	2 true leaves
Deadnettle, Red, <i>Lamium purpureum</i> (LAMPU)	98 (72-100) 23	2 true leaves
Deadnettle, Henbit, <i>Lamium amplexicaule</i> (LAMAM)	98 (96-100) 3	2 true leaves
Cleavers, <i>Galium aparine</i> (GALAP)	96 (80-100) 25	2 whorls
Round-leaved cranesbill, <i>Geranium rotundifolium</i> (GERRT)	90 (71-100) 7	2 true leaves
Cranesbill, Small-flowered, <i>Geranium pusillum</i> (GERPU)	94 (78-100) 5	2 true leaves
Cranesbill, Cut-leaved, <i>Geranium dissectum</i> (GERDI)	93 (87-99) 5	2 true leaves
Cranesbill, Dove's-foot, <i>Geranium molle</i> (GERMO)	98 (98-98) 2	1 true leaf
Cranesbill, Long-stalked, <i>Geranium columbinum</i> (GERCO)	90 (90-90) 1	Pre
Cranesbill, Meadow, <i>Geranium pratense</i> (GERPR)	100 (100-100) 2	1 true leaf
Flixweed, <i>Descurainia sophia</i> (DESSO)	89 (76-99) 6	2 true leaves

Weed Name	Efficacy mean %/ min max % / N	Maximum susceptible growth stages of target weed
Shepherd's purse, <i>Capsella bursa-pastoris</i> (CAPBP)	88 (40-100) 33	Pre
Parsley piert, <i>Aphanes arvensis</i> (APHAR)	99 (98-100) 4	Pre

BAS 830 01 H is applied in water based spray carrier at a volume between 100-400 L/ha. The application is done either in pre or in post emergence of the oilseed rape crop.

B.3.10 Information on the development of resistance

The resistance risk assessment submitted by the applicant in principal follows the EPPO Standard 1/213.

Mechanism of resistance

Dimethenamid-P belongs to the Herbicide-Resistance Action Committee (HRAC) group K3 (inhibitors of very-long-chain-fatty-acids (VLCFA)). For dimethenamid-P, no information on potential resistance mechanism is available.

Quinmerac belongs to the chemical group of the quinolinecarboxylic acids. Due to its primary target site and its chemical family, in the HRAC mode of action classification quinmerac is classified as group O.

Although the mechanism of resistance of group O herbicides has not been determined, resistance may be due to an insensitive target site.

Evidence of resistance and cross resistance

Four grass weed species with resistance to HRAC group K3 active substances are reported worldwide (www.weedscience.org, Nov 2014): *Alopecurus myosuroides* (Germany), *Echinochloa crus-galli* var. *crus-galli* (China, Thailand, Philippines), *Lolium perenne* ssp. *multiflorum* (US) and *Lolium rigidum* (Australia). For all reported resistant species, multiple resistance to up to seven different modes of action has been confirmed in at least one resistant biotype. The resistant biotype of *Alopecurus myosuroides* shows resistance to flufenacet and additional resistance to ACCase, ALS and PSII inhibitors. No case of resistance to dimethenamid-P has so far been reported worldwide.

There are no known cases of resistance to quinmerac. However, based on HRAC resistance classification, cross resistance should be expected to be likely between quinmerac and other HRAC group O herbicides. In Europe cases of multiple resistance including HRAC group O herbicides are reported for biotypes of *Papaver rhoeas*.

Analysis of the inherent risk

Only one case of resistance to HRAC group K3 (in *Alopecurus myosuroides*) has been reported in Europe although herbicides in this group have been used for many decades. As dimethenamid-P is not intended for the control of *Alopecurus myosuroides*, the inherent risk of the active substance can therefore be regarded as low. In general, there are some target weed species of dimethenamid-P that exhibit a high resistance risk, namely *Echinochloa crus-galli* (for which resistance to HRAC group K3 has been reported) and *Amaranthus* species. However, resistance to HRAC group K3 has not been reported for these species so far.

Analysis of the agronomic risk

Dimethenamid-P is used for the control of certain grasses and dicotyledonous species in maize, soybeans, sugar beet, sunflower and winter oilseed rape. In many European cropping systems, cereals are grown in monoculture situations or constitute a high percentage of the respective crop rotation.

The application frequency of dimethenamid-P can therefore be increased in certain crop rotations. However, other herbicides with alternating mode of action are commonly applied in cereals which reduced the agronomic risk of herbicide resistance. The agronomic risk of dimethenamid-P and quinmerac can be assessed as being low.

Summary and conclusion

Due to the low inherent and agronomic risk, the overall resistance risk of the herbicide containing dimethenamid-P and quinmerac can be assessed as low.

B.3.11 Adverse effects on treated crops

BAS 830 01 H is selective in oilseed rape. Incompatibilities of BAS 830 01 H with certain varieties are not known.

B.3.12 Observations on other undesirable or unintended side-effects

BAS 830 01 H can be considered as sufficiently safe for adjacent crops. The most sensitive plants like lettuce may be affected in pre emergence applications to a maximum distance of 5 m from the treated field, if no drift reducing application technique is used.

B.3.13 References relied on

None.