

BASF
We create chemistry

Hammer®

Reg. No. L5201

Act No. 36 of 1947

**READ ATTACHED PACKAGE OR LEAFLET BEFORE USE
KEEP OUT OF REACH OF CHILDREN AND ANIMALS**

GROUP	2	HERBICIDE
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A water soluble herbicide, for the control of annual broadleaf weeds in dry beans, soya beans and groundnuts.

'n Vloeistofkonsentraatonkruiddoder, vir die beheer van sekere eenjarige breëblaaronkruidе in droëbone, sojabone en grondbone.

Very toxic to aquatic life with long lasting effects.

If medical advice is needed, have product container or label at hand.

Dispose of contents and container to hazardous or special waste collection point.

Active ingredients / Aktiewe bestanddele:

Imazethapyr (imidazolinone).....100 g/l

Registered by:

BASF South Africa (Pty) Ltd
Co. Reg. No. 66/10235/07
852 Sixteenth Road
P.O. Box 2801
Halfway House 1685
+27 11 203 2400

Geregistreeur deur:

BASF Suid-Afrika (Edms) Bpk
Mpy Reg. Nr 66/10235/07
852 Sestiende Laan
Posbus 2801
Halfweghuis 1685
+27 11 203 2400

WARNING



Batch No. & Date manufactured: Refer to details printed on container

Lotnummer & Datum vervaardig: Verwys na besonderhede gedruk op houer

UN-No. / VN-Nr: 3082

EMERGENCY NUMBER / NOODNOMMER: +27 82 446 8946

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81167656 ZA 2033



ENGLISH

WARNINGS

Hazard Statements

- Very toxic to aquatic life with long lasting effects
- Allow 85 days between application and harvest of the crop.
- Handle with care.
- Poisonous when swallowed.
- Store in a cool place away from food, feeds and seed.
- Keep out of reach of children, uninformed persons and animals.

Aerial application:

- Notify all inhabitants of the immediate area to be sprayed and issue the necessary warnings.
- Do not spray over or allow drift to contaminate adjacent areas or water bodies.

Although this remedy has been tested under a large variety of conditions the registration holder does not warrant that it will be efficacious under all conditions because the action and effect thereof may be affected by factors such as abnormal soil, climatic and storage conditions, quality of dilution water, compatibility with other substances not indicated on the label, and the occurrence of resistance of the weeds against the remedy concerned as well as by the method, time and accuracy of application. The registration holder furthermore does not accept responsibility for damage to crops, vegetation, the environment or harm to man or animal or for lack of performance of the remedy concerned due to the occurrence of conditions which could not have been foreseen in terms of the registration. Consult the supplier in the event of any uncertainty.

PRECAUTIONS

Precautionary Statements

- If medical advice is needed, have product container or label at hand.
- Keep out of reach of children.
- Read carefully and follow all instructions.
- Collect spillage.
- Dispose of contents and container to hazardous or special waste collection point.
- Do not inhale spray mist.
- Wash with soap and water after use and accidental skin contact.
- Do not eat, drink or smoke while mixing or spraying, unless having washed hands and face.
- Do not allow spray drift onto / or spraying of other crops, grazing, rivers, dams and any area not under treatment.
- Do not allow food, feedstuffs, drinking water and eating utensils to be contaminated.
- TRIPLE RINSE empty container in the following manner: Invert the empty container over the spray or mixing tank and allow to drain for at least 30 seconds after the flow has slowed down to a drip. Thereafter, rinse the container three times with a volume of water equal to a minimum of 10% of that of the container.
- Add the rinsings to the contents of the spray tank, before destroying the container by perforation, flattening and burying and never re-use for any other purpose.
- Wash and rinse spray equipment thoroughly after use and dispose of wash-water where it will not contaminate crops, grazing, rivers and dams.

RELEVANT SUBSTANCES

Hazardous ingredients According to UN GHS criteria	CAS number	Concentration (W/W)
3-Pyridinecarboxylic acid, 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-ethyl-	81335-77-5	9,35 %
Ethane-1,2-diol	107-21-1	< 10 %
Ammonia, aqueous solution	1336-21-6	< 3 %

FIRST AID TREATMENT

Remove contaminated clothing.

ON CONTACT WITH EYES:	Wash affected eyes for at least 15 minutes under running water with eyelids held open.
ON INGESTION:	Rinse mouth and then drink 200 – 300 ml water.
ON SKIN CONTACT:	Wash thoroughly with soap and water.
IF INHALED:	Keep patient calm, remove to fresh air.

TREATMENT: Symptomatic treatment (decontamination, vital functions).

RESISTANCE WARNING

For resistance management, Hammer® is a HRAC Group Code 2 Herbicide. Any weed population may contain individuals naturally resistant to Hammer® and other Group Code 2 herbicides. The resistant individuals can eventually dominate the weed population, if these herbicides are used repeatedly and exclusively in programmes. These resistant weeds may not be controlled by Hammer® or any other Group Code 2 herbicide.

To delay herbicide resistance:

- Avoid exclusive repeated use of herbicides from the same Herbicide Group Code. Alternate or tank-mix with products from different Herbicide Group Codes.
- Integrate other control methods (chemical, cultural, biological), into weed control programmes.

FOR SPECIFIC INFORMATION ON RESISTANCE MANAGEMENT, CONTACT THE REGISTRATION HOLDER, BASF SA (Pty) Ltd.

USE RESTRICTIONS

- Do not apply Hammer® to acid soils with pH (KCl) below 5.
- Do not use the post-emergent treatment on soils below 15% clay.
- Do not apply more than 700 ml/ha Hammer® on a land per season.
- When Hammer® is applied post-emergent to the crop, the crop may be treated at any time after the full emergence of the third trifoliolate leaf, but before flowering.
- Avoid the post-emergent application of Hammer® to plants stressed in any way, by factors such as drought, nematode infestations, diseases, nutritional deficiencies or plants put under stress, by prior use of other herbicides.
- **DO NOT** apply Hammer as a post-emergent treatment to the soya bean, PAN 717 cultivar.
- If a deep cultivation is required to aerate the soil BEFORE the post-emergent application has been made, Hammer® can be applied immediately after the cultivation or any time up to 14 days after this cultivation, provided the crop has not started flowering. Further shallow cultivations may be carried out.

WAITING PERIOD FOR FOLLOW-UP CROPS

- To avoid possible damage to follow-crops, the waiting periods as indicated below should lapse after the last application of **Hammer®** and the planting of the follow crop.
- However, the waiting periods mentioned here will only be valid if;
 - the standard, recommended **Hammer®** rate for the soil type was applied, and
 - at least 350 mm of well distributed rainfall and / or irrigation was recorded, which was enough to ensure a reasonable field legume harvest.
 - This rain or irrigation must have occurred after the application of **Hammer®** and prior to the planting of the follow-up crop.
- When the higher rate was used to control *Tribulus terrestris*, the safety periods mentioned in the table below must be extended by a further 12 months to at least 20 months, before a **Hammer®**-sensitive crop can be planted with relative safety.
- The land should always be deep ploughed before planting a follow-up crop.
- Test planting is nevertheless recommended.
- See **TABLE 5** for maize cultivars to be used.

CROP	WAITING PERIOD
Dry beans, soya beans and groundnuts	None
Any other legume crop (other than dry beans, soya beans or groundnuts)	10 months
Wheat	6 months
All other crops (including popcorn & sweetcorn)	24 months
Maize	20 months, but depending on the following factors and their inter-relationship, waiting period may be shorter. <ul style="list-style-type: none"> • soil type, • rainfall or irrigation, • application rate used, • maize variety to be planted Contact the supplier for further information.

DIRECTIONS FOR USE: USE ONLY AS DIRECTED

General information:

- **Hammer®** can be used either **PRE-EMERGENT** or **POST-EMERGENT** of weeds and the crop.
- It is preferable that about 10 mm rain should fall within seven days after a pre-emergent application in order to move the product into the top layer of the soil where it can be absorbed by roots of germinating weeds.
- Internode shortening and / or temporary yellowing of the crop may occasionally occur, especially when heavy rains (more than 15 mm/h) should fall shortly after a post-emergent application of **Hammer®**. These effects can be more pronounced if crops are growing under any stressful environmental conditions. Normal growth and appearance will resume within one – two weeks. No adverse affect on the yield has been recorded.
- If dry weather conditions should prevail for a period of more than seven days after application, weeds may germinate and grow. When this happens, a shallow cultivation / surface blend (3 – 5 cm) should follow to control weeds and to incorporate the herbicide into the top layer of the soil. The same shallow cultivation may be necessary when heavy rains fall within a few hours of an application of **Hammer®** as the post- emergent efficacy of **Hammer®** may be reduced, resulting in poorer weed control. Such a cultivation should not influence the residual efficacy of **Hammer®**.
- If heavy rains should fall on sandy soils within a few days after a pre-emergent application, the product could move out of the region where the weeds germinate, resulting in poor weed control.
- Susceptible weeds will stop growing within two – three days after the post-emergent application of **Hammer®**. Over the next 10 – 14 days these weeds will begin yellowing and after three to five weeks will either die or will not be competitive with the crop. Weeds will germinate after the pre-emergent application of **Hammer®**, but the susceptible weeds will soon show yellowing and growth will stop.

- For increased weed control of especially *Tagetes minuta*, a shallow surface blend or inter-row cultivation of less than 5 cm deep should be carried out at least once, before the crop canopies. Ensure cultivation is not too deep, as optimum control of weeds may not be achieved and further cultivations will be required.
- In lands where especially high weed populations were treated, the control of late season weeds may appear to be unacceptable. This can be attributed to the interception of the herbicide by the dense weeds and crop canopy, resulting in insufficient herbicide reaching the soil for the residual control of late germinating weeds
- Ensure thorough coverage and wetting of the weeds, especially when crop foliage is dense.

Compatibility:

- **Hammer[®]** is compatible with most commonly used pyrethroids such as **Fastac[®] SC** and **Fastac[®] EC** (L4992 & L4991) as well as with **Butisan[®] S** (L2449), **Frontier[®] Optima** (L7011), acetochlor, alachlor and metolachlor, at their recommended dosages.
- **Hammer[®]** is compatible with a flowable (50%) high quality ammonium sulphate and a wetter / spreader.
- **Hammer[®]** is not compatible with post-emergent grass herbicides, due to conflicting modes of action.
- When **Hammer[®]** is used in conjunction with any other agrochemical, full cognisance must be taken of all **WARNINGS**, **PRECAUTIONS** and **DIRECTIONS FOR USE** mentioned on those labels.

Mixing instructions:

- Three-quarter fill the spray tank with clean water.
- The use of a registered buffering agent is recommended, where water with a pH > 8 is to be used for spraying.
- Shake the **Hammer[®]** container well, measure out the required volume and pre-mix this with at least 10 ℓ water, before adding to the spray tank. If any other product is to be mixed with **Hammer[®]**, pre-mix the required volume of product in similar fashion.
- Fill the spray tank with water to the required level while maintaining agitation, to ensure thorough mixing of the spray mixture before spraying commences. Maintain agitation while spraying.
- For **post-emergent** spraying, add a wetter / spreader and a flowable (50%) high quality ammonium sulphate to the spray tank. The required amount of both these products must first be pre-mixed with at least 10 ℓ water before adding to the spray tank.
- The prepared spray mixture must not be left in the spray tank for any length of time, e.g. overnight.

Soil nutrient status:

- Ensure that all plant nutrients are at optimum levels (even in regions of relatively low cropping potential), by always carrying out timeous soil fertility analyses and correcting any major or minor nutrient deficiencies.
- This applies particularly to soil phosphate levels that should be at least 20 – 25 ppm.

Aerial application:

Aerial application of **Hammer[®]**, may only be done by a registered aerial application operator using a correctly calibrated, registered aircraft according to the instructions of SANS Code 10118 (Aerial Application of Agricultural Pesticides). Ensure that the spray mixture is distributed evenly over the target area and that the loss of spray material during application is restricted to a minimum. It is therefore essential that the following criteria be met:

- **Volume:** A spray mixture volume of 30 ℓ per hectare is recommended. As this product has not been evaluated at a reduced volume rate, the registration holder cannot guarantee efficacy, or be held responsible for any adverse effects if this product is applied aerially at a lower volume rate than recommended above.
- **Droplet coverage:** The following number of droplets per cm² must be recovered at the target area:
- **Pre-emergent:** 20 – 30 and **Post-emergent:** 35 – 45.
- **Droplet size:** The following droplet spectrum is recommended:
- **Pre-emergent:** VMD of 350 – 400 micron and **Post-emergent:** VMD of 300 – 350 micron. Limit the production of fine droplets less than 150 micron (high drift and evaporation potential) to a minimum.
- **Flying height:** Maintain the height of the spray boom at 3 – 4 metre above the target. Do not spray when aircraft dives, is in a climb or when banking.
- Use suitable atomising equipment that will produce the desired droplet size and coverage, but which will ensure the minimum loss of product. The spraying system must produce a droplet spectrum with the lowest possible Relative Span.
- Position all the atomisers within the inner 60 – 75% of the wingspan to prevent droplets from entering the wingtip vortices.
- The difference in temperature between the wet and dry bulb thermometers, of a whirling hygrometer, should not exceed 8°C.
- Stop spraying if the wind speed exceeds 15 km/h.
- Stop spraying under turbulent, unstable and dry conditions during the heat of the day.

- Spraying under temperature inversion conditions (spraying in or above the inversion layer) and / or high humidity conditions (relative humidity 80% and above) may lead to the following:
 - reduced efficacy due to suspension and evaporation of small droplets in the air (inadequate coverage),
 - damage to other sensitive crops and / or non-target areas through drifting of the suspended spray cloud away from the target field.
- Ensure that the aerial spray operator knows exactly which fields to spray.
- Obtain an assurance from the aerial spray operator that the above requirements will be met and that relevant data will be compiled in a logbook and kept for future reference.

Dry beans (*Phaseolus vulgaris* & *Phaseolus coccineus*)

(a) A single PRE-EMERGENT APPLICATION, OR

(b) A programme PRE-EMERGENT followed by a POST-EMERGENT APPLICATION.

% CLAY	PRE-EMERGENT APPLICATION	The POST-EMERGENT "FOLLOW UP" TREATMENT
	RATE / HA	RATE / HA
0 – 15	300 mℓ	On this soil type a "follow-up" treatment is not recommended
16 – 25	(a) 400 mℓ OR (b) 400 mℓ followed by	300 mℓ + 4 ℓ/ha of a flowable (50%) high quality ammonium sulphate + a wetter / spreader.
26* – 30	(a) 500 mℓ OR (b) 400 mℓ followed by	300 mℓ + 4 ℓ/ha of a flowable (50%) high quality ammonium sulphate + a wetter / spreader.
<i>*If a follow-up treatment of Hammer® is intended on soils with more than 26% clay, do not exceed 400 mℓ/ha as a pre-emergent treatment.</i>		
COMMENTS		COMMENTS
<p>Apply Hammer® as a pre-emergent (to crop and weeds) treatment, onto a well-prepared seedbed, with an even surface and free of clods.</p> <p>Ground application: With boom and nozzle: Apply the prescribed dosage by means of a suitable ground applicator, in at least 200 ℓ of water/ha as an overall application, to the soil, during or soon after planting.</p> <p>For increased grass control, Hammer® can be mixed with:</p> <ul style="list-style-type: none"> • A registered pre-emergent grass herbicide, at its registered rate. OR • Stomp® (L1686) can be applied and incorporated (label rate for grass control only), before the application of Hammer® at rates indicated above. <p>See Tables: 1 and 2 below, for a list of weeds controlled by Hammer® applied in this manner.</p>		<p>The "Followed by" treatment:</p> <p>To improve control of late-season broadleaf weeds (especially <i>Tagetes minuta</i>), a 'Followed by' treatment can now be applied <u>after a pre-emergent application of Hammer®</u>.</p> <p>Ground application: with boom and nozzle: Apply the prescribed dosage of Hammer® by means of a suitable ground applicator, in at least 200 ℓ of water/ha, as an overall application in a tank mixture, with 4 ℓ/ha of a flowable (50%) high quality ammonium sulphate + a wetter / spreader.</p> <p>Apply this treatment 2 – 3 weeks after the Hammer® pre-emergent application.</p> <p>This post-emergent application can only be used on the following dry bean cultivars: PAN 148, Kranskop, Sabie, Helderberg, Teebus and Kamberg.</p> <p>CAUTION: Compact row crops, with high plant populations, will intercept spray droplets, resulting in reduced spray deposition on weeds and soil. This may result in lowered efficacy. Correctly placed drop-arm nozzles will help to alleviate this problem.</p> <p>See Tables: 3 and 4 below, for a list of weeds controlled by Hammer® applied in this manner.</p>
<p>Aerial application: Apply as for Ground application above in at least 35 ℓ water / ha. Refer to Aerial application under DIRECTIONS FOR USE above. Please Note: application recommendations for pre- and post-emergent treatments differ, depending on climatic conditions.</p>		

Groundnuts

(a) A single PRE-EMERGENT APPLICATION, OR

(b) a single POST-EMERGENT APPLICATION [a follow-up treatment is not recommended].

% CLAY	PRE-EMERGENT	POST-EMERGENT
	RATE / HA	RATE / HA
0 – 15	300 mℓ	Not recommended
16 – 25	400 mℓ	Not recommended
	-----	700 mℓ + 4 ℓ/ha of a flowable (50%) high quality ammonium sulphate + a wetter / spreader.
26 – 30	500 mℓ	Not recommended
	-----	700 mℓ + 4 ℓ/ha of a flowable (50%) high quality ammonium sulphate + a wetter / spreader.
<ul style="list-style-type: none"> • Hammer[®] can be applied as either a pre- or a post-emergent treatment. • A follow-up treatment, similar to dry beans and soya, is not recommended. 		
<p align="center">COMMENTS</p> <p>Ground application: With boom and nozzle: Apply the prescribed dosage, by means of a suitable ground applicator, in at least 200 ℓ of water/ha, as an overall application to the soil, during or soon after planting.</p> <p>In areas where <i>Tribulus terrestris</i> is a problem, a pre-emergent application of 450 – 500 mℓ/ha, must be used. Warning: This higher dosage rate may result in Hammer[®] remaining active longer in lighter soils (where carry over to the following season is possible).</p> <p>For increased grass control, Hammer[®] can be mixed with:</p> <ul style="list-style-type: none"> • A Registered pre-emergent grass herbicide, at its registered rate, <p>OR</p> <ul style="list-style-type: none"> • Stomp[®] can be applied and incorporated (label rate for grass control only), before the application of Hammer[®] at rates indicated above. <p>See TABLES: 1 and 2 below, for a list of weeds controlled by Hammer[®] applied in this manner.</p>		<p align="center">COMMENTS</p> <p>Hammer[®] can be applied as a post-emergent treatment when circumstances prohibited its pre-emergent use. Apply 14 – 25 days after the crop has been planted. This will usually be when most of the weeds are 3 – 6 cm tall (1 – 3 leaf stage).</p> <p>Hammer[®] should be preceded by a registered pre-emergent grass herbicide.</p> <p>Ground application: With boom and nozzle: Apply the prescribed dosage of Hammer[®] by means of a suitable ground applicator in at least 200 ℓ of water / ha as an overall application in a tank mixture with 4 ℓ/ha of a flowable (50%) high quality ammonium sulphate + a wetter / spreader.</p> <p>CAUTION: Compact row crops with high plant populations will intercept spray droplets resulting in reduced spray deposition on weeds and soil. This may result in lowered efficacy. Correctly placed drop-arm nozzles will help to alleviate this problem.</p> <p>See TABLES: 3 and 4 below, for a list of weeds controlled by Hammer[®].</p>
<p>Aerial Application: Apply as for Ground application above, in at least 35 ℓ water/ha. Refer to Aerial application under DIRECTIONS FOR USE above.</p> <p>Please Note: application recommendations for pre- and post-emergent treatment differ, depending on climatic conditions.</p>		

Soya beans

(a) A single **PRE-EMERGENT APPLICATION**, OR

(b) a programme **PRE-EMERGENT** followed by a **POST-EMERGENT APPLICATION**, OR

(c) a single **POST-EMERGENT APPLICATION**.

% CLAY	PRE-EMERGENT APPLICATION	POST-EMERGENT "FOLLOW-UP" TREATMENT	POST-EMERGENT
	RATE / HA	RATE / HA	RATE / HA
0 – 15	300 ml	On this soil type, a "follow-up" treatment is not recommended	Not recommended
16 – 25	(a) 400 ml OR (b) 400 ml followed by	300 ml + 4 l/ha of a flowable (50%) high quality ammonium sulphate + a wetter / spreader.	700 ml + 4 l/ha of a flowable (50%) high quality ammonium sulphate + a wetter / spreader.
26* – 30	(a) 500 ml OR (b) 400 ml followed by	300 ml + 4 l/ha of a flowable (50%) high quality ammonium sulphate + a wetter / spreader.	700 ml + 4 l/ha of a flowable (50%) high quality ammonium sulphate + a wetter / spreader.
*If a follow-up treatment of Hammer ® is intended on soils with more than 26% clay, do not exceed 400 ml/ha, as a pre-emergent treatment.			COMMENTS
COMMENTS Apply Hammer ® as a pre-emergent (to crop and weeds) treatment, onto a well-prepared seedbed, with an even surface and free of clods. Ground application: With boom and nozzle: Apply the prescribed dosage by means of a suitable ground applicator, in at least 200 l of water/ha as an overall application, to the soil, during or soon after planting. For increased grass control, Hammer ® can be mixed with: • A registered pre-emergent grass herbicide, at its registered rate, OR • Stomp ® (L1686) can be applied and incorporated (label rate for grass control only) before the application of Hammer ® at rates indicated above. See TABLES: 1 and 2 below, for a list of weeds controlled by Hammer ® applied in this manner.		COMMENTS To improve control of late-season broadleaf weeds (especially <i>Tagetes minuta</i>), a 'Followed by' treatment can now be applied after a pre-emergent application of Hammer ®. Ground application: with boom and nozzle: Apply the prescribed dosage of Hammer ® by means of a suitable ground applicator, in at least 200 l of water/ha, as an overall application, in a tank mixture with 4 l/ha of a flowable (50%) high quality ammonium sulphate + a wetter / spreader. Apply this treatment 14 – 25 days after the Hammer ® pre-emergent application. This post-emergent application, can be used on all soya bean varieties, except PAN 717. CAUTION: Compact row crops with high plant populations, will intercept spray droplets, resulting in reduced spray deposition on weeds and soil. This may result in lowered efficacy. Correctly placed drop-arm nozzles, will help to alleviate this problem. See TABLES: 3 and 4 below, for a list of weeds controlled by Hammer ® applied in this manner.	Apply this treatment as a post-emergent application, where circumstances prohibited the pre-emergent use of Hammer ®. Apply 14 – 25 days after the crop has been planted. This will usually be when most of the weeds are 3 – 6 cm tall (1 – 3 leaf stage). Ground application: With boom and nozzle: Apply the prescribed dosage of Hammer ® by means of a suitable ground applicator, in at least 200 l of water/ha, as an overall application, in a tank mixture with 4 l/ha of a flowable (50%) high quality ammonium sulphate + a wetter / spreader. The recommended rate of Hammer ® should follow the application of a registered pre-emergent grass herbicide. CAUTION: Compact row crops with high plant populations, will intercept spray droplets, resulting in reduced spray deposition on weeds and soil. This may result in lowered efficacy. Correctly placed drop-arm nozzles, will help to alleviate this problem. See TABLES: 3 and 4 below, for a list of weeds controlled by Hammer ® in this manner.
Aerial application: Apply as for Ground application above, in at least 35 l water/ha. Refer to Aerial application under DIRECTIONS FOR USE above.			
Please Note: application recommendations for pre- and post-emergent treatment differ, depending on climatic conditions.			

TABLE 1: WEEDS NORMALLY CONTROLLED BY Hammer® WHEN APPLIED PRE-EMERGENT

<i>Acanthospermum hispidum</i>	Upright starbur	<i>Amaranthus thunbergii</i>	Red pigweed
<i>Amaranthus deflexus</i>	Perennial pigweed	<i>Chenopodium album</i>	White goosefoot
<i>Amaranthus hybridus</i>	Common pigweed		

TABLE 2: Hammer® (APPLIED PRE-EMERGENT) ON ITS OWN, PROVIDES VARIABLE CONTROL (75% – 80%) OF THE FOLLOWING WEEDS

<i>Commelina benghalensis</i>	Wandering jew	<i>Galinsoya parviflora</i>	Quick weed
<i>Cyperus esculentus</i>	Yellow nutsedge	<i>Portulaca oleracea</i>	Common purslane
<i>Cyperus rotundus</i>	Purple nutsedge	<i>Tagetes minuta</i>	Khaki weed
<i>Datura ferox</i>	Common thorn apple	<i>Tribulus terrestris (1)</i>	Common dubbeltjie
<i>Datura stramonium</i>	Large thorn apple	<i>Xanthium strumarium</i>	Cocklebur

- When **Hammer®** is used in combination with **Butisan® S**, acetochlor, alachlor, **Frontier® Optima**, **Stomp®** or metolachlor, in either a tank mixture or as a split application, control of the above weeds will be increased (refer also to the relevant product label for weeds controlled by that product).

(1) In areas where *Tribulus terrestris* is a problem, a dosage rate of at least 450 ml/ha may be used, as a pre-emergent treatment, irrespective of soil type, which will result in control of greater than 80%. This higher dosage rate for certain soils may, however, influence the waiting periods for follow crops. See **USE RESTRICTIONS** above.

TABLE 3: WEEDS CONTROLLED BY Hammer® (APPLIED POST-EMERGENT) WHEN PRECEDED BY A REGISTERED PRE-EMERGENT GRASS HERBICIDE (WHICH INCLUDES A Hammer® PRE-EMERGENT TREATMENT)

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
<i>Acanthospermum australe</i>	8 Seeded prostrate starburr	<i>Datura ferox</i>	Large thorn apple
<i>Acanthospermum glabratum</i>	5 Seeded prostrate starburr	<i>Datura stramonium</i>	Common thorn apple
<i>Acanthospermum hispidum</i>	Upright starburr	<i>Flaveria bidentis</i>	Smelter's bush
<i>Amaranthus deflexus</i>	Perennial pigweed	<i>Galinsoya parviflora</i>	Gallant soldier
<i>Amaranthus hybridus</i>	Common pigweed	<i>Nicandra physaloides</i>	Apple of Peru
<i>Amaranthus thunbergii</i>	Red pigweed	<i>Physalis angulata</i>	Wild gooseberry
<i>Chenopodium album</i>	White goosefoot	<i>Tagetes minuta</i> ^{#1}	Khaki weed
<i>Cleome monophylla</i>	Spindlepod	<i>Triumfetta annua</i>	Burs
<i>Commelina benghalensis</i>	Wandering Jew	<i>Xanthium strumarium</i>	Cocklebur

#1 = Only weeds which are fully emerged, are well controlled – seedlings which emerge after application are only 60 – 70% controlled.

TABLE 4: VARIABLE CONTROL OF THE FOLLOWING WEEDS IS ACHIEVED WITH Hammer® ALONE (APPLIED POST-EMERGENT)

SCIENTIFIC NAME	COMMON NAME	LEVEL OF CONTROL	SCIENTIFIC NAME	COMMON NAME	LEVEL OF CONTROL
<i>Bidens pilosa</i>	Blackjack	up to 70%	<i>Hibiscus trionum</i>	Bladderweed	up to 70%
<i>Bidens formosa</i>	Cosmos	up to 70%	<i>Ipomoea purpurea</i>	Morning glory	up to 70%
<i>Cyperus esculentus</i>	Yellow nutsedge	up to 80%	<i>Panicum schinzii</i> ^{#2}	Sweet buffalo grass	up to 90%
<i>Cyperus rotundus</i>	Purple nutsedge	up to 80%	<i>Portulaca oleracea</i>	Purslane	up to 70%
<i>Digitaria sanguinalis</i>	Crab finger grass	75 – 90%	<i>Rottboelia exaltata</i>	Guineafowl grass	70 – 85%
<i>Echinochloa colona</i>	Marsh grass	75 – 80%	<i>Schkuhria pinnata</i>	Dwarf marigold	80 – 90%
<i>Echinochloa crus-galli</i>	Barnyard grass	75 – 80%	<i>Sorghum halepense</i>	Johnson grass	up to 80%
<i>Eleusine indica</i>	Goose grass	up to 70%	<i>Tribulus terrestris</i>	Devil thorn	up to 70%
<i>Eragrostis curvula</i>	Love grass	up to 70%	<i>Zea mais</i> ^{#2}	Volunteer maize	up to 99%

#2 = Plants turn purple within two – three weeks, but take longer to die than most other weeds – minimum of 4 – 5 weeks.
#3 = Maize varieties that are tolerant to **Hammer**® will not be controlled. Contact the supplier for information on tolerant maize varieties.

TABLE 5: GUIDANCE FOR THE SELECTION OF MAIZE HYBRIDS, AS TESTED FOR PLANTING AFTER THE APPLICATION OF Hammer® IN THE WESTERN FREE STATE, WESTERN NORTH-WEST PROVINCE AND NORTHERN NORTH CAPE PROVINCE

COMMENTS		MAIZE HYBRID NO / NAME
A	<p>NIL WAITING PERIOD</p> <p>Consult your seed supplier for Clearfield® cultivars available for your region. This group can also be planted where Hammer® was applied to the previous season's groundnut, soya- or dry bean lands, in districts where a drought season or very low rainfall was experienced, i.e. less than 350 mm of rain. This group can also be planted immediately in the same season that Hammer® has been applied, i.e. where wind has covered or damaged new groundnut plantings.</p>	All Clearfield ® maize hybrids
B	<p>10 MONTH WAITING PERIOD</p> <p>Where the specified higher rate of 450 – 500 ml/ha Hammer®, for <i>Tribulus terrestris</i> control, was used the previous season.</p> <p>This group of maize hybrids, semi-tolerant to Imidazolinone herbicides, can be planted where the average seasonal rainfall, or more, was experienced the previous season. But only use a Clearfield® maize hybrid, as recommended in section A above, if less than the average and especially, where less than 350 mm of rainfall was experienced the previous season.</p>	PHB 30H22 PHB 3394 PHB 35A19 CRN 3549
C	<p>10 MONTH WAITING PERIOD</p> <p>Where the standard registered rate of Hammer® for the soil type, was used in the previous season.</p> <p>This second group of semi-tolerant maize hybrids, can be planted only where average rainfall, or higher, was experienced the previous season. Where less than the average rainfall was experienced the previous season, use only the maize hybrids in sections A or B above. If less than 350 mm rain fell during the previous season, only use Clearfield® maize hybrids as referred to in section A above.</p>	CRN 3414 CRN 3505 CRN 3604 CRN 3631 CRN 3760 CRN 3891 CRN 4502 Goldfinger Highflyer LS 8503 PAN 6146 PAN 6233 PAN 6364 PHB 30D05 PHB 30T43 PHB 3203 PHB 32K39 PHB 32K61 SC 707 SNK 2147 SNK 2401 SNK 2640 SNK 2776 SNK 2860 Woodriver
D	<p>A minimum waiting period of 20 months is recommended in the production areas, in western Free State, western North-West Province and northern North-Cape Province, for all maize hybrids not listed in the tables above. A test planting should nonetheless still be carried out. If there is any doubt, choose a yellow maize hybrid over a white hybrid.</p>	

Fastac® EC, **Fastac**® SC, **Butisan**® S, **Frontier**® Optima, **Clearfield**® and **Stomp**® are Registered Trademarks of BASF.

AFRIKAANS

WAARSKUWINGS

Gevaarstellings

- Baie giftig vir akwatiese organismes met langdurige effek
- Laat 85 dae verloop tussen toediening en oes van die gewas.
- Hanteer versigtig
- Giftig indien ingesluk.
- Bêre weg van voedsel, voer en saad in 'n koel plek.
- Hou buite bereik van kinders, oningeligte persone en diere.

Lugtoediening:

- Verwittig alle inwoners in die omgewing van die gebied wat bespuit gaan word, en reik die nodige waarskuwings uit.
- Moenie oor aangrensende gebiede of water spuit of spuitnewel daarheen laat oorwaai nie.

Alhoewel hierdie middel onder 'n groot verskeidenheid toestande getoets is, waarborg die registrasiehouer nie dat dit onder alle toestande doeltreffend sal wees nie, aangesien die werking en effek daarvan, deur faktore soos abnormale grond-, klimaats- en bergingstoestande, kwaliteit van verdunningswater, verenigbaarheid met ander stowwe wat nie op die etiket aangedui is nie, en die voorkoms van weerstand by onkruid teen die betrokke middel beïnvloed kan word, die metode, tyd en akkuraatheid van toediening kan ook die werking en doeltreffendheid van die middel beïnvloed. Verder aanvaar die registrasiehouer nie verantwoordelikheid vir skade aan gewasse, plantegroei en die omgewing nie, of vir nadelige effek op mens of dier nie, of vir onvoldoende prestasie van die betrokke middel weens die versuim van die gebruiker om etiketaanwysings na te kom nie, of weens toestande wat nie kragtens die registrasie voorsien kon word nie. Raadpleeg die verskaffer in geval van enige onsekerheid.

VOORSORGMATREËLS

Voorsorgstellings

- Indien mediese advies nodig is, hou die produkhouer of etiket byderhand.
- Hou buite bereik van kinders.
- Lees etiket noukeurig en volg alle instruksies.
- Maak stortsel bymekaar
- Raak ontslae van inhoud en houer deur na 'n gevaarlike- of spesiale-afval insamelsplek te besorg.
- Vermyn inaseming van spuitnewel.
- Was met water en seep na gebruik of toevallige velkontak.
- Moenie eet, rook of drink terwyl gemeng, of gespuit word nie en alvorens hande en gesig eers gewas is nie.
- Voorkom die oorwaai van spuitnewel na, of die bespuiting van ander gewasse, weiding, riviere, damme of ander gebiede.
- Voorkom besoedeling van voedsel, voer, drinkwater en eetgerei.
- Leë houers moet DRIE KEER UITGESPOEL word soos volg: Keer die leë houer om oor die spuittenk of mengbak en dreineer vir minstens 30 sekondes nadat die vloei tot 'n gedrup verminder het. Spoel die houers daarna drie keer uit met 'n volume water gelykstaande aan 'n minimum van 10% van die houer.
- Gooi die spoelwater by die inhoud van die spuittenk en vernietig die houers, deur gate in te kap en plat te slaan en doen weg daarmee op 'n veilige manier en moenie die leë houers vir enige ander doel hergebruik nie.
- Was en spoel spuitoerusting deeglik uit na gebruik en gooi die was- en spoelwater uit waar dit nie gewasse, weiding, riviere en damme sal besoedel nie.

RELEVANTE STOWWE

Gevaarlike bestanddele Volgens UN GHS kriteria	CAS nommer	Konsentrasie (W/W)
3-Pyridinecarboxylic acid, 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-ethyl-	81335-77-5	9,35 %
Ethane-1,2-diol	107-21-1	< 10 %
Ammonia, aqueous solution	1336-21-6	< 3 %

NOODHULPBEHANDELING

Verwyder dadelik besmette klere

INDIEN IN DIE OË:	Spoel aangetaste oë vir ten minste 15 minute met lopende water, terwyl die ooglede oopgehou word.
INDIEN INGESLUK:	Spoel mond uit en drink 200 – 300 ml water.
INDIEN OP DIE VEL:	Was aangetaste area dadelik deeglik met seep en water
INDIEN INGEASEM:	Hou pasiënt kalm en verwyder na vars lug.

Behandeling: Behandel simptome (reinig, belangrikste funksies).

WAARSKUWING TEEN WEERSTAND

Hammer® is 'n HRAC Groepkode 2 Onkruidodder. Enige populasie van 'n spesifieke onkruid mag individue insluit wat 'n natuurlike weerstand teen Hammer®, of enige ander Groepkode 2 onkruidodder het. Indien hierdie onkruidodders herhaaldelik aangewend word, kan die weerstandbiedende individue uiteindelik die onkruidpopulasie oorheers. Hierdie weerstandbiedende onkruid sal waarskynlik nie deur Hammer® of enige ander Groepkode 2 onkruidodders, beheer word nie.

Om weerstand teen onkruidodders te vertraag:

- Vermoed die eksklusiewe herhaaldelike gebruik van onkruidodders in dieselfde Onkruidodder-groepkode. Wissel af met, of gebruik tenkengels van produkte in verskillende Onkruidodder-groepkodes.
- Integreer ander beheermaatreëls (chemies, verbouing, biologies), in onkruidodderprogramme.

VIR SPESIFIEKE INLIGTING OOR WEERSTANDBESTUUR KONTAK DIE REGISTRASIEHOUER, BASF SA (Edms) Bpk.

GEBRUIKSBEPERKINGS

- Vermoed die toediening van Hammer® op suurgronde, met pH (KCl) onder 5,0.
- Moenie die na-opkomsbehandeling op gronde toedien wat minder as 15% klei bevat nie.
- Moenie meer as 700 ml Hammer® per seisoen op 'n land toedien nie.
- Wanneer Hammer® as 'n na-opkoms onkruidodder op die gewas toegedien word, mag die gewas behandel word enige tyd na die ontwikkeling van die derde drieledige blaar, maar vóór blomvorming.
- Vermoed na-opkoms toediening van Hammer® op plante wat onder stremming verkeer deur faktore soos droogte, aalwurms besmettings, siektes, voedingstekorte, of plante wat onder stremming verkeer deur 'n ander onkruidodder wat vroeër toegedien is.
- **MOENIE Hammer®** op die sojaboontkultivar PAN 717 as 'n na-opkomsbehandeling toedien nie.

- Wanneer 'n diep tussen-ry skoffel benodig word om die grond te belug VOOR die na-opkomsbehandeling toegedien is, dan kan **Hammer**[®] onmiddellik na die skoffel toegedien word, óf enige tyd binne 14 dae na skoffel, op voorwaarde dat die gewas nog nie begin blom het nie. Verdere vlak tussen-ry skoffels mag wel nog uitgevoer word.

WAGPERIODES VIR OPVOLGGEWASSE

- 'n Sekere tyd is nodig om te verloop tussen die toediening van **Hammer**[®] en die aanplant van opvolggewasse, om skade aan hierdie gewasse te voorkom.
- Die wagperiodes soos hieronder genoem, geld slegs indien:
 - Die standaard aanbevole dosis **Hammer**[®] vir die grondtipe toegedien was, en
 - Ten minste 350 mm goed verspreide reën en / of besproeiing is nodig, om 'n redelike veld peuloes te verseker.
 - Hierdie reën of besproeiing moet plaasvind nadat **Hammer**[®] toegedien is en vóór die opvolggewas aangeplant is.
- Waar die hoër dosis vir *Tribulus terrestris* beheer gebruik is, moet die wagperiodes, soos in die tabel hieronder genoem, met 'n verdere 12 maande tot ten minste 20 maande verleng word, voordat 'n **Hammer**[®]-sensitiewe opvolggewas met relatiewe veiligheid geplant kan word.
- Die land moet altyd diep geploeg word voordat 'n opvolggewas geplant word.
- 'n Toetsaanplanting word nogtans aanbeveel.
- Kyk **TABEL 5** vir die keuse van mieliebasters.

GEWAS	WAGPERIODE
Droëbone, sojabone en grondbone.	Geen
Ander peulgewas (behalwe droëbone sojabone of grondboontjies)	10 maande
Koring	6 maande
Alle ander gewasse (sluit in springmielies & suikermielies)	24 maande
Mielies	20 maande Die volgende faktore, asook die inter-reaksie tussen die faktore, beïnvloed die nawerking van die produk, wat die wagperiode mag verkort. Raadpleeg die verskaffer vir verdere inligting. <ul style="list-style-type: none"> • Grondtipe • Reënval of besproeiing • Toedieningsdosis • Mieliebaster

GEBRUIKSAANWYSINGS: GEBRUIK SLEGS SOOS VOORGESKRYF

Algemene inligting:

- **Hammer**[®] kan **VOOR-OPKOMS** of **NA-OPKOMS** van die gewas en die onkruid gespuit word.
- Dit is verkieslik dat 10 mm reën binne sewe dae na 'n voor-opkoms toediening val, sodat die produk in die bogrond ingewas kan word waar dit deur die wortels van ontkiemende onkruid opgeneem word.
- Verkorting van internodes en / of 'n tydelike vergeling van die gewas, mag sigbaar wees, veral as stortreën (meer as 15 mm in 1 uur) kort na toediening van **Hammer**[®] geval het. Hierdie simptome sal meer sigbaar wees indien die gewas onder fisiologiese stremming geplaas word as gevolg van omgewings- of uitermate warm toestande. Normale groei en voorkoms verskyn weer na een – twee weke. Gewasopbrings word nie beïnvloed nie.
- Indien droë weerstoestande vir 'n periode van sewe dae na toediening voortduur, mag onkruid ontkiem en ontwikkel. Waar dit gebeur, word aanbeveel dat 'n vlak bewerking (3 – 5 cm) met bv. 'n roltand-eg uitgevoer word om die onkruid te vernietig en die onkruidodder met die boonste grondlaag te meng. Indien swaar reën sou val kort na 'n na-opkoms toediening van **Hammer**[®], mag die werking van die bespuiting nie na wense wees nie en 'n soortgelyke vlak bewerking mag nodig wees.
- Indien swaar reën sou val op sandgronde, binne 'n paar dae na 'n voor-opkoms toediening, kan die produk oormatig loog wat tot swak onkruidbeheer kan lei.
- **Onkruid** sal ontkiem na die voor-opkoms toediening van **Hammer**[®], maar vatbare onkruid sal gou vergeling van die blare toon en groei sal staak. Die groeipunte van beide die bo-grondse dele en die wortels van vatbare onkruid, se groei staak binne twee tot drie dae na 'n na-opkomstoeidiening van **Hammer**[®]. Binne die volgende 10 – 14 dae word die onkruid geel, en dan na drie – vyf weke sal hulle óf doodgaan óf glad nie meer met die gewas kompeteer nie.

- Vir verhoogde beheer van onkruid, veral *Tagetes minuta*, moet 'n vlak tussen-ry skoffel van minder as 5 cm diep uitgevoer word, voordat die digte gewasblaremat oor die rye vorm. Verseker egter dat die bewerking nie te diep is wat latere onkruidbeheer nadelig sal beïnvloed nie.
- In 'n land waar 'n besondere hoë onkruidpopulasie voorkom, mag die beheer van veral laatseisoenonkruid nie na wense blyk te wees nie. Dit kan toegeskryf word aan die feit dat die digte onkruid- en gewasblaremat die spuitstof onderskep het en daar nie genoegsaam produk die grondoppervlak bereik het vir effektiewe nawerking en beheer van laat-ontkiemers nie.
- Verseker goeie benutting en bedekking van die onkruid, veral wanneer hulle saam met die gewas 'n digte blaremassa vorm.

Verenigbaarheid:

- **Hammer**® is verenigbaar met piretroïede, algemeen in gebruik soos **Fastac**® SC & EC (L4992 & L4991), asook met **Frontier**® **Optima** (L7011), **Butisan**® S (L2449), acetochlor, alachlor, metolachlor teen die aanbevole dosisse.
- **Hammer**® is verenigbaar met ammoniumsulfaat en 'n benatter / verspreider.
- **Hammer**® is nie verenigbaar met na-opkoms grasdoders nie, as gevolg van verskillende metodes van werking.
- Indien **Hammer**® in kombinasie met enige ander landboumiddel gebruik word, moet alle **WAARSKUWINGS, VOORSORMAATREËLS** en **GEBRUIKSAANWYSINGS** soos genoem op daardie etiket, nagekom word.

Menginstruksies:

- Maak die spuittenk driekwart vol met skoon water.
- Die gebruik van 'n geregistreerde buffer word aanbeveel, indien water met 'n hoë pH > 8 gebruik word vir toediening.
- Skud die **Hammer**® houër goed voor gebruik. Meet die benodigde volume **Hammer**® af en meng dit vooraf met minstens 10 ℓ water, voordat dit by die tenk gevoeg word. Indien enige ander produk met **Hammer**® gemeng word, moet die benodigde volume van hierdie produk op soortgelyke wyse eers vooraf gemeng word.
- Vul die spuittenk met water tot by die verlangde vlak terwyl daar voortdurend geroeer word om deeglike vermenging te verseker, alvorens daar met toediening begin word. Handhaaf roering gedurende toediening.
- Vir na-opkomsbespuiting moet ammoniumsulfaat en 'n benatter / verspreider in die spuittenk bygevoeg word. Die verlangde hoeveelheid van beide produkte moet vooraf eers met minstens 10 ℓ water gemeng word en dan by die spuittenk gevoeg word.
- Aangemaakte spuitmengsels moenie in die spuittenk gelaat word vir 'n onbepaalde tyd, bv. oornag, nie.

Bemestingsvlak van grond:

- Verseker dat die optimale bemestingsvlak vir die betrokke grondtipe en gewas verkry word (selfs in streke met relatiewe lae opbrengspotensiaal) deur vooraf die grond te laat analiseer en tekorte vroegetydig aan te vul,
- Dit geld veral wat die fosfaatvlak betref, waar die ideaal tussen 20 – 25 dpm is.

Vliegtuigtoediening:

Hammer® kan slegs deur 'n geregistreerde lugbespuitingsperateur met 'n korrek gekalibreerde, geregistreerde vliegtuig volgens die instruksies van SANS Kode 10118 (Aerial Application of Agricultural Pesticides) uit die lug bespuit word. Verseker dat die spuitmengsel eweredig oor die teikenarea versprei word, en die verlies aan spuitmengsel tydens toediening tot 'n minimum beperk word. Dit is daarom belangrik om aan die volgende vereistes te voldoen:

- **Volume:** 'n Spuitmengselvolume van 30 ℓ per ha word aanbeveel. Hierdie produk is nie teen 'n verlaagde volume getoets nie. Die registrasiehouer kan nie effektiwiteit waarborg, of verantwoordelik gehou word vir enige nadelige effekte indien hierdie produk teen 'n laer volume, as hierbo aanbeveel, toegedien word nie.
- **Druppelbedekking:** Die volgende aantal druppels per cm² moet op die teikenarea herwin word:
- **Voor-opkoms:** 20 – 30 en **Na-opkoms:** 35 – 45 druppels per cm².
- **Druppelgrootte:** Die volgende druppelspektrum word aanbeveel:
- **Voor-opkoms:** VMD van 350 tot 400 mikron en **Na-opkoms:** VMD van 300 – 350 mikron. Beperk die produksie van druppels kleiner as 150 mikron (hoë drywing en verdampingspotensiaal) tot 'n minimum.
- **Vlieghoogte:** Handhaaf die hoogte van die spuitbalk bo die teiken op 3 – 4 meter. Moenie spuit wanneer die vliegtuig duik, uitklim of draai nie.
- Gebruik geskikte atomiseringsapparaat wat die vereiste druppelgrootte en bedekking sal produseer, maar die minste verlies van produk verseker. Die spuitstelsel moet 'n druppelspektrum met die kleinste maonlike Relatiewe Span produseer.
- Plaas al die atomiseerders in die bineste 60 – 75% van die vlerkspan om te verhoed dat druppels binne-in die vlerkpuntvorteks beweeg.
- Die verskil in temperatuur tussen die nat- en droëboltermometer van 'n swaaihgrometer, moenie 8°C oorskry nie.

- Stop bespuiting indien die **windspoed** 15 km/uur oorskry.
- Stop bespuiting tydens **turbulente**, onstabiele en droë toestande gedurende die hitte van die dag.
- Bespuiting onder temperatuur **inversietoestande** (deur bo of binne die inversie laag te spuit) en / of **hoë lugvogtoestande** (relatiewe humiditeit 80% en meer) mag tot volgende probleme aanleiding gee:
 - verlaagde effektiwiteit aangesien die druppels as 'n wolk in die lug bly hang en moontlik verdamp (onvoldoende bedekking op teiken).
 - skade aan nie-teiken gewasse of sensitiewe areas as gevolg van wegdrywing van die spuitwolk na nie-teiken area.
- Verseker dat die lugbespuitingsoperateur presies weet watter lande bespuit moet word.
- Dit is noodsaaklik om 'n versekering van die lugbespuitingsoperateur te verkry dat aan al die bogenoemde vereistes voldoen sal word en dat data van belang in 'n logboek saamgevat is vir toekomstige verwysing.

Droëbone (*Phaseolus vulgaris* & *Phaseolus coccineus*)

(a) 'n Enkel VOOR-OPKOMSTOEDIENING, OF

(b) 'n Program VOOR-OPKOMS- gevolg deur 'n NA-OPKOMSTOEDIENING.

KLEI %	VOOR-OPKOMS-TOEDIENING	NA-OPKOMS OPVOLGBEHANDELING
	DOSIS / HA	DOSIS / HA
0 – 15	300 mℓ	'n "opvolgbehandeling" word nie op hierdie grondtipe aanbeveel nie
16 – 25	(a) 400 mℓ OF (b) 400 mℓ opgevolg deur	300 mℓ + 4 ℓ/ha van 'n vloeibare (50%) hoë kwaliteit ammoniumsulfaat + 'n benatter/verspreider.
26** – 30	(a) 500 mℓ OF (b) 400 mℓ opgevolg deur	300 mℓ + 4 ℓ/ha van 'n vloeibare (50%) hoë kwaliteit ammoniumsulfaat + 'n benatter/verspreider.

** Wanneer 'n na-opkomsbehandeling met **Hammer®** beplan word op gronde met meer as 26% klei, moet nie meer as 400 mℓ/ha as 'n voor-opkomsbehandeling, toegedien word nie.

OPMERKINGS	OPMERKINGS
<p>Dien Hammer® as 'n voor-opkomsbehandeling toe (op gewas en onkruid) op 'n goed voorbereide saadbed sonder kluitte en wat 'n gelyk oppervlak het.</p> <p>Grondtoediening: Met spuitbalk en spuitneuse: Dien die voorgeskrewe toedieningsdosis met 'n geskikte toediener in minstens 200 ℓ water/ha as 'n breedwerpige behandeling toe. Dien gedurende of kort na die plantproses toe.</p> <p>Vir verhoogde grasbeheer kan Hammer® met die volgende gemeng word:</p> <ul style="list-style-type: none"> • 'n Geregistreerde voor-opkoms- grasonkruidodder teen die voorgeskrewe dosis <p>OF</p> <ul style="list-style-type: none"> • Stomp® (L1686) kan toegedien en ingewerk word (slegs dosis vir grasbeheer) voor Hammer® toediening teen die dosisse soos hierbo aangegee. <p>Kyk TABELLE: 1 en 2 hieronder, vir die lys van onkruid wat deur Hammer® beheer word wanneer op hierdie manier toegedien.</p>	<p>Die "opvolgbehandeling"</p> <p>Vir verbeterde laatseisoen breëblaaronkruidbeheer (veral <i>Tagetes minuta</i>), moet 'n opvolgbehandeling toegedien word, ná die voor-opkomsbespuiting van Hammer®.</p> <p>Grondtoediening: Met spuitbalk en spuitneuse:</p> <p>Dien die voorgeskrewe Hammer® toedieningsdosis met 'n geskikte toediener in ten minste 200 ℓ water/ha, as 'n breedwerpige behandeling, toe. Dien in 'n tenkmengsel met 4 ℓ/ha van 'n vloeibare (50%) hoë kwaliteit ammoniumsulfaat + 'n benatter/verspreider toe. Dien toe 2 – 3 weke ná die voor-opkomsbehandeling van Hammer®.</p> <p>Hierdie na-opkomstoediening, kan op slegs die volgende droëboonkultivars: PAN 148, Kransop, Sabie, Helderberg, Teebus en Kamberg, gespuit word.</p> <p>WAARSKUWING: Gewasse met diggeplante rye (met 'n hoë plantpopulasie) sal spuitdruppels onderskep. Dit sal 'n verlaagde druppel-opvangs op die onkruid en op die grond teweegbring en mag swak beheer tot gevolg hê. Korrek geplaasde valarmspuitneuse sal die probleem beperk.</p> <p>Kyk TABELLE: 3 en 4 hieronder vir die lys van onkruid wat deur Hammer® beheer word wanneer op hierdie manier toegedien.</p>
<p>Lugtoediening: Dien, soos by Grondtoediening, in ten minste 35 ℓ water/ha toe. Kyk na Lugtoediening onder GEBRUIKSAANWYSINGS hierbo.</p> <p>Let wel: Toedieningsaanbevelings vir voor- en na-opkomsbehandelings verskil afhangende van klimaatstoestande.</p>	

Grondbone

a) 'n Enkel VOOR-OPKOMSTOEDIENING, OF

b) 'n Enkel NA-OPKOMSTOEDIENING. [’n Opvolgbehandeling word nie aanbeveel nie].

KLEI %	VOOR-OPKOMS	NA-OPKOMS
	DOSIS / HA	DOSIS / HA
0 – 15	300 mℓ	Nie aanbeveel nie
16 – 25	400 mℓ	Nie aanbeveel nie
	----	700 mℓ + 4 ℓ/ha van 'n vloeibare (50%) hoë kwaliteit ammoniumsulfaat + 'n benatter/verspreider.
26 – 30	500 mℓ	Nie aanbeveel nie
	-----	700 mℓ + 4 ℓ/ha van 'n vloeibare (50%) hoë kwaliteit ammoniumsulfaat + 'n benatter/verspreider.

• **Hammer**® word toegedien as óf 'n voor-opkoms- of 'n na-opkomsbehandeling.
• 'n Opvolgbehandeling, soortgelyk aan droëbone en sojabone, word nie aanbeveel nie. .

OPMERKINGS	OPMERKINGS
<p>Grondtoediening: Met spuitbalk en spuitneuse: Dien die voorgeskrewe toedieningsdosis met 'n geskikte grondtoediener in minstens 200 ℓ water/ha, as 'n breedwerpige behandeling, toe. Dien gedurende, of kort na die plantproses, toe.</p> <p>In lande waar <i>Tribulus terrestris</i> 'n probleem is, moet voor-opkomstoediening van 450 – 500 mℓ/ha gebruik word. Hierdie hoër dosis mag egter veroorsaak dat Hammer® langer in ligter gronde aktief bly (waar oordraging na die volgende seisoen moontlik is).</p> <p>Vir verhoogde grasbeheer kan Hammer® met die volgende gemeng word:</p> <ul style="list-style-type: none"> • 'n Geregistreeerde voor-opkoms grasonkruidodder, teen die voorgeskrewe dosis. <p>OF</p> <ul style="list-style-type: none"> • Stomp® kan toegedien en ingewerk word (slegs dosis vir grasbeheer) voor Hammer® toediening teen die dosisse soos hierbo aangegee. <p>Kyk TABELLE: 1 en 2 hieronder vir die lys van onkruid wat deur Hammer® beheer word wanneer op hierdie manier toegedien.</p>	<p>Hammer® kan as 'n na-opkomsbehandeling gespuit word, waar omstandighede verhoed het dat dit as 'n voor-opkomsbespuiting, toegedien is. Dien 14 – 25 dae na aanplant toe. Dit is wanneer die onkruid gewoonlik 3 – 6 cm hoog (1 – 3 blaarstadium), is.</p> <p>Hammer® moet toegedien word, nadat 'n geregistreeerde voor-opkomsgrasdoder toegedien is.</p> <p>Grondtoediening: Met spuitbalk en spuitneuse: Dien die voorgeskrewe toedieningsdosis van Hammer® met 'n geskikte toediener in minstens 200 ℓ water/ha toe as 'n breedwerpige behandeling, met 4 ℓ/ha van 'n vloeibare (50%) hoë kwaliteit ammoniumsulfaat + 'n benatter/verspreider.</p> <p>WAARSKUWING: Diggeplante rye met 'n hoë plantpopulasie sal spuitdruppels onderskep. Dit sal 'n verlaagde druppelopvangs op die onkruid en op die grond teweegbring en mag swak beheer tot gevolg hê. Korrek geplaasde valarmspuitneuse sal die probleem beperk.</p> <p>Kyk TABELLE: 3 en 4 hieronder vir die lys van onkruid wat deur Hammer® beheer word wanneer op hierdie manier toegedien.</p>

Lugtoediening: Dien, soos by **Grondtoediening**, in ten minste 35 ℓ water/ha toe. Kyk na **Lugtoediening** onder **GEBRUIKSAANWYSINGS** hierbo.
Let wel: Toedieningsaanbevelings vir voor- en na-opkomsbehandelings verskil afhange van klimaatstoestand.

Sojabone

- (a) 'n Enkel VOOR-OPKOMSTOEDIENING, OF
(b) 'n Program VOOR-OPKOMS- gevolg deur 'n NA-OPKOMSTOEDIENING OF
(c) 'n Enkel NA-OPKOMSTOEDIENING.

KLEI %	VOOR-OPKOMS-TOEDIENING	NA-OPKOMS OPVOLGTOEDIENING	NA-OPKOMSTOEDIENING
	DOSIS / HA	DOSIS / HA	DOSIS / HA
0 – 15	300 ml	'n "opvolgbehandeling" word nie op hierdie grondtipe aanbeveel nie'	Nie aanbeveel nie
16 – 25	(a) 400 ml OF (b) 400 ml opgevolg deur	300 ml + 4 l/ha van 'n vloeibare (50%) hoë kwaliteit ammoniumsulfaat + 'n benatter/verspreider.	700 ml + 4 l/ha van 'n vloeibare (50%) hoë kwaliteit ammoniumsulfaat + 'n benatter/verspreider.
26** – 30	(a) 500 ml OF (b) 400 ml opgevolg deur	300 ml + 4 l/ha van 'n vloeibare (50%) hoë kwaliteit ammoniumsulfaat + 'n benatter/verspreider.	700 ml + 4 l/ha van 'n vloeibare (50%) hoë kwaliteit ammoniumsulfaat + 'n benatter/verspreider.
** Wanneer 'n na-opkomsbehandeling met Hammer [®] beplan word op gronde met meer as 26% klei, moet nie meer as 400 ml/ha as 'n voor-opkomsbehandeling toegedien word nie.			OPMERKINGS
OPMERKINGS Dien Hammer [®] as 'n voor-opkomsbehandeling toe (op gewas en onkruid) op 'n goed voorbereide saadbed sonder kluitte en wat 'n gelyk oppervlak het. Grondtoediening: Met spuitbalk en spuitneuse: Dien die voorgeskrewe toedieningsdosis met 'n geskikte toediener in minstens 200 l water/ha, as 'n breedwerpig behandeling toe. Dien gedurende of kort na die plantproses toe. Vir verhoogde grasbeheer kan Hammer [®] met die volgende gemeng word: • 'n Geregistreerde voor-opkoms-grasonkruidodder teen die voorgeskrewe dosis. OF • Stomp [®] kan toegedien en ingewerk word (slegs dosis vir grasbeheer) voor Hammer [®] toediening teen die dosisse soos hierbo aangegee. Kyk TABELLE 1 en 2 hieronder vir die lys van onkruid wat deur Hammer [®] beheer word wanneer op hierdie manier toegedien.		OPMERKINGS Vir verbeterde laatseisoen breëblaaronkruidbeheer (veral <i>Tagetes minuta</i>) moet 'n opvolgbehandeling toegedien word ná die voor-opkomsbespuiting van Hammer [®] . Grondtoediening: Met spuitbalk en spuitneuse: Dien die voorgeskrewe Hammer [®] toedieningsdosis met 'n geskikte toediener in ten minste 200 l water/ha, as 'n breedwerpig behandeling, toe. Dien in 'n tenkingsel met 4 l/ha van 'n vloeibare (50%) hoë kwaliteit ammoniumsulfaat + 'n benatter/verspreider toe. Dien hierdie behandeling 14 – 25 dae ná die voor-opkomsbehandeling van Hammer [®] toe. Hierdie na-opkomstoediening, kan op alle sojaboontkultivars, behalwe PAN 717, gespuit word. WAARSKUWING: Gewasse met diggeplante rye (met 'n hoë plantpopulasie) sal spuitdruppels onderskep. Dit sal 'n verlaagde druppel-opvangs op die onkruid en op die grond teweegbring en mag swak beheer tot gevolg hê. Korrek geplaasde valarmspuitneuse sal die probleem beperk. Kyk TABELLE: 3 en 4 hieronder vir die lys van onkruid wat deur Hammer [®] beheer word wanneer op hierdie manier toegedien.	OPMERKINGS Hammer [®] kan as 'n na-opkomsbehandeling gespuit word waar omstandighede verhoed het dat 'n voor-opkomsbespuiting gedoen is. Dien 14 – 25 dae na aanplant toe. Dit is wanneer die onkruid gewoonlik 3 – 6 cm hoog (1 – 3 blaarstadium) is. Grondtoediening: Met spuitbalk en spuitneuse: Dien die voorgeskrewe toedieningsdosis van Hammer [®] met 'n geskikte toediener in minstens 200 l water/ha toe as 'n breedwerpig behandeling, met 4 l/ha van 'n vloeibare (50%) hoë kwaliteit ammoniumsulfaat + 'n benatter/verspreider. Hammer [®] moet toegedien word nadat 'n geregistreerde voor-opkomsgrasonkruidodder toegedien is. WAARSKUWING: Diggeplante rye met 'n hoë plantpopulasie sal spuitdruppels onderskep. Dit sal 'n verlaagde druppel-opvangs op die onkruid en op die grond teweegbring en mag swak beheer tot gevolg hê. Kyk TABELLE 3 en 4 hieronder vir die lys van onkruid wat deur Hammer [®] beheer word wanneer op hierdie manier toegedien.
Lugtoediening: Dien, soos by Grondtoediening , in ten minste 35 l water/ha, toe. Kyk na Lugtoediening onder GEBRUIKSAANWYSINGS hierbo. Let wel: Toedieningsaanbevelings vir voor- en na-opkomsbehandelings verskil afhangende van klimaatstoestand.			

TABEL 1: ONKRUIDE WAT NORMAALWEG DEUR Hammer® BEHEER WORD.

<i>Acanthospermum hispidum</i>	Regopsterklits	<i>Amaranthus thunbergii</i>	Roomisbredie
<i>Amaranthus deflexus</i>	Meerjarige misbredie	<i>Chenopodium album</i>	Withondebossie
<i>Amaranthus hybridus</i>	Gewone misbredie		

TABEL 2: INDIEN NET Hammer® GEBRUIK WORD, WORD WISSELVALLIGE BEHEER (75% – 80%) VAN DIE VOLGENDE ONKRUIDE VERKRY

<i>Commelina benghalensis</i>	Wandelende jood	<i>Galinsoa parviflora</i>	Knopkruid
<i>Cyperus esculetus</i>	Geeluintjie	<i>Portulaca oleracea</i>	Gewone porstein
<i>Cyperus rotundus</i>	Rooiuintjie	<i>Tagetes minuta</i>	Kakiebos
<i>Datura ferox</i>	Grootstinkblaar	<i>Tribulus terrestris*</i> (1)	Gewone dubbeltjie
<i>Datura stramonium</i>	Gewone stinkblaar	<i>Xanthium strumarium</i>	Kankerroos

• Indien **Hammer®** egter in kombinasie met **Butisan® S**, asetochlor, alachlor, **Frontier® Optima**, **Stomp®** of metolachlor as 'n tenkmengsel of splittoediening gebruik word, sal die beheer van bogenoemde onkruid verbeter word. Verwys ook na die betrokke produketiket vir die onkruid beheer deur daardie produk.

(1) In lande waar *Tribulus terrestris* 'n probleem is, kan 'n dosis van ten minste 450 ml/ha as 'n voor-opkomsbehandeling toegedien word, ongeag die grondtipe en meer as 80% beheer kan dan verwag word. Onder hierdie hoër toedieningsdosis kan **Hammer®** langer aktief bly in sekere grondtipes en derhalwe oordra na die volgende seisoen, wat die wagperiodes vir die aanplant van opvolggewasse sal beïnvloed. Verwys na **GEBRUIKSBEPERKINGS** hierbo.

TABEL 3: ONKRUIDE DEUR Hammer® BEHEER (NA-OPKOMSTOEDIENING) WANNEER 'n GEREGISTREERDE VOOR-OPKOMSGRASDODER VOORAF TOEGEDIEN IS (WAT 'n Hammer® VOOR-OPKOMSBEHANDELING INSLUIT).

WETENSKAPLIKE NAAM	GEWONE NAAM	WETENSKAPLIKE NAAM	GEWONE NAAM
<i>Acanthospermum australe</i>	Kruipsterklits (8-sadig)	<i>Datura ferox</i>	Groot stinkblaar
<i>Acanthospermum glabratum</i>	Kruipsterklits (5-sadig)	<i>Datura stramonium</i>	Gewone stinkblaar
<i>Acanthospermum hispidum</i>	Regopsterklits	<i>Flaveria bidentis</i>	Smeltersbossie
<i>Amaranthus deflexus</i>	Meerjarige misbredie	<i>Galinsoa parviflora</i>	Knopkruid
<i>Amaranthus hybridus</i>	Gewone misbredie	<i>Nicandra physaloides</i>	Basterappelliefie
<i>Amaranthus thunbergii</i>	Roomisbredie	<i>Physalis angulata</i>	Wilde appelliefie
<i>Chenopodium album</i>	Withondebossie	<i>Tagetes minuta</i> "	Kakiebos
<i>Cleome monophylla</i>	Rusperbossie	<i>Triumfetta annua</i>	Klitse
<i>Commelina benghalensis</i>	Wandelende Jood	<i>Xanthium strumarium</i>	Kankerroos

#1 =Net onkruid wat ontkiem en bo-kant die grond verskyn het, sal beheer word – saailinge wat ontkiem ná toediening sal net 60 – 70% beheer word.

TABEL 4: WISSELVALLIGE BEHEER VAN DIE VOLGENDE ONKRUIDE SAL VERKRY WORD AS Hammer® ALLEEN TOEGEDIEN WORD (NA-OPKOMS).

WETENSKAPLIKE NAAM	GEWONE NAAM	VLAK VAN BEHEER	WETENSKAPLIKE NAAM	GEWONE NAAM	VLAK VAN BEHEER
<i>Bidens pilosa</i>	Knapsekêrel	tot 70%	<i>Hibiscus trionum</i>	Terblansbossie	tot 70%
<i>Bidens formosa</i>	Kosmos	tot 70%	<i>Ipomoea purpurea</i>	Purperwinde	tot 70%
<i>Cyperus esculentus</i>	Geeluintjie	tot 80%	<i>Panicum schinzii</i> ²	Vleibuffelsgras	tot 90%
<i>Cyperus rotundus</i>	Rooiuintjie	tot 80%	<i>Portulaca oleracea</i>	Porslein	tot 70%
<i>Digitaria sanguinalis</i>	Kruisingergras	75 – 90%	<i>Rottboelia exaltata</i>	Tarentaalgras	70 – 85%
<i>Echinochloa colona</i>	Moerasgras	75 – 80%	<i>Schkuhria pinnata</i>	Klein kakiebos	80 – 90%
<i>Echinochloa crus-galli</i>	Hanepootmanna	75 – 80%	<i>Sorghum halepense</i>	Johnsongras	tot 80%
<i>Eleusine indica</i>	Jongosgras	tot 70%	<i>Tribulus terrestris</i>	Dubbeltjie	tot 70%
<i>Eragrostis curvula</i>	Blousaadgras	tot 70%	<i>Zea mais</i> ²	Opslagmielies	tot 99%

#2 = Plante verkleur pers, binne 2 – 3 weke, maar neem langer as meeste ander onkruid, om dood te gaan – minimum 4 – 5 weke.

#3 = Mieliebasters wat tolerant is, sal nie beheer word nie. Kontak die verskaffer oor inligting aangaande tolerante basters.

TABEL 5: RIGLYNE VIR DIE KEUSE VAN MIELIEBASTERS SOOS GETOETS VIR AANPLANTING NA DIE TOEDIENING VAN Hammer® IN DIE WES VRYSTAAT, WESTELIKE NOORD-WES PROVINSIE EN DIE NOORDELIKE NOORDKAAP PROVINSIE

OPMERKINGS		MIELIEBASTERS NR / NAAM
A	<p>GEEN WAGPERIODE NIE</p> <p>Raadpleeg u saadverskaffer oor Clearfield® kultivars wat in u streek beskikbaar is.</p> <p>Hierdie groep kan ook geplant word waar Hammer® die vorige seisoen in lande toegedien was waar grondboontjie-, soja- of droëbone geplant was en in distrikte waar 'n droë seisoen, of baie lae reënval, ondervind was, bv. minder as 350 mm reën. Hierdie groep kan ook onmiddellik geplant word in dieselfde seisoen as wat Hammer® toegedien was, bv. waar wind nuwe grondboontjieaanplantings bedek of beskadig het.</p>	<p>Alle Clearfield® mieliebasters</p>
B	<p>10 MAANDE WAGPERIODE</p> <p>Waar die vorige seisoen die aanbevole hoër dosis van 450 – 500 ml/ha Hammer®, vir Tribulus terrestris beheer, toegedien was.</p> <p>Hierdie groep mieliebasters wat semi-tolerant is vir die Imidazolinone-onkruidodders, kan geplant word waar in die vorige seisoen 'n gemiddelde, of bogemiddelde reënval voorgekom het. Plant egter slegs Clearfield® kultivars soos aanbeveel in afdeling A hierbo, waar minder as die gemiddelde reënval, of veral minder as 350 mm, die vorige seisoen voorgekom het.</p>	<p>PHB 30H22</p> <p>PHB 3394</p> <p>PHB 35A19</p> <p>CRN 3549</p>

OPMERKINGS		MIELIEBASTERS NR / NAAM
C	<p>10 MAANDE WAGPERIODE</p> <p>Waar die standaard geregistreerde dosis van Hammer® vir die grondtipe die vorige seisoen toegedien was.</p> <p>Hierdie tweede groep semi-tolerante mieliebasters kan geplant word slegs waar die gemiddelde reënval, of meer, die vorige seisoen voorgekom het. Waar minder as die gemiddelde reënval die vorige seisoen voorgekom het, mag slegs die mieliebasters wat in afdelings A en B genoem word, gebruik word. Indien minder as 350 mm reën gedurende die vorige seisoen geval het, mag slegs Clearfield® kultivars gebruik word soos in afdeling A aangedui.</p>	<p>CRN 3414 CRN 3505 CRN 3604 CRN 3631 CRN 3760 CRN 3891 CRN 4502 Goldfinger Highflyer LS 8503 PAN 6146 PAN 6233 PAN 6364 PHB 30D05 PHB 30T43 PHB 3203 PHB 32K39 PHB 32K61 SC 707 SNK 2147 SNK 2401 SNK 2640 SNK 2776 SNK 2860 Woodriver</p>
D	<p>'n Minimum wagperiode van 20 maande word aanbeveel in die produksiegebiede van die Wes Vrystaat, westelike Noord-Wes Provinsie, en die noordelike Noord-Kaap Provinsie, vir alle mieliebasters wat nie hierbo gelys is nie. 'n Toetsaanplanting word nogtans aanbeveel. Indien daar enige twyfel bestaan, moet 'n geelmielebaster eerder as 'n witmielebaster gebruik word.</p>	

Fastac® EC, Fastac® SC, Butisan® S, Frontier® Optima, Clearfield® en Stomp® is Geregistreerde Handelsmerke van BASF.

BASF
We create chemistry

Hammer®

Reg. No. L5201

Act No. 36 of 1947

**READ ATTACHED PACKAGE OR LEAFLET BEFORE USE
KEEP OUT OF REACH OF CHILDREN AND ANIMALS**

GROUP	2	HERBICIDE
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A water soluble herbicide, for the control of annual broadleaf weeds in dry beans, soya beans and groundnuts.

'n Vloeistofkonsentraatonkruiddoder, vir die beheer van sekere eenjarige breëblaaronkruidе in droëbone, sojabone en grondbone.

Very toxic to aquatic life with long lasting effects.

If medical advice is needed, have product container or label at hand.

Dispose of contents and container to hazardous or special waste collection point.

Active ingredients / Aktiewe bestanddele:

Imazethapyr (imidazolinone).....100 g/l

Registered by:

BASF South Africa (Pty) Ltd
Co. Reg. No. 66/10235/07
852 Sixteenth Road
P.O. Box 2801
Halfway House 1685
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Geregistreeur deur:

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852 Sestiende Laan
Posbus 2801
Halfweghuis 1685
+27 11 203 2400

WARNING



Batch No. & Date manufactured: Refer to details printed on container
Lotnummer & Datum vervaardig: Verwys na besonderhede gedruk op houer

UN-No. / VN-Nr: 3082

EMERGENCY NUMBER / NOODNOMMER: +27 82 446 8946

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