



syngenta

Reg. No. L5748 Act No. 36 of 1947 N-AR 0717 (Namibia) W130332 (Botswana)

An emulsifiable concentrate herbicide for pre-emergence control of annual grasses and under certain conditions yellow nutsedge in maize, grain sorghum, forage sorghum, green beans, dry beans, kidney beans, groundnuts, sugarcane, sunflowers, soybeans, lupins, cotton, *Eucalyptus* and pine plantations as well as potatoes and tobacco in the summer rainfall region.



Hazard statements:

May cause an allergic skin reaction. Causes serious eye irritation. Very toxic to aquatic life with long-lasting effects.

Precautionary statements:

Prevention: Avoid breathing dust/fumes/gas/mist/vapours/spray. Wear protective gloves/eye protection/face protection.

Response: If skin irritation or rash occurs, get medical advice/attention. If eye irritation persists, get medical advice/attention. Take off contaminated clothing and wash it before re-use. Collect spillage.

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GROUP 15 HERBICIDE

Active Ingredient:

s-metolachlor (a-chloroacetamide).. 960 g/l

Product names marked ® or ™, the ALLIANCE FRAME, the SYNGENTA Logo and the PURPOSE ICON are Trademarks of a Syngenta Group Company



WARNING

1. WARNINGS:

Hazard statements: May cause an allergic skin reaction. Causes serious eye irritation. Very toxic to aquatic life with long-lasting effects.

- Handle with care.
- Poisonous if swallowed.
- Toxic to fish.
- Store in a cool place.
- Store away from food and feed.
- Keep out of reach of children, uninformed persons and animals.
- **In case of poisoning:** Call a doctor and present this label.
- **Re-entry:** Do not enter treated area within one (1) day after application unless wearing protective clothing.
- **Aerial application:** Notify all inhabitants in the immediate vicinity of the area to be sprayed and issue the necessary warnings. Do not spray over or allow drift to contaminate water or adjacent areas.

Although this remedy has been extensively 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 weed 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 and the environment, or harm to people or animal or for lack of performance of the remedy concerned due to failure of the user to follow the label instructions or to the occurrence of conditions, that could not have been foreseen in terms of the registration. Consult the supplier in the event of any uncertainty.

2. PRECAUTIONS:

Precautionary statements: Prevention: Avoid breathing dust/fumes/gas/mist/vapours/spray. Wear protective gloves/eye protection/face protection. **Response:** If skin

irritation or rash occurs, get medical advice/attention. If eye irritation persists, get medical advice/attention. Take off contaminated clothing and wash it before re-use. Collect spillage.

- Do not inhale the spray mist.
- Avoid skin contact.
- Wash with soap and water after use.
- Wash contaminated clothing after use.
- Do not eat, drink, or smoke while mixing or applying the product or before washing hands and face.
- Avoid drift of spray onto other crops, grazing, rivers, dams and areas not under treatment.
- Clean applicator after use. Dispose of rinsate where it will not contaminate crops, grazing, rivers, dams and boreholes.
- Prevent contamination of food, feed, drinking water and eating utensils.
- Rinse the empty container three (3) times with a volume of clean water equal to a minimum of 10% of the container. Add the rinsate to the content of the spray tank.
- Do not use the empty container for any other purpose.

Symptoms of human poisoning: No case of human poisoning is on record.

First Aid and Medical Treatment:

If poisoning is suspected immediately call a physician. Remove patient from further contact with pesticide and place patient in a well-ventilated area.

- **Eye contact:** Hold eyelids open and flush with a steady, gentle stream of water for 15 minutes.
- **Skin contact:** Wash with plenty of soap and water. Consult a doctor if irritation persists.
- **Ingestion:** Promptly administer a large quantity of milk, egg whites, gelatine solution or, if these are not available large quantities of water.

Do not induce vomiting or give anything by mouth to an unconscious person.

Note to doctor: No specific antidote is known. If ingested, induce emesis or lavage stomach. Administration of an aqueous slurry of activated charcoal may be considered. Apply symptomatic therapy.

3. RELEVANT SUBSTANCES:

Chemical name	
s-metolachlor	
Classification	Concentration (% w/w)
Skin Sens. 1; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M-Factor (Acute aquatic toxicity): 10 M-Factor (Chronic aquatic toxicity): 10	≥ 70 - < 90

4. RESISTANCE MANAGEMENT:

METAGAN GOLD is a group code 15 herbicide. Any weed population may contain individuals naturally resistant to **METAGAN GOLD** and other group code 15 herbicides. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly and exclusively in programs. These resistant weeds may not be controlled by **METAGAN GOLD** or any other group code 15 herbicides.

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 programs.

For specific information on resistance management contact the registration holder of this product.

5. USE RESTRICTIONS:

NB. DO NOT APPLY METAGAN GOLD AS A PRE-EMERGENCE TREATMENT ON MAIZE.

METAGAN GOLD on green beans is only registered for use by McCains on the cultivars Fortè, Masai and Dark Seeded Provider in the production area of the Loskop scheme, Letsitele, Ohrigstad and certain areas of the Highveld.

METAGAN GOLD may damage certain crops under the following conditions:

- Inbred parent plants of maize hybrids. First consult a representative of Syngenta, the distributor, or seed supplier.
- Tobacco and forage sorghum planted on very sandy and/or gravely soils or where flood irrigation is practised.
- Grain sorghum and forage sorghum on soils with a high percentage (more than 60%) fine sand and/or poor structure which are inclined to compact with rain and which are therefore poorly aerated, or grain sorghum and forage sorghum planted deeper than 50 mm.

- Grain sorghum, forage sorghum and dry beans on fields with a high incidence of soil borne diseases and/or where monoculture is practised.
- Dry beans in hot, dry conditions especially in the presence of a compaction layer in the soil. Under these conditions beans might also be susceptible to wind damage.
- Sunflowers and dry beans on waterlogged, shallow, sandy soils of < 100 cm depth with an impermeable clay sub soil.

METAGAN GOLD can only be used on forage sorghum which are sorghum x sorghum hybrids and sorghum x Sudan grass hybrids. Hybrids with *Pennisetum* spp. and hybrids containing the BMR genes should not be sprayed with **METAGAN GOLD**.

CONCEP® 960 EC seed treatment should only be used in combination with **METAGAN GOLD** or DUAL GOLD.

Important: Where other herbicides are used in combination with **METAGAN GOLD** the restrictions of use as given on the labels of the herbicides concerned, must be adhered to.

Warning: Possible damage to triazine sensitive crops

- Where soils have been treated with lime to correct the soil pH, the possibility of crop damage increases dramatically in fields where triazines were previously applied. This is due to the triazine molecules being replaced on the clay complex with calcium cations and the triazine thus becoming more available in the soil-water complex.
- Only maize should be planted in the season directly after soil pH adjustment with lime.
- No triazine sensitive crops should be planted in the season after the soil pH adjustment has been done with lime. This applies even if triazines were used at crop rotation rates in previous years.
- Triazine sensitive crops include all broadleaf crops e.g., different bean crops, sunflowers and all cereals e.g. wheat.
- These warnings however do not guarantee that no damage would be experienced to even the following maize crop as large volumes of previously applied triazines might now be available depending on the volume of lime applied and the rainfall experienced.

Warning: Possible increased efficacy, phytotoxicity and residual action

- Increasing the soil pH levels above 7 could produce conditions for increased efficacy and reduced selectivity. This increased pH may also result in increased soil residual action by certain herbicides influencing the choice of following crops especially under irrigation.
- In situations where pH adjustments has been done, take care when sulphonyl urea herbicides, triazolopyrimidine sulfonanilide herbicides and imidazolinone herbicides, which are all sensitive to soil pH fluctuations, have been used or are about to be used.

Contact your local SYNGENTA representative to discuss crop rotation and crop protection programs to follow before embarking on any pH adjustment program.

6. WEEDS CONTROLLED:

The following weed species are normally controlled by a pre-emergence application of **METAGAN GOLD** at the dosage rates as indicated below:

<i>Brachiaria eruciformis</i> <i>Chloris virgata</i> <i>Dactyloctenium aegyptium</i> <i>Digitaria sanguinalis</i> <i>Echinochloa crusgalli</i> <i>Eleusine indica</i> <i>Panicum maximum</i> <i>Panicum schinzii</i> <i>Pseudobracharia deflexa</i> <i>Setaria pallide-fusca</i> <i>Setaria verticillata</i> <i>Tragus berteronianus</i> <i>Tragus racemosus</i> <i>Urochloa mosambicensis</i> <i>Urochloa panicoides</i>	sweet signal grass feathertop Chloris crowfoot crab finger-grass barnyard grass goose grass common buffalo grass sweet buffalo grass false signal grass red bristle grass sticky bristle grass small carrotseed grass large carrotseed grass bushveld herringbone grass herringbone grass
Control of the following weeds is variable	
<i>Amaranthus hybridus</i> <i>Amaranthus spinosus</i> <i>Amaranthus thunbergii</i> <i>Chenopodium carinatum</i> <i>Cleome monophylla</i> <i>Commelina benghalensis</i> <i>Cyperus esculentus</i> <i>Datura ferox</i> <i>Datura stramonium</i> <i>Galinsoga parviflora</i> <i>Nicandra physaloides</i> <i>Portulaca oleracea</i>	common pigweed thorny pigweed red pigweed green goosefoot spindlepod Bengal wandering Jew yellow nutsedge large thorn apple thorn apple gallant soldier apple of Peru purslane

Important: Yellow nutsedge (*Cyperus esculentus*).

The control of *C. esculentus* can be improved provided the following conditions are met:

- Planting is immediately preceded by thorough ploughing with a mouldboard plough.
- A relatively fine, even and firm seedbed is prepared.
- Herbicide application is followed by at least 10 - 20 mm of soft penetrating rain (or irrigation) to leach the herbicide into the soil prior to the emergence of *C. esculentus* (normally 7 - 10 days after ploughing). These conditions are more likely to occur during the latter half of the planting season (November). More rain or irrigation is required on heavier soils to obtain good results. This is the reason for the poor control sometimes obtained on turf soils.
- Rainfall following herbicide application but before emergence of *C. esculentus* is necessary for optimum *C. esculentus* control. For this reason application of **METAGAN GOLD** should be made at or immediately after planting onto moist soil.
- When planting into dry soil (insufficient moisture for *C. esculentus* germination) the application should be timed as close as possible to, but definitely before the first rains.

Grass control

Grass killers belonging to the α -chloroacetamide group of herbicides (that includes **METAGAN GOLD**) are absorbed via the coleoptiles of grass weeds. Therefore, for good grass control the herbicide needs to be present at lethal concentrations in the top \pm 50 mm of the soil profile.

The adsorptive capacity of a soil for these herbicides, as well as the amount of water that moves through the soil profile with rain/irrigation, determine the resultant concentration of these herbicides in the top layers of the soil profile.

As a result of the low adsorption capacity of sandy soils (0 - 15% clay, < 1% organic matter) the amount of these herbicides can be reduced to sub-lethal concentrations in the top \pm 50 mm after the occurrence of permeating rain [25 mm and more within one (1) day].

Persistent rain (50 mm and more distributed over 3 - 7 days) will have the same result. It can therefore happen that grasses germinate if such conditions prevail. Split applications are recommended if **METAGAN GOLD** is used on such soils.

Permeating and/or persistent rain after the split application will have the same result.

7. DIRECTIONS FOR USE: Use only as indicated.

7.1 Compatibility

The compatibility of **METAGAN GOLD** with other products may be influenced by the formulation of the products involved as well as the quality of the water. Since the formulation of other products may change without the knowledge of Syngenta and the quality of water may vary from farm to farm, a physical compatibility test should always be carried out prior to application.

METAGAN GOLD is compatible with CALLISTO (L6795), AGRAL 90 (L2967), BREAKTHRU (L5895), COMPLEMENT SUPER (L8169), TRONIC (L3685), SOLITAIRE (L6962), GARDOMIL® GOLD 600 SC (L6246), GESAPRIM SUPER (L3914), SORGOMIL® GOLD 600 SC (L5897), GESAPRIM 90 WG (L4767), HAMMER® 100 SL (L5201), IGRAN® 500 SC (L0324), SENCOR® 480 SC (L3034), GRAMOXONE® (L1174), STING® (L3066), MCPA, and 2, 4-D amine as recommended on this label.

7.2 Mixing Instructions

Replace cap after use.

- Half-fill the spray tank with water, then pour the required amount of **METAGAN GOLD** into the spray tank while the water is being stirred.
- Top-up with water to the final volume required.
- When **METAGAN GOLD** is tank mixed with SORGOMIL GOLD 600 SC or GESAPRIM SUPER or IGRAN 500 SC or SENCOR 480 SC or GESAPAX 500 SC or DIURON 800 SC or 2,4-D Amine or MCPA or HAMMER 100 SL, these compounds should be added to the water first. **METAGAN GOLD** should then be added last, just before the required volume is reached. When GRAMOXONE or STING is included in a tank mixture it should be added last, only after all the other products have been added and properly mixed just prior to the final volume being obtained.

Ensure thorough agitation of the mixture in the tank during mixing and spraying.

Tank mixtures must be sprayed out immediately and not allowed to stand in the spray tank.

7.3 Application Techniques

7.3.1 Post plant pre-emergence

When planting into moist soil, **METAGAN GOLD** must be applied within three (3) days of planting (but preferably at planting) on a fine, even, firm and freshly prepared weed-free seedbed. To obtain good results it is necessary that application is followed by rain or irrigation before the weeds emerge. If rainfall does not occur in time and weeds begin to emerge and develop, a shallow cultivation must be carried out to destroy these weeds and to mix the herbicide with the top 10 - 20 mm of soil.

When planting into dry soil (insufficient moisture for germination), **METAGAN GOLD** must be applied as close to, but definitely before the first rain. Emerged weeds at the time of application will not be controlled.

7.3.2 Post-emergence (maize and potatoes)

METAGAN GOLD has very limited post-emergence effect. It may however, be applied post-emergence to the crop immediately after a cultivation i.e., when no weeds are present. Weeds that are present after the cultivation will not be controlled.

7.3.3 Ground application

METAGAN GOLD may be applied with any medium- or high-volume sprayer properly calibrated and which is equipped with an efficient agitation mechanism. The recommended amount of **METAGAN GOLD** should be applied in at least 200 ℓ water/ha.

7.3.4 Aerial application (Pre- and post emergence)

Aerial application of this product may only be done by a registered aerial application operator using a correctly calibrated, registered aircraft according to the instructions of SANS 10118 (Aerial Application of Agricultural Remedies). It is important to 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 are met:

a) Application parameters:

- **Volume:** A volume of 30 ℓ/ha (pre-emergence) and 35 ℓ/ha (post-emergence) 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 the product is applied aerially at a lower volume rate than recommended above.
- **Droplet coverage:** A droplet coverage of 20 - 30 droplets/cm² (pre-emergence) and 30 - 45 droplets/cm² (post-emergence) must be recovered at the target.
- **Droplet size:** A droplet spectrum with a VMD of 350 - 400 microns (pre-emergence) and 300 - 350 (post-emergence) is recommended. Ensure that the production of fine droplets (less than 150 microns - high drift and evaporation potential) is restricted to a minimum.
- **Flying height:** The height of the spray boom should be maintained at 3 - 4 metres above the target. Do not spray when aircraft is in a climb, at the top, during a

dive, or when banking.

b) Equipment:

- Use suitable atomising equipment (hydraulic nozzles or rotary atomisers) that will produce the desired droplet size and coverage but which will ensure the minimum loss of product either through endodrift (within target field) or exodrift (outside target field).
- The operator must use a set-up that will produce a droplet spectrum with the lowest possible relative span.
- All nozzles/atomisers should be positioned within the inner 60 - 75% of the wingspan to prevent droplets from entering the wingtip vortices.

c) Meteorological conditions:

- The difference in temperature between the wet and dry bulb thermometers, of a whirling hygrometer, should not exceed 8°C. The addition of a suitable anti-evaporant is recommended if the VMD of the droplets is less than 200 - 250 microns.
- Stop spraying if the wind speed exceeds 15 km/h or reduces to less than 5 km/h.
- Aerial application of this product must not be done under turbulent, unstable conditions during the heat of the day when rising thermals and downdraughts occur. Also note that the application of this product under temperature inversion conditions (spraying in or above the inversion layer) 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 the movement of the suspended spray cloud away from the target field.
- **METAGAN GOLD** and **METAGAN GOLD** plus GESAPAX 500 SC may be applied aerially provided that the spray mixture is distributed evenly over the target area and the loss of spray material during application is restricted to a minimum.

It is essential to obtain assurance from the aerial spray operator that the above requirements are met.

7.3.5 Centre pivot irrigation application

- **METAGAN GOLD** may be applied in irrigation water pre-emergence (after planting but before weeds or crop emerge) at rates recommended on this label.
- Use only centre pivot systems that apply water uniformly.
- Prepare a mixture with a minimum of one (1) part of water to one (1) part herbicide and inject this mixture into the centre pivot system using a positive displacement pump.
- Injecting a larger volume of a more dilute mixture per hour will usually provide more accurate calibration of metering equipment.
- Maintain sufficient agitation to keep the herbicide in suspension.
- Apply in 12.5 - 25 mm of water. Use the lower water volume (12.5 mm) on coarser textured soils and the higher volume (25 mm) on finer textured soils.
- More than 25 mm of water at application may reduce weed control by moving the herbicide below the effective zone in the soil.

7.3.5.1 Precautions for centre pivot applications

- Apply only through irrigation systems containing anti-siphon and check valves to prevent contamination of the well during shutdown and overflow of solution tank.
- Inject ahead of any right angle turn in the main line to insure adequate mixing.
- Chemical injection pumps and water pumps must have interlocking controls to insure simultaneous shut-off.
- Application when drift may occur, such as from windy conditions, or when systems joints and connections are leaking, or when nozzles are not providing uniform distribution, may cause crop injury.
- Where sprinkler distribution patterns do not overlap sufficiently, unacceptable weed control may result. Where sprinkler distribution patterns overlap excessively, crop injury or unacceptable residues may result.

7.4 Application Rates

7.4.1 Green beans, groundnuts, dry beans, kidney beans, sunflowers, cotton, soybeans and lupins.

TABLE 1: The following application rates of METAGAN GOLD are recommended for the different crops on various soil types and for the control of certain weeds:

Soil type	% clay	METAGAN GOLD (ℓ/ha)
Sand/loamy sand/sandy loam	0 - 20	0.6 - 0.8
Sandy clay loam	21 - 30	0.8 - 1
Sandy clay loam/sandy clay	> 30	1 - 1.3

Use the higher application rate of **METAGAN GOLD** for improved control of **yellow nutsedge** (*C. esculentus*) or where heavy infestations of **crab finger grass** (*D. sanguinalis*) exist or where the organic matter in the soil exceeds 1%. **METAGAN GOLD** can be used pre-emergence on glyphosate tolerant cotton and soybeans in combination with TOUCHDOWN FORTE HITECH applied post-emergence.

Important (groundnuts only): To obtain good broadleaf control, IGRAN 500 SC may be added to **METAGAN GOLD** at the rates indicated on the IGRAN 500 SC label per soil type. IGRAN 500 SC is only recommended where overhead sprinkler irrigation is practised.

Tank mixtures with HAMMER 100 SL: The following application rates as tank mixtures of **METAGAN GOLD** plus HAMMER 100 SL are recommended for the different crops on various soil types and for the control of certain weeds.

TABLE 2: Tank mixtures of METAGAN GOLD plus HAMMER 100 SL on dry beans:

Soil type	% clay	METAGAN GOLD (ℓ/ha)	HAMMER 100 SL (ℓ/ha)
Sand/loamy sand	0 - 15	0.6	0.3
Sandy loam/sandy clay loam	16 - 25	0.6	0.4

TABLE 2 cont.

Soil type	% clay	METAGAN GOLD (ℓ/ha)	HAMMER 100 SL (ℓ/ha)
Sandy clay loam/sandy clay	26 - 35	0.8	0.5
Sandy clay/turf	> 35	NOT RECOMMENDED	

TABLE 3: Tank mixtures of METAGAN GOLD plus HAMMER 100 SL in groundnuts and soybeans:

Soil type	% clay	METAGAN GOLD (ℓ/ha)	HAMMER 100 SL (ℓ/ha)
Sand/loamy sand/sandy loam	0 - 25	0.5 - 0.8	0.4
Sandy clay loam/sandy clay	26 - 35	0.8 - 1	0.5
Sandy clay/turf	> 35	NOT RECOMMENDED	

TABLES 2 AND 3 REMARKS:

- A tank mixture of **METAGAN GOLD** plus HAMMER 100 SL may damage the crop when used on a soil with a pH (H₂O) of more than 7.
- The control of certain weeds may be detrimentally affected under the following conditions:
 - A poorly prepared seedbed.
 - Soils with a pH (H₂O) of less than 5.
 - Dry conditions directly after application or a lack of sufficient rain on heavy soils.
- The application rate of **METAGAN GOLD** must be increased in table 3 in accordance with the increase in clay content within each soil type group.
- See the HAMMER 100 SL label for full details.

Tank mixtures with SENCOR 480 SC (soybeans)

The following application rates as tank mixtures of **METAGAN GOLD** plus SENCOR 480 SC are recommended on soybeans on various soil types and for the control of certain weeds as indicated on the SENCOR 480 SC label, additional to that controlled by **METAGAN GOLD**.

TABLE 4: Tank mixtures of METAGAN GOLD with SENCOR 480 SC on soybeans:

Soil type	% clay	METAGAN GOLD (ℓ/ha)	SENCOR 480 SC (ℓ/ha)
Sand	0 - 10	NOT RECOMMENDED	
Loamy sand/sandy loam	11 - 20	0.6 - 0.8	0.54
Sand clay loam	21 - 35	0.8 - 1	0.7
Sandy clay loam/sandy clay/turf	> 35	NOT RECOMMENDED	

TABLE 4 REMARKS:

- Use the higher application rate of **METAGAN GOLD** to improve the control of **yellow nutsedge** (*C. esculentus*) or where heavy infestations of **crab finger grass** (*D. sanguinalis*) exist.

- Use the **METAGAN GOLD** plus SENCOR 480 SC mixture only on soils with more than 1% organic matter.
- See SENCOR 480 SC label for cultivar restrictions.
- Do not apply **METAGAN GOLD** plus SENCOR 480 SC on soybeans which are planted on soils with exceptionally low or high pH values pH (H₂O) lower than 4.5 and higher than 7), or on soils with mineral deficiencies, or on waterlogged soils, as injury might occur.
- The application of **METAGAN GOLD** plus SENCOR 480 SC on light soils early in the season under conditions of low night temperatures may cause injury.
- Over-application, application at the incorrect growth stage, or any other use not in accordance with the directions on the **METAGAN GOLD** and SENCOR 480 SC labels, may cause stunting of the crop and other adverse effects.
- Consult the SENCOR 480 SC label for full details.

7.4.2 Potatoes (summer rainfall region only)

Apply 1.2 ℓ/ha **METAGAN GOLD** on all soil types. To obtain good broadleaf weed control SENCOR 480 SC may be added to **METAGAN GOLD** at a rate of 1.1 ℓ/ha. When used in combination with SENCOR 480 SC, the rate of **METAGAN GOLD** may be lowered to 1 ℓ/ha where potatoes are planted during the rainy season or under irrigation. Where potatoes are planted on dry land, prior to the start of the rainy season, the higher rate of **METAGAN GOLD** should be applied even when used in combination with SENCOR 480 SC.

The restrictions with regard to SENCOR 480 SC as indicated on the label must be observed.

Ridging

- After herbicide application, ridging should be delayed as long as possible since untreated soil is brought to the surface by this operation, which may result in a new flush of weed growth.
- **METAGAN GOLD** can also be applied post-emergence to the potatoes after ridging. Under these circumstances a directed application is preferable although not essential.

7.4.3 Grain sorghum/forage sorghum

METAGAN GOLD can be used in grain sorghum and forage sorghum provided the sorghum seed has been **properly** treated as prescribed with CONCEP® 960 EC. The application rates in table 5 are recommended for the control of annual grasses and partial control of *C. esculentus*.

METAGAN GOLD can only be used on forage sorghum which are sorghum x sorghum hybrids and sorghum x Sudan grass hybrids. Hybrids with *Pennisetum* spp. and hybrids containing the BMR genes should not be sprayed with **METAGAN GOLD**.

CONCEP® 960 EC seed treatment should only be used in combination with **METAGAN GOLD** or DUAL GOLD.

TABLE 5: METAGAN GOLD rates when applied on CONCEP 960 EC treated sorghum:

Soil type	% clay	METAGAN GOLD (ℓ/ha)
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TABLE 5 cont.

Sand/loamy sand/sandy loam	0 - 20	NOT RECOMMENDED
Sandy clay loam	21 - 30	0.8
Sandy clay	31 - 40	0.9
Turf	> 40	0.9 - 1.3

Important

- On turf soils, *B. eruciformis* may require 1.3 ℓ/ha of **METAGAN GOLD** for good control. It may also improve the control of *C. esculentus*.
- Use the higher application rates of **METAGAN GOLD** where heavy infestations of *D. sanguinalis* (crab finger grass) exist.
- If grain and forage sorghum seed are not properly pre-treated with CONCEP 960 EC, **METAGAN GOLD** will cause severe injury to the crop.
- If a soil crust is formed it should be broken up immediately by means of shallow cultivation.
- **METAGAN GOLD** may damage grain and forage sorghum temporarily when high soil moisture conditions occur 4 - 6 weeks after planting. The crop will normally outgrow this injury without any detrimental effect on yield.

Control of broadleaf weeds (grain sorghum only)

- A tank mix of **METAGAN GOLD** plus SORGOMIL GOLD 600 SC at 0.5 ℓ/ha + 3 ℓ/ha may be used for pre-emergence weed control in grain sorghum on soils with 21 - 30% clay and 0.6 ℓ/ha + 3.7 ℓ/ha on soils with 31 - 35% clay. (Consult the SORGOMIL GOLD 600 SC label.)
- On all soil types a pre-emergence treatment of **METAGAN GOLD** for grass control may be followed by an early post-emergence treatment of GESAPRIM SUPER or GESAPRIM SUPER plus 2,4-D amine to control the broadleaf weeds. (Consult the GESAPRIM SUPER 600 SC label.)
- An alternative after a pre-emergence treatment of **METAGAN GOLD** is an early post-emergence follow-up treatment with SORGOMIL GOLD 600 SC. SORGOMIL GOLD 600 SC may only be applied from the 5-leaf stage of the grain sorghum.
- When crop rotation is practised the SORGOMIL GOLD 600 SC rate must not exceed 2 ℓ/ha. (Consult the SORGOMIL GOLD 600 SC label.)

TABLE 6: Application rates of METAGAN GOLD, followed by SORGOMIL 600 SC on grain sorghum:

Soil type	% clay	Pre-emergence METAGAN GOLD (ℓ/ha)	Post-emergence SORGOMIL GOLD 600 SC (ℓ/ha)
Sand/loamy sand	0 - 15	NOT RECOMMENDED	
Sandy loam	15 - 20	0.5	2.6
Sandy clay loam	21 - 30	0.6	3
Heavier soils including turf	> 30	0.7 - 1	3

Important

- The adjuvant COMPLEMENT should be added to all post-emergence applications except GESAPRIM SUPER 600 SC plus 2,4-D amine.
- On turf soils 1 ℓ/ha **METAGAN GOLD** may be required for good control of *B. eruciformis* and it can also be used for improved control of *C. esculentus*.

7.4.4 Tobacco (summer rainfall region only)

- Apply **METAGAN GOLD** as a full-cover spray within three (3) days after transplanting of the tobacco while the plants are still wilted.
- When **METAGAN GOLD** is applied to turgid tobacco transplants the spray must be directed in such a way that it does not enter the funnel of the plant where it may damage the growing point.
- Where **METAGAN GOLD** is sprayed on the leaves of actively growing tobacco scorching may occur.
- On light soils (0 - 10% clay) **METAGAN GOLD** must only be applied between plant rows in such a way that an unsprayed strip with a width of about 20 - 25 cm on top of the ridge (i.e., 10 cm on both sides of the plant row) is left.
- Existing weeds must be removed before **METAGAN GOLD** is applied. This may be done mechanically, by hand, or by application of GRAMOXONE immediately before transplanting. Any growing weeds present at the time of application will not be controlled.
- Where tobacco is planted on ridges, use 110° nozzles and position the nozzles between the ridges. This will ensure more even distribution of the herbicide.
- In order to activate the **METAGAN GOLD**, overhead irrigation of at least 10 mm, but not more than 15 mm, should be applied within 2 - 3 days after **METAGAN GOLD** application on soils with less than 35% clay and at least 20 mm, but not more than 30 mm, on soils with more than 35% clay.

Only strong and healthy plants should be transplanted.

Tobacco plants with roots exposed to **METAGAN GOLD** at the time of application will be adversely affected. Ensure, therefore, that planting is done properly.

TABLE 7: The following METAGAN GOLD application rates are recommended on tobacco:

Soil type	% clay	METAGAN GOLD (ℓ/ha)
Sand	0 - 10	0.5
Loamy sand/sandy loam	11 - 20	0.7
Sandy clay loam	21 - 35	1
Sandy clay	> 35	1.4

7.4.5 Eucalyptus spp. and pine plantations

- METAGAN GOLD** may be applied immediately after transplanting the young trees on a well-prepared weed-free seedbed.
- Should grass weeds already be present at the time of planting it is recommended that a tank mix of GRAMOXONE and **METAGAN GOLD** be applied prior

to planting.

- Apply GRAMOXONE at the rates as recommended by the manufacturer. The GRAMOXONE will kill the emerged weeds and create a pre-emergence situation for **METAGAN GOLD** to act effectively.
- If grass weeds are present after the trees have been planted, the **METAGAN GOLD** application may be followed one (1) week later by AGIL® 100 EC (L4694), as recommended by the manufacturer, to kill the emerged grasses.

TABLE 8: The following METAGAN GOLD rates are recommended in Eucalyptus spp. and pine plantations:

Soil type	% clay	METAGAN GOLD (ℓ/ha)
Sand/loamy sand/sandy loam	0 - 20	1
Sandy clay loam	21 - 30	1.3
Sandy clay loam/sandy clay	> 30	1.6 - 2

Use the higher rate where the soil organic matter content exceeds 1%.

7.4.6 Maize

a) Residual grass control

Residual grass control after a pre-emergence application of DUAL GOLD (L5749) may be prolonged with a post-emergence application of **METAGAN GOLD**. This application must be made after a thorough cultivation, as emerged grass weeds will not be controlled.

TABLE 9: METAGAN GOLD applied post-emergence on maize:

Soil type	% clay	METAGAN GOLD (ℓ/ha)
Sand	0 - 10	0.35
Loamy sand/sandy loam	11 - 20	0.30
Sandy clay loam	21 - 30	0.35
Sandy clay loam/sandy clay	31 - 40	0.35 - 0.50
Sandy clay/turf	41 - 50	0.35 - 0.50

Comments

- If the DUAL GOLD plus **METAGAN GOLD** split treatment is selected (compare table 3 of the DUAL GOLD label) on soils containing more than 30% clay, the rate of **METAGAN GOLD** may be varied according to the degree of pre-emergence control achieved and the prevailing weather conditions.
- The higher dosage rate of **METAGAN GOLD** may be used if grass weeds have started to emerge at the time of the post-emergence application.
- In order to control broadleaf weeds effectively GESAPRIM SUPER can be added to the above recommended rates of **METAGAN GOLD**. Consult the GESAPRIM SUPER label (compare table 1 of the GESAPRIM SUPER label). Do not apply 2,4-D Amine in tank mixture with **METAGAN GOLD** on maize.

b) Residual grass control with knockdown affect

Post-emergence application of METAGAN GOLD plus CALLISTO plus GESAPRIM SUPER plus an adjuvant.

- **CALLISTO** must be applied post-emergence when the target
 - grasses are between the 2 - 3-leaf stage
 - broadleaf weeds are between the 2 - 6-leaf stage.
- **Recommended adjuvants:** In all post emergence applications of CALLISTO an adjuvant must be used. The following adjuvants are recommended:
 - AGRAL at 200 ml/100 l spray volume
 - BREAKTHRU at 50 ml/100 l spray volume
 - COMPLEMENT SUPER 100 ml/ha
 - PENETREX at 500 ml/100 l spray volume
 - SOLITAIRE at 100 ml/100 l spray volume
 - TRONIC at 500 ml/ha
- To enhance the activity on larger weeds 250 ml 2,4-D can be added to the tank mixtures mentioned below. The addition of 2,4-D is recommended for the control of morning glory and other problem weeds.
- This post-emergence application should be preceded by a pre-emergence application of CALLISTO, DUAL GOLD, GARDOMIL GOLD 600 SC, GESAPRIM 90 WG or GESAPRIM SUPER as indicated on the registered labels.

CALLISTO 104 ml/ha	plus METAGAN GOLD 135 - 508 ml/ha	plus GESAPRIM SUPER 416 ml/ha	plus recommended adjuvant*
Weeks control	Botanical name	Common name	
4	<i>Amaranthus hybridus</i>	common pigweed	
4	<i>Crotalaria sphaerocarpa</i>	mealie Crotalaria	
4	<i>Galinsoga parviflora</i>	gallant soldier	
4	<i>Hibiscus trionum</i>	bladder weed	
4	<i>Tagetes minuta</i>	khaki weed	
4	<i>Xanthium strumarium</i>	Cocklebur	

CALISTO 104 ml/ha	plus METAGAN GOLD 203 - 508 ml/ha	plus GESAPRIM SUPER 416 ml/ha	plus recommended adjuvant*
Weeks control	Botanical name		Common name
The above-mentioned weeds plus			
4	Cleome monophylla		spindlepod
4	Datura ferox		large thorn apple
4	Datura stramonium		thorn apple

CALISTO 156 mℓ/ha		plus METAGAN GOLD 203 - 508 mℓ/ha	plus GESAPRIM SUPER 416 mℓ/ha	plus recommended adjuvant*
Weeks control	Botanical name		Common name	
The above-mentioned weeds plus				
8	<i>Bidens bipinnata</i>		Spanish blackjack	
8	<i>Bidens pilosa</i>		Blackjack	
8	<i>Datura ferox</i>		large thorn apple	
8	<i>Galinsoga parviflora</i>		gallant soldier	
8	<i>Tagetes minuta</i>		khaki weed	

CALISTO 156 mℓ/ha		plus METAGAN GOLD 305 - 508 mℓ/ha	plus GESAPRIM SUPER 416 mℓ/ha	plus recommended adjuvant*
Weeks control	Botanical name		Common name	
The above-mentioned weeds plus				
4	<i>Citrullus lanatus</i>		bitter apple	

CALISTO 208 mℓ/ha		plus METAGAN GOLD 271 - 508 mℓ/ha	plus GESAPRIM SUPER 416 mℓ/ha	plus recommended adjuvant*
Weeks control	Botanical name		Common name	
The above-mentioned weeds plus				
4	Commelina benghalensis		Benghal wandering Jew common morning glory dubbeltjie	
4	Ipomoea purpurea			
4	Tribulus terrestris			
8	Cleome monophylla		spindlepod bladder weed	
8	Hibiscus trionum			

CALISTO 208 mℓ/ha		plus METAGAN GOLD 406 - 508 mℓ/ha	plus GESAPRIM SUPER 416 mℓ/ha	plus recommended adjuvant*
Weeks control	Botanical name		Common name	
The above-mentioned weeds plus				
4	<i>Digitaria sanguinalis</i>		crab fingergrass	
4	<i>Eleusine indica</i>		goose grass	
8	<i>Amaranthus hybridus</i>		common pigweed	
8	<i>Commelina benghalensis</i>		Benghal wandering Jew	
8	<i>Ipomoea purpurea</i>		common morning glory	
8	<i>Tribulus terrestris</i>		dubbeltjie	

CALISTO 260 mℓ/ha	plus METAGAN GOLD 339 - 508 mℓ/ha	plus GESAPRIM SUPER 416 mℓ/ha	plus recommended adjuvant*
Weeks control	Botanical name	Common name	
The above-mentioned weeds plus			
4	<i>Hibiscus cannabinus</i>	kenaf	
8	<i>Citrullus lanatus</i>	bitter apple	
8	<i>Digitatia sanguinalis</i>	crab fingergrass	
8	<i>Eleusine indica</i>	goose grass	
8	<i>Crotalaria sphaerocarpa</i>	mealie Crotalaria	

CALISTO 260 ml/ha		plus METAGAN GOLD 508 ml/ha	plus GESAPRIM SUPER 416 ml/ha	plus recommended adjuvant*
Weeks control	Botanical name		Common name	
Up to 80% suppression of the following weeds:				
8	Chloris virgata		feathertop Chloris	
8	Cyperus esculentus		yellow nutsedge	
8	Hibiscus cannabinus		kenaf	

CALISTO 260 mℓ/ha		plus METAGAN GOLD 508 mℓ/ha	plus GESAPRIM SUPER 416 mℓ/ha	plus recommended adjuvant*
Weeks control	Botanical name		Common name	
Up to 80% suppression of the following weeds:				
8	<i>Urochloa panicoides</i>		herringbone grass cocklebur	
8	<i>Xanthium strumarium</i>			

Consult the CALLISTO, GESAPRIM SUPER, BREAKTHRU, COMPLEMENT SUPER, PENETREX, SOLITAIRE, TRONIC and AGRAL 90 labels for WARNINGS, PRECAUTIONS and DIRECTIONS FOR USE.

c) Post-emergence application on glyphosate tolerant maize

- **METAGAN GOLD** can be applied in tank mixes with CALLISTO and TOUCHDOWN FORTE HITECH on glyphosate tolerant maize to provide knockdown and residual control.
- Any individual plants that do not contain the glyphosate tolerant gene would die when sprayed with glyphosate based products e.g., TOUCHDOWN FORTE HITECH. The utmost care should be taken not to apply this tank mixture to non-glyphosate tolerant maize. Follow the label instructions for the application of this tank mixture to glyphosate tolerant maize as described on the TOUCHDOWN FORTE HITECH label.
- When tank mixing **METAGAN GOLD** with CALLISTO and TOUCHDOWN FORTE HITECH:
 - Ammonium sulphate e.g., VELOCITY GLYFO must be used to correct the water quality status of the water.
 - No adjuvants may be used.
 - No other triazine may be added to this tank mixture.
 - The TOUCHDOWN FORTE HITECH and CALLISTO labels should be followed carefully.

METAGAN GOLD plus CALLISTO may not be applied with any other glyphosate containing product other than TOUCHDOWN FORTE HITECH.

7.4.7 Sugarcane

Pre-emergence application

- Apply 1 - 1.6 ℓ/ha **METAGAN GOLD** on all soil types as a pre-emergence treatment. The higher rate is recommended on soils with more than 35% clay and on all soil types where *P. maximum* is a problem and/or for improved control of *C. esculentus* and/or for longer residual control.
- Apply **METAGAN GOLD** at 2 ℓ/ha if the soil organic matter content exceeds 1% and the clay content exceeds 35%.
- Because it is not always possible to apply the herbicide prior to weed emergence, it is recommended to add 1.5 ℓ/ha GRAMOXONE to the above mentioned **METAGAN GOLD** spray mixture where weeds have started to emerge.
- To obtain good broadleaf weed control, it is recommended

that GESAPAX 500 SC be added at a rate of 2 - 3 ℓ/ha to the **METAGAN GOLD**. The lower rate (2 ℓ/ha) is recommended for light to medium soils and the higher rate (3 ℓ/ha) for medium to heavy soils.

- Alternatively, the broadleaf weeds may be controlled post-emergence with MCPA or 2,4-D amine. For full particulars consult the respective labels.

Post-emergence application

Since **METAGAN GOLD** has no post-emergence activity, it will not control emerged weeds. It may, however, be applied post-emergence provided it is applied in a mixture with a suitable post-emergence herbicide, which will kill the emerged weeds.

Such treatments are recommended below:

1. METAGAN GOLD plus GESAPAX 500 SC plus GRAMOXONE.

Apply per hectare: 1 - 1.6 ℓ **METAGAN GOLD** in tank mix with 2 - 3 ℓ GESAPAX 500 SC plus 1.5 ℓ GRAMOXONE.

Do not add a surfactant to this treatment.

2. METAGAN GOLD plus GESAPAX 500 SC

Apply per hectare: 1 - 1.6 ℓ **METAGAN GOLD** in tank mix with 6 ℓ GESAPAX 500 SC. Add a non-ionic surfactant at a rate of 0.2% by volume.

3. METAGAN GOLD plus GESAPAX 500 SC plus MCPA or 2,4 -D

Apply per hectare: 1 - 1.6 ℓ **METAGAN GOLD** in tank mix with 4 - 5 ℓ GESAPAX 500 SC plus 3.5 ℓ MCPA - potassium salt (400 g ae/ℓ) or 3 ℓ of 2,4 - D amine (480 g ae/ℓ). Add a non-ionic surfactant at a rate of 0.2% by volume.

4. METAGAN GOLD plus DIURON 800 SC plus GRAMOXONE

Apply per hectare: 1 - 1.6 ℓ **METAGAN GOLD** in tank mix with 2 - 2.5 ℓ DIURON 800 SC plus 1.5 ℓ GRAMOXONE.

Do not add a surfactant to this treatment.

5. METAGAN GOLD plus SENCOR 480 SC plus GRAMOXONE

Apply per hectare: 1 - 1.6 ℓ **METAGAN GOLD** in a tank mix with 2 ℓ SENCOR 480 SC plus 1.5 ℓ GRAMOXONE.

Do not add a surfactant to this treatment. SENCOR 480 SC should only be used on soils of between 6 - 35% clay.

Important

- All five of the above-mentioned post-emergence treatments should be applied not later than the 3-leaf stage of the grass weeds.
- Treatments 1, 4 and 5, which contain GRAMOXONE, may be applied up to the 3-leaf stage of the crop.
- Treatment 2, which contains only **METAGAN GOLD** and GESAPAX 500 SC, may be made by means of and overhead application, up to the 5-leaf stage of the crop. After the 5-leaf stage the spray must be directed between the sugarcane rows.
- Treatment 3, which contains either MCPA or 2,4 -D amine, should preferably be directed between the sugarcane rows. After the 5-leaf stage of the crop the spray must be

directed between the sugarcane rows.

- The rate of **METAGAN GOLD** in all five above-mentioned treatments and the rates of GESAPAX 500 SC in treatment 1 should be selected according to the directions under PRE-EMERGENCE APPLICATION.
- The rate of GESAPAX 500 SC in treatment 3 should be selected according to the density of the grass infestation and the prevailing climatic conditions.
- Treatments 2 and 3 may not always give satisfactory control of *P. maximum*.
- Use the higher dosage rate of DIURON 800 SC in treatment 4 for longer residual control.
- Apply **METAGAN GOLD** at 2 l/ha if the soil organic matter content exceeds 1% and the clay content exceeds 35%.

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