

Kubist Flo

A suspension concentrate formulation containing 500 g/l (44.3% w/w) ethofumesate.

A residual herbicide with some contact activity for the control of annual grass and broad-leaved weeds in sugar beet, red beet, fodder beet and mangels including seed crops.

PRODUCT BENEFITS

- Flexible residual and contact herbicide for use in a wide range of situations in sugar beet.
- Concentrated flowable formulation producing less packaging waste.
- Control of some annual grass weeds and a range of broad-leaved weeds.
- Useful tank-mixer.

LERAP category: Unclassified

Pack size: 1 litre

Storage: PROTECT FROM FROST



IMPORTANT INFORMATION

FOR USE ONLY AS AN AGRICULTURAL HERBICIDE.

| Crop | Maximum individual dose | Maximum total dose | Latest time of application |
|---------------------------------------------------------------------|--------------------------------|---------------------------|------------------------------------------------|
| Sugar beet, red beet, fodder beet and mangels, including seed crops | 2.0 l/ha | 2.0 l/ha | Before the crop foliage meets between the rows |

Other specific restriction:

- The maximum total dose must not exceed 1.0 kg ethofumesate per hectare in any three year period.

READ THE LABEL BEFORE USE. USING THIS PRODUCT IN A MANNER THAT IS INCONSISTENT WITH THE LABEL MAY BE AN OFFENCE. FOLLOW THE CODE OF PRACTICE FOR USING PLANT PROTECTION PRODUCTS.

MAPP 12987

The (COSHH) Control of Substances Hazardous to Health Regulations may apply to the use of this product at work.

DIRECTIONS FOR USE

IMPORTANT: This information is approved as part of the Product Label. All instructions within this section must be read carefully in order to obtain safe and successful use of this product.

INTRODUCTION

KUBIST FLO is a residual herbicide with some contact activity for the control of annual grass and broad-leaved weeds in sugar beet, red beet, fodder beet and mangels including seed crops.

KUBIST FLO may be used either pre-emergence or post-emergence of the crop and must always be used in tank mixtures.

Pre-emergence applications of KUBIST FLO mixtures sensitise weeds to post-emergence applications of Betanal Flow, Betanal Carrera or Betanal Flow/Betanal Carrera tank mixtures, extending the period over which these treatments can be applied for optimum benefit by up to 14 days. KUBIST FLO mixtures control many important broad-leaved weeds including Cleavers, have a greater effect on late emerging weeds and are more effective than most other residual herbicides when moisture is limited.

Post-emergence, KUBIST FLO mixtures with Betanal Flow, Betanal Carrera or Goltix WG are designed for use to give optimum weed control in a wide range of situations, and allow problem weeds such as Knotgrass, Redshank and Black bindweed to be controlled at larger stages than the individual products alone. Residual activity from KUBIST FLO prevents or reduces troublesome late germinating weeds such as Fat hen or Black nightshade.

WEEDS CONTROLLED

WEED CONTROL – PRE-EMERGENCE

KUBIST FLO is recommended only in the mixtures shown in the dose section.

Susceptible

| | | |
|-------------------|----------------------|----------------------|
| Bindweed, black | Forget-me-not, field | Pimpernel, scarlet |
| Blackgrass | Fumitory, common | Radish, wild (Runch) |
| Campion, white | Knotgrass | Redshank |
| Charlock | Mayweed [†] | Shepherd's purse |
| Chickweed, common | Meadow grass, annual | Sowthistle, smooth |
| Cleavers | Orache, common | Spurge, sun |
| Fat hen | Persicaria, pale | Spurrey, corn |

Moderately susceptible

| | | |
|---------------------|-------------------|-------------------------|
| Deadnettle, red | Nightshade, black | Speedwell, common field |
| Groundsel | Pansy, field | Speedwell, ivy-leaved |
| Hemp-nettle, common | Pennycress, field | Volunteer cereals |
| Nettle, small | Poppy, common | Wild oat |

Weeds not controlled

| | | |
|------------|-----------------|----------|
| Nipplewort | Parsley, fool's | Ryegrass |
|------------|-----------------|----------|

Perennial grasses, e.g. Common couch, may be reduced by KUBIST FLO mixtures under favourable conditions.

Strains of some annual grasses, e.g. Blackgrass, Wild oat, and Italian ryegrass, have developed resistance to herbicides which may lead to poor control. A strategy for preventing and managing such resistance should be adopted. Guidelines have been produced by the Weed Resistance Action Group and copies are available from the HGCA, CPA, your distributor, crop adviser or product manufacturer.

Mode of uptake

KUBIST FLO is taken up by the emerging shoot (especially grasses) or by root absorption soon after germinating (some broad-leaved weeds). KUBIST FLO remains effective in the upper soil layer for several weeks.

Although KUBIST FLO mixtures are less dependent on soil moisture than many other residual beet herbicides, best results will be obtained from application to a moist seed bed. Adequate soil moisture or irrigation or rainfall soon after application is essential for best results.

WEED CONTROL – POST-EMERGENCE

Weeds killed up to six expanded true leaves

| | | |
|----------|---------------------|-------------------------|
| Charlock | Hemp-nettle, common | Radish, wild (Runch) |
| Fat hen | Pimpernel, scarlet | Speedwell, common field |

Weeds killed up to four expanded true leaves

| | | |
|------------------|----------------------|-----------------------|
| Bindweed, black | Meadow grass, annual | Pennycress, field |
| Fumitory, common | Orache, common | Speedwell, ivy-leaved |
| Groundsel | Pansy, field | |

Weeds killed up to two expanded true leaves

| | | |
|--------------------|----------------|------------------|
| Bugloss | Knotgrass | Nipplewort |
| Deadnettle, henbit | Marigold, corn | Persicaria, pale |
| Deadnettle, red | Nettle, small | Redshank |

Other weeds controlled

| | |
|-------------------|---------------------------------------------------|
| Blackgrass | severe check or kill up to three leaf stage |
| Chickweed, common | killed up to 25 cm across or high |
| Cleavers | killed up to 5 cm across or high |
| Mayweed | severe check or kill up to 2.5 cm across or high |
| Nightshade, black | severe check or kill up to one expanded true leaf |
| Poppy, common | killed up to 10 cm across or high |
| Shepherd's purse | killed up to 10 cm across or high |
| Spurrey, corn | killed up to 5 cm across or high |
| Wild oat | severe check or kill up to three leaf stage |

Under good growing conditions some weeds may be controlled beyond the recommended stages.

Weeds not controlled

Perennial weeds.

CROP SPECIFIC INFORMATION

Sugar beet, red beet, fodder beet and mangels

All varieties of these crops (including seed crops) may be sprayed with KUBIST FLO mixtures. Do not treat red beet with KUBIST FLO + Pyramin DF.

Consult the processor before using KUBIST FLO on contracted crops of red beet.

Application

KUBIST FLO mixtures pre-emergence and post-emergence may be applied as an overall spray. KUBIST FLO mixtures with Betanal Flow/Betanal Carrera or Goltix WG may be applied overall as a low volume spray.

Drift

Avoid drift to areas outside those being sprayed, having due regard to the prevailing weather conditions and spray quality being used. The risk of drift is greater when a FINE quality spray, as recommended for the use of this product in tank-mixture with Goltix WG is used.

Crop failure

If crop failure occurs by reason of insect damage, soil blow, capping etc., re-drill only with sugar beet, red beet, fodder beet or mangels. Where crop failure occurs late, contact Nufarm or your distributor for advice.

Safety to foliage

Foliar distortion may occur on occasional plants treated with KUBIST FLO mixtures at recommended doses. These effects are most likely to occur early in the season and have no effect on total yield or sugar content.

PRE-EMERGENCE

Application

Apply KUBIST FLO mixtures at drilling or as soon as possible after drilling but before crop or weed emergence.

Pre-emergence

Maximum individual dose

2.0 l/ha.

Maximum number of treatments

One pre-emergence treatment per crop.

Sugar beet, red beet*, fodder beet and mangels

| Soil type | KUBIST FLO | plus | Pyramin DF | or | Venzar Flowable |
|---------------------------------------|------------|------|------------|----|-----------------|
| Very light/light (LS-ZL) [†] | 2.0 l/ha | | 1.7 kg/ha | | 0.9 l/ha |
| Medium* (SCL-ZCL) [†] | 2.0 l/ha | | 2.2 kg/ha | | 1.3 l/ha |

[#] On medium soils persistence and residual control may be reduced and/or weed control may be less than the listed susceptibilities.

* KUBIST FLO mixtures with Pyramin DF should not be used on red beet.

[†] Soil Texture (85 System) (see above).

Volume

200–400 litres of water per hectare.

Spray quality

Application

KUBIST FLO mixtures pre-emergence should be applied as a COARSE or MEDIUM quality spray (for details see *Boom Sprayers Handbook* published by BCPC).

Soils

KUBIST FLO mixtures are recommended for very light to medium soils except Sands[†] and soils with more than 5% organic matter (this level can only be determined by chemical analysis). If Very Light Soils[†] have a high proportion of stones, growers should consult their Nufarm representative.

Apply KUBIST FLO mixtures to a fine, firm, level seed bed.

[†] Soil Texture (85 System). Details may be found in MAFF leaflet *Soil Texture (85) System and Pesticide Use*.

Frost

As with other beet herbicides, crops sprayed pre-emergence with KUBIST FLO mixtures and subsequently subjected to frost may be checked such that they may not fully recover.

COMPATIBILITY

KUBIST FLO must only be used in tank-mixture with any one of the following as recommended below:

Pyramin DF or Venzar Flowable.

SEQUENCES

Sequences after pre-emergence herbicides

Pre-emergence KUBIST FLO mixtures can be applied after the use of approved formulations of Avadex BW Granular for grass weed control.

Do NOT use programmes of KUBIST FLO after other pre-drilling herbicides without first consulting your Nufarm representative.

Sequences before post-emergence herbicides

For season-long weed control programmes based on Betanal Flow and Betanal Carrera mixtures can be applied at the recommended dose post-emergence to crops previously treated with KUBIST FLO mixtures pre-emergence.

POST-EMERGENCE

KUBIST FLO must be used in tank-mixture with **one** of the following as recommended below:

Betanal Flow, Betanal Carrera, or Goltix WG.

In conventional volumes KUBIST FLO must be used in tank mixture with Betanal Flow overall. In low volume overall spray programmes, KUBIST FLO may be mixed with Goltix WG, Betanal Flow or Betanal Carrera (see LOW VOLUME OVERALL TREATMENT).

KUBIST FLO + Betanal Flow or Betanal Carrera mixtures shows both contact and residual activity. The residual activity will be more evident under moist soil conditions. The mixture may be used on all soil types. BUT on soils with more than 5% organic matter (which can be determined only by chemical analysis) the KUBIST FLO/Betanal Flow or Betanal Carrera mixtures will act mainly by contact action and will have little residual effect.

Factors affecting crop tolerance

When used as recommended post-emergence, KUBIST FLO mixtures exhibit good safety to beet. Several factors can affect crop tolerance and individually may appear to have little effect.

However, where two or more stress-inducing conditions occur at the same time, the application of KUBIST FLO mixtures can result in some transient crop effect which may not be fully outgrown. In extreme cases some loss of crop may occur.

The most important factors are as follows:

- Previously applied pesticides and herbicides, as it is not always possible to predict the interactions which may occur, and the effects of stresses in such conditions may be more severe.
- Substantial day to night temperature fluctuations. If this occurs shortly before or after spraying, a check may occur from which the crop may not fully recover.
- High light intensity. Where the crop is already under stress, and KUBIST FLO mixtures are sprayed in conditions of high light intensity, the crop may suffer a check from which it may not fully recover.
- High radiant temperatures. When the temperature is, or is likely to be, above 21°C (70°F) on the day of spraying, applications should be made after 5pm otherwise crop check may occur.
- Prolonged low temperature periods or frost. Crops sprayed with KUBIST FLO mixtures and subjected to frost within seven days may be checked such that they may not fully recover.
- Damage by wind blows. Strong winds can damage crops by physical buffeting and contingent damage can arise from blown soil particles. When wind damage has occurred, delay application of KUBIST FLO mixtures until the crop has recovered.
- Lime deficiency. Growers should ensure that the lime status of the soil is satisfactory before drilling.
- Nutrient deficiencies such as manganese, as a check may occur.
- Insect attack e.g. Mangel fly, Pygmy mangel beetle or Flea beetle, as treatment may cause a check from which the crop may not fully recover.
- Fungal attack.

LOW VOLUME OVERALL TREATMENT

KUBIST FLO + Betanal Flow or Betanal Carrera

In low volume overall spray programmes, KUBIST FLO may be used in tank-mixture with Betanal Flow or Betanal Carrera. Where spraying has been unavoidably delayed and weeds are beyond the cotyledon stage, mixtures of Betanal Flow + KUBIST FLO or Betanal Carrera + KUBIST FLO will give improved weed control as part of a low dose programme. Full details of the tank-mixtures are given on the Betanal Flow and Betanal Carrera labels.

Applications must be separated by at least five days. Do NOT spray once the crop has met between the rows.

Mixture with Betanal Flow – Crops: All varieties of sugar beet, fodder beet, red beet and mangels.

Apply KUBIST FLO 0.6 l/ha + Betanal Flow 1.75 l/ha from crop growth stage two true leaves expanded. Up to two applications may be made.

Mixture with Betanal Carrera – Crops: All varieties of sugar beet.

Apply KUBIST FLO 0.4 l/ha + Betanal Carrera 1.5 l/ha from crop fully expanded cotyledon stage.

Apply KUBIST FLO 0.6 l/ha + Betanal Carrera 1.5 l/ha from crop growth stage two true leaves expanded (maximum of two applications).

KUBIST FLO + Goltix WG or other metamiltrons formulations

Where additional residual activity is required in the post-emergence programme and/or where weeds have grown slightly larger than cotyledon size, a mixture of KUBIST FLO + Goltix WG or other metamiltrons formulations may be used. KUBIST FLO + Goltix WG or other metamiltrons formulations must be sprayed overall, post-emergence of the crop and must form part of a low volume/low dose programme. Normally such a mixture will be required only once in the programme before reverting to Betanal Flow or Betanal Carrera mixtures.

Crops

Sugar beet, fodder beet and mangels (all varieties).

Timing

KUBIST FLO + Goltix WG or other metamiltrons formulations may be sprayed when the crop cotyledons are fully expanded and the first pair of true leaves are at least one centimetre long.

Dose

KUBIST FLO 0.7 l/ha + Goltix WG 1.5 kg/ha.

Volume

80 to 100 litres of water per hectare.

Spray quality

FINE quality spray (BCPC definition).

Fan or hollow cone nozzles which have an output of 0.3 to 0.6 litres per minute at three bar have been found to be suitable. e.g. F80-110/0.3-0.6/3 or HC -/0.3-0.6/3.

Fan nozzles must have at least an 80° spray angle.

Mixing

- Goltix WG or other metamiltrons formulations should be thoroughly dispersed in the spray tank half full of water before adding the KUBIST FLO. Agitation should be maintained throughout spraying and stoppages until the tank is empty.
- Appropriate filters should be fitted (see Goltix WG or metamiltron label).
- Do not add Actipron or any other adjuvant or pesticide to a mixture of Kubist + Goltix WG or other metamiltron formulation.

KUBIST FLO/BETANAL FLOW: Conventional volume treatment

TIMING

Application should be made post-emergence when the smallest beet have at least two fully expanded true leaves, i.e. where the third and fourth true leaves are apparent.

Where a recommended pre-emergence treatment has been used (see *Following Pre-drilling/Pre-emergence Treatments*, below).

Spray the first application of the split treatment from when the beet have two fully expanded true leaves. The second application should follow 5–10 days later. The split treatment should not be used where non-recommended pre-emergence treatments have been applied.

Where a pre-emergence treatment has not been used

Spray the first application of the split treatment from when all the beet have emerged and are at the cotyledon stage with the first pair of true leaves visible. The second application should follow 5–10 days later.

If germination of weeds occurs after the second application of the split treatment, a further post-emergence application of Betanal Flow with or without Pyramin DF will probably be necessary.

Interval between applications

Successful results from this technique are achieved by applying the two sprays such that the second is applied when the first is still having effect. In good vigorous growing conditions, the interval should be five days. In cooler conditions, the interval may be extended up to a maximum of ten days. Beyond an interval of ten days, the additional benefit of the split treatment will be lost.

In exceptional cases, the second part of the split treatment may not appear necessary even at 10 days. Alternatively, it may not be possible to spray the second application because of, for instance, unfavourable weather conditions. In such situations, weed growth should be watched carefully and an appropriate treatment of Betanal Flow with or without Pyramin DF applied.

Maximum total dose

2.0 l/ha.

Sugar beet, red Beet, fodder beet and mangels

Apply KUBIST FLO 1.0 l/ha + Betanal Flow 2.5 l/ha, from two true leaves expanded of the crop.

Latest timing of application

Before the crop foliage meets between the rows.

Volume

200–240 litres water/hectare in conventional volume.

Spray Quality

KUBIST FLO plus Betanal Flow should be applied as a MEDIUM quality spray (BCPC definition). Do NOT use a coarse quality spray such as produced by low pressure or 'reduced-drift' nozzles, as this may give poor weed control.

COMPATIBILITIES AND SEQUENCES*Compatibility – post-emergence*

KUBIST FLO is compatible with Betanal Flow, Betanal Carrera, Pyramin DF or Goltix WG.

Following pre-drilling/pre-emergence treatments

KUBIST FLO plus Betanal Flow or Betanal Carrera mixtures may be applied post-emergence to crops treated pre-drilling or pre-emergence with the following at commercially recommended doses:

Avadex BW Granular (MAPP 12104)

Pyramin DF (MAFF 03438)

Venzar Flowable (MAFF 06907)

Metamitron (MAPP 11540, 11539)

Following post-emergence treatments

KUBIST FLO plus Betanal Flow or Betanal Carrera mixtures may follow other post-emergence applications of Betanal Flow or Betanal Carrera provided an interval of 10 days is left between applications. If Mayweed is a particular problem then KUBIST FLO/ Betanal Flow or Betanal Carrera should follow a recommended pre-emergence treatment or be tank-mixed with Pyramin DF or metamitron.

A four day interval should be left between the application of KUBIST FLO plus Betanal Flow or Betanal Carrera mixtures and an insecticide treatment.

SPRAY OPERATORS INSTRUCTIONS

SHAKE THE CONTAINER BEFORE USE.

Preparation

Wash out the sprayer, spraybars and nozzles to ensure no trace remains of previous chemicals. (This is most important after hormone or sulfonyleurea weedkillers.) Contaminated hoses should be replaced by new hoses and all hose connections must be secured with hose clips.

Check that nozzle tips are clean, undamaged and of the correct type to apply the recommended spray quality and all of the same size, giving equal spray outputs and distribution.

Mixing and filling – KUBIST FLO mixtures pre-emergence

Part fill the sprayer with clean water and check that the agitation is functioning properly.

Following the instructions for the partner product, add and thoroughly disperse the required quantity of the partner product in the spray tank. Then add the required volume of KUBIST FLO.

Fill the tank with water to the required level, and mix well by agitating or stirring. Continue agitation until tank load is used.

If agitation is stopped for any reason it is essential to re-suspend the spray mixture by thorough agitation and stirring before commencing spraying.

Mixing and filling – KUBIST FLO + Betanal Flow or Betanal Carrera **Post-emergence**

Start to fill the sprayer with clean water, and check that the agitation is operating correctly.

Add the required quantity of Betanal Flow or Betanal Carrera to a small quantity of water in the tank and agitate until dispersed.

When the Betanal Flow or Betanal Carrera is thoroughly dispersed, add more water and half fill the tank, then add the required quantity of KUBIST FLO and mix well by agitation or stirring.

Add water to the required level and mix well by agitating or stirring. Continue agitation until tank load is used.

In the field

Ensure that the spray nozzles are set at the correct height to give even spray coverage. Commence spraying, being careful to maintain correct pressure and tractor speed. Avoid overdosing or drift onto neighbouring crops.

After spraying

Mix only sufficient chemical for immediate use. Any chemical remaining at the end of the day must be drained off, stored in a labelled, tightly sealed container and kept for further use in a place protected from frost.

After each day's work drain the sprayer, wash thoroughly with water and liquid detergent and empty completely. Ensure that all liquid is removed from the sprayer tank, pump and hoses. Remove nozzles, open tank and drain pump to allow free access of air to all parts of the system.

SUCCEEDING CROPS

Any crop may be sown three months after using KUBIST FLO mixtures at recommended doses. Ploughing (mould board) to a minimum depth of 15 cm should precede preparation of the new seed bed.

Weather

As with many soil applied or residual herbicides, adverse weather, soil or cultural conditions may lead to unsatisfactory results or a check to growth from which recovery may not be complete.

KUBIST FLO

A suspension concentrate formulation containing 500 g/l (44.3% w/w) ethofumesate.

**DANGEROUS FOR THE ENVIRONMENT****TOXIC TO AQUATIC ORGANISMS, MAY CAUSE LONG-TERM ADVERSE EFFECTS IN THE AQUATIC ENVIRONMENT.**

This material and its container must be disposed of in a safe way.

Use appropriate containment to avoid environmental contamination.

To avoid risks to man and the environment, comply with the instructions for use.

SAFETY PRECAUTIONS**Operator protection**

WASH ANY CONTAMINATION from skin or eyes immediately.

DO NOT BREATHE SPRAY.

WASH HANDS AND EXPOSED SKIN before eating, drinking and smoking and after work.

Environmental protection

Do not contaminate water with the product or its container. (Do not clean application equipment near surface water. Avoid contamination via drains from farmyards and roads.)

To protect groundwater/soil organisms the maximum total dose of this, or any other product containing ethofumesate, **MUST NOT** exceed 1.0 kg ethofumesate per hectare in any three year period.

Storage and disposal

KEEP IN ORIGINAL CONTAINER, tightly closed in a safe place.

THIS MATERIAL AND ITS CONTAINER must be disposed of in a safe way.

WASH OUT CONTAINER THOROUGHLY, empty washings into spray tank and dispose of safely.

Approval holder Bayer CropScience.