Information in this portfolio booklet does not constitute a recommendation, it is for guidance only. Up-to-date information can be found on our website uk.uplonline.com.

Brand names used in this booklet are trademarks of UPL and of other manufacturers, in which proprietary rights may exist. Use plant protection products safely. Always read the label and product information before use.

For further information please contact your local distributor or UPL.
Sugar Beet Weeds

Introduction

The growing of sugar beet has been revolutionised in recent decades from a high cost labour intensive crop to the efficient profitable one we know today. Efficient modern herbicides have been one of the major innovations that have made this possible.

Sugar Beet is a slow growing crop that suffers greatly from the competition of weeds which compete for light, space, nutrients and water. It is a very uneven battle, which without intervention would dramatically reduce crop yields. Certain weeds can seriously hamper harvesting and processing slowing down these all-important operations and increasing costs. Others can act as hosts to pests and diseases such as beet cyst nematodes, and violet root rot as well as contributing to the build up of weed seeds in the soil if left unchecked.

The choice of products whether used alone, in mixtures, or in a programme is critical to the success of controlling weeds. It is necessary to understand which weeds are controlled by which products, what size of weeds are controlled, and because beet is a very sensitive plant, at what crop stage the various herbicides may be applied.

Adapting to the changing face of sugar beet production in Europe, UPL Europe Ltd, formerly known as United Phosphorus Limited, has used their expertise to develop an unequalled range of cost effective products to support farmers.
UPL Sugar Beet Portfolio

Our Areas of Expertise Include:

Manufacturing
To ensure continuity of supply we are unique in our ability to manufacture our major sugar beet active ingredients in-house and we do not rely on outsourcing.

Technology
Our research scientists are working to create high quality formulations to deliver efficacy, crop safety, quality and value.

Formulation
Formulation capacity at our UK factory in Sandbach has been constantly upgraded to keep pace with increased demand for our quality products.

Registrations
We have a dedicated registration team based at our European headquarters in Warrington.

We are supporting UPL’s major sugar beet molecules with data generation to provide long-term security for product registrations.

Changes to This Edition
1. Useful information: updated with changes since last edition highlighted in red
2. BETTIX FLO replaced with BETTIX FLO SC – new label

Note
Some products may have approvals for use in crops other than those listed above.
For further information, please see product labels, also available to view and download at www.uplsugarbeet.co.uk and uk.uplonline.com.

<table>
<thead>
<tr>
<th>Page</th>
<th>Product</th>
<th>Description</th>
<th>Active Ingredients</th>
</tr>
</thead>
<tbody>
<tr>
<td>p7</td>
<td>BEETUP COMPACT SC</td>
<td>80g desmedipham SC</td>
<td>Sugar beet, fodder beet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>80g phenmedipham SC</td>
<td></td>
</tr>
<tr>
<td>p10</td>
<td>BETASANA SC</td>
<td>160g phenmedipham SC</td>
<td>Sugar beet, fodder beet, red beet and mangels</td>
</tr>
<tr>
<td>p12</td>
<td>BETASANA TRIO</td>
<td>15g desmedipham SC 115g ethofumesate 75g phenmedipham SC</td>
<td>Sugar beet, fodder beet and mangels</td>
</tr>
<tr>
<td>p15</td>
<td>BETTIX FLO SC (NEW)</td>
<td>700g metamitron SC</td>
<td>Sugar beet, fodder beet, red beet and mangels</td>
</tr>
<tr>
<td>p20</td>
<td>EFECKT</td>
<td>500g ethofumesate SC</td>
<td>Sugar beet, fodder beet, red beet and mangels</td>
</tr>
<tr>
<td>p22</td>
<td>MICROTHIOL SPECIAL</td>
<td>80% sulphur WDG</td>
<td>Sugar beet</td>
</tr>
<tr>
<td>p23</td>
<td>MISSION 200SL</td>
<td>200g diquat SL</td>
<td>Sugar beet</td>
</tr>
<tr>
<td>p24</td>
<td>SHIRO</td>
<td>500g triflusulfuron-methyl WDG</td>
<td>Sugar beet and fodder beet</td>
</tr>
<tr>
<td>p27</td>
<td>VIVENDI 200</td>
<td>200g clopyralid SL</td>
<td>Sugar beet, fodder beet, red beet and mangels</td>
</tr>
</tbody>
</table>
The authorisations listed on this notice have been extended pending completion of their ongoing product renewal applications which have been submitted and accepted under Article 43 of Regulation (EC) 1107/2009.

Harvest interval of 84 days for Red Beet

Harvest interval of at least 35 days for Fodder beet

BEETUP COMPACT SC is a selective post-emergent herbicide for the control of annual weeds in sugar beet. It contains an 80:80 ratio of phenmedipham combined with desmedipham.

The addition of a robust rate of desmedipham means greater activity than phenmedipham alone with more rapid contact action and improved efficacy against key weeds. The co-formulation is optimised to aid ethofumesate to penetrate the target surface effectively and BEETUP COMPACT SC is more stable and therefore less reliant on temperature and light than phenmedipham alone.

In growth, BEETUP COMPACT SC can be applied to crops suffering from stress may lead to a check. In growth, substantial day-to-night fluctuations in temperature occur shortly before or after the application, growth may be checked. BEETUP COMPACT SC is more resistant to cold and therefore less reliant on temperature and light than phenmedipham alone.

Best Use Advice

The application of BEETUP COMPACT SC to crops suffering from stress may lead to a check. Before crop leaves meet between the rows (BBCH 39) Fodder beet must not be grazed by livestock or harvested for animal consumption until at least 35 days after last application.

Useful Information

www.uplsugarbeet.co.uk
Crop Tolerance
All commercial varieties of Sugar Beet can be sprayed if healthy. Timing should be determined by the stage of growth of the weeds present.
As the beet plants are small and grow rapidly they can be affected by changes in conditions and become stressed.
The safety of BEETUP COMPACT SC to the crop will vary with conditions around the time of application.
If the plants are sprayed when they are stressed, this may lead to a check in growth from which they may not recover.
Causes of stress include:
- Temperatures above 21°C
- Wind or hail
- Pests and diseases
- Use of other herbicides

Weeds Controlled
(see centre pages)
BEETUP COMPACT SC should be used as a repeat low dose treatment when weeds are at the cotyledon stage. If sprayed at later growth stages weed control may be reduced.
BEETUP COMPACT SC is a contact herbicide that is dependant for action on light and temperature.

Product Performance – Broom’s Barn 2012 UPL Trial

Trials Summary
BEETUP COMPACT SC compares favorably with similar desmedipham:phenmedipham products to give reliable weed control and is an important tank mix partner.

Tank Mixes
Please note that the following tank mixes have been tested for physical compatibility with BEETUP COMPACT SC at recommended rates of use and will mix in the sprayer tank. Physical compatibilities may not be approved tank mixes. These tests have not been undertaken to check for any adverse crop phytotoxicity or for the biological efficacy of the individual products when applied as a tank mix. UPL accepts no liability for physical compatibilities; therefore use is at grower’s own risk.

BEETUP COMPACT SC is physically compatible with any one of the following tank mix partners:
- Bettix Flo
- Bettix Flo SC
- Debut
- Defiant
- Defiant SC
- Dow Shield 400
- Efeckt
- Ethofol
- Ethofol 500SC
- Goltix 70SC
- Oblix 500SC
- Oblix MT/Volcano
- Safari Lite WSB
- Shiro
- Target SC
- Torero
- Venzar Flowable
- Vivendi 200

For the latest information on tank mix recommendations, please visit our website at www.uplsugarbeet.co.uk.

A Best Use Guide is available for BEETUP COMPACT SC

Summary
- Improved activity and speed of contact compared to solo products
- Safe at all stages of crop growth
- Proven reliability
- Flexible application timings
- Aids ethofumesate to penetrate weeds
- More stable, less reliant on temperature and light than phenmedipham solo

Overall ABLW Control – Suffolk 2013 UPL Trials

Trials Summary

<table>
<thead>
<tr>
<th>Treatment</th>
<th>LSD</th>
<th>CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Untreated</td>
<td>25</td>
<td>30.3</td>
</tr>
</tbody>
</table>

Source: Rothamsted Research, Broom’s Barn 2012
LSD = 25 (Comparison between treatments)
LSD = 18.4 (Comparison between untreated and treatments)

Source: UPL Suffolk 2013
Dewar Crop Protection
Assessed: 4 July 2013
LSD = 18.4
CV = 30.3

Weeds/m²

<table>
<thead>
<tr>
<th>Treatment</th>
<th>LSD</th>
<th>CV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Untreated</td>
<td>104.3</td>
<td>9.82</td>
</tr>
</tbody>
</table>

Source: UPL Suffolk 2013
Dewar Crop Protection
Assessed: 4 July 2013
LSD = 9.82
CV = 30.3

* Torero/Oblix MT contain 150g ai of ethofumesate and 350g ai of metamitron. ** phenmedipham + desmedipham 160:160 formulation.
**BETASANA SC** is one of the building blocks integral to the UPL portfolio of quality sugar beet herbicides.

**BETASANA SC** is a contact herbicide for the control of a selection of broadleaved weeds in sugar beet, fodder beet, red beet and mangels.

### Product Profile

<table>
<thead>
<tr>
<th>Brand</th>
<th>BETASANA SC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active ingredient</td>
<td>phenmedipham</td>
</tr>
<tr>
<td>Inclusion rate</td>
<td>160g/L</td>
</tr>
<tr>
<td>Formulation</td>
<td>Suspension Concentrate (SC)</td>
</tr>
<tr>
<td>Crops</td>
<td>Sugar beet, fodder beet, red beet and mangels</td>
</tr>
<tr>
<td>Maximum individual dose</td>
<td>3L/ha</td>
</tr>
<tr>
<td>Maximum total dose</td>
<td>6L/ha</td>
</tr>
<tr>
<td>Latest timing of application</td>
<td>Before crop leaves meet between the rows (BBCH 39)</td>
</tr>
<tr>
<td>Pack size</td>
<td>5L</td>
</tr>
<tr>
<td>LERAP</td>
<td>8</td>
</tr>
<tr>
<td>Water volume</td>
<td>80 – 100L/ha</td>
</tr>
</tbody>
</table>

**BETASANA SC** is absorbed through the leaves of the weeds and effects should be seen within 5–6 days of spraying. Weed response will vary according to conditions at spraying and the stage of growth of individual weeds.

Weeds are best controlled at the seedling stage when growing actively in warm, moist, sunny conditions. Under poor growing conditions control may be reduced. Susceptible weeds quickly die and in warm weather will be dead in 3-4 days. More tolerant weeds may take longer to die.

Under cool conditions results may not be complete for as long as 7-10 days.

**BETASANA SC** will not prevent germination of weed seed after treatment, and where this occurs further applications may be made provided the crop is in a healthy state and the other conditions for safe use are complied with.

As **BETASANA SC** has only contact action it is not affected by soil type and can be used on organic and peaty soils as well as mineral soils.

### Tank Mixes

Please note that the following tank mixes have been tested for physical compatibility with **BETASANA SC** at recommended rates of use and will mix in the sprayer tank. Physical compatibilities may not be approved tank mixes. These tests have not been undertaken to check for any adverse crop phytotoxicity or for the biological efficacy of the individual products when applied as a tank mix. UPL accepts no liability for physical compatibilities; therefore use is at grower’s own risk.

**BETASANA SC** is physically compatible with **any one** of the following tank mix partners:

- Bettix Flo
- Bettix Flo SC
- Debut
- Defiant
- Defiant SC
- Dow Shield 400
- Efeckt
- Ethofol
- Ethofol 500SC
- Ethosat 500
- Ethosat 500SC
- Goltix 70 SC
- Oblix 500SC
- Oblix MT/Volcano
- Oblix MT/Volcano
- Safari Lite WSB
- Shiro
- Target SC
- Venzar Flowable
- Vivendi 200

For the latest information on tank mix recommendations, please visit our website at [www.uplsugarbeet.co.uk](http://www.uplsugarbeet.co.uk).

### Summary

- Effective contact action
- Safe at all stages of crop growth
- Proven reliability
- Flexible tank mixes and dose rates

---

**Weeds Controlled**

(see centre pages)

**BETASANA SC** should be used as a repeat low dose treatment when weeds are still small. Best control is achieved at the cotyledon stage. It is normal for a repeat low dose treatment to be applied as an overall spray.

**BETASANA SC** is a contact herbicide that is dependent for action on light and temperature. This affects both weed control and crop safety. This is particularly important for application under hot conditions to crops under stress and for tank mixtures.
**BETASANA TRIO** is a selective post-emergent herbicide for the control of annual weeds in sugar beet, fodder beet and mangels.

**BETASANA TRIO** combines three complementary active ingredients:

- **Ethofumesate**
  - Long lasting weed control
  - Good activity against weeds, including black-grass
  - Mode of action different to other sugar beet actives
  - Enhancing the contact activity of other herbicides

- **Phenmedipham**
  - Effective contact action
  - Safe at all stages of growth
  - Mode of action different to other sugar beet actives
  - Enhancing the contact activity of other herbicides

- **Desmedipham**
  - Rapid contact action
  - Improved activity under difficult/cool conditions
  - Improved efficacy against key weeds
  - Aids ethofumesate to penetrate weeds

Beet crops are extremely sensitive and can easily be damaged by herbicides. This can result in reduced yields and lower returns. **BETASANA TRIO** is proven to significantly reduce the threat of crop damage.

Using a specially formulated mixture of the three active ingredients above, **BETASANA TRIO** provides the highest level of weed control with unparalleled crop safety.

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**Product Profile**

<table>
<thead>
<tr>
<th>Brand</th>
<th>BETASANA TRIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active ingredient</td>
<td>ethofumesate, phenmedipham, desmedipham</td>
</tr>
<tr>
<td>Inclusion rate</td>
<td>115g/L + 75g/L + 15g/L</td>
</tr>
<tr>
<td>Formulation</td>
<td>Suspension Concentrate (SC)</td>
</tr>
<tr>
<td>Crops</td>
<td>Sugar beet, fodder beet and mangels</td>
</tr>
<tr>
<td>Maximum individual dose</td>
<td>2.5L/ha</td>
</tr>
<tr>
<td>Maximum total dose</td>
<td>7.0L/ha</td>
</tr>
<tr>
<td>Latest timing of application</td>
<td>BBCH18 (eight leaves unfolded)</td>
</tr>
<tr>
<td>Pack size</td>
<td>5L</td>
</tr>
<tr>
<td>LERAP</td>
<td>–</td>
</tr>
<tr>
<td>Water volume</td>
<td>100 – 300L/ha</td>
</tr>
</tbody>
</table>

**Other Specific Restrictions**

The maximum total dose must not exceed 1.0kg of ethofumesate per hectare in any three year period.
Product Performance
2012 Rothamsted Research, Broom’s Barn research trials have shown that as it is kinder to the crop, BETASANA TRIO can improve yields by as much as 7 tonnes per hectare compared with the standard 4 ingredient herbicide.

<table>
<thead>
<tr>
<th>T1</th>
<th>T2</th>
<th>T3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Betanas Trio 1.5 + Bettix Flo 0.75 + Oil</td>
<td>Betanas Trio 2.0 + Venzar Flowable 0.4 + Oil</td>
<td>Betanas Trio 2.5 + Bettix Flo 1.0 + Oil</td>
</tr>
<tr>
<td>Standard 4 way 1.0 + Bettix Flo 0.75</td>
<td>Standard 4 way 1.0 + Venzar Flowable 0.4</td>
<td>Standard 4 way 1.25 + Bettix Flo 1.0</td>
</tr>
</tbody>
</table>

BBRO Systems Trials – Weed Control, 2012 Results

Source: British Beet Review Winter 2012 Volume 80 No. 4

Weeds Controlled (see centre pages)

Trials Summary
BETASANA TRIO performed consistently across all 4 trials sites. A full report is given in the British Sugar Beet Review Winter 2012 Volume 80 No 4.

For the latest information on tank mix recommendations, please visit our website at www.uplsugarbeet.co.uk

A Best Use Guide is available for BETASANA TRIO

Summary
- Excellent crop safety
- Outstanding protection against a full range of annual weeds
- Easy to use

BETTIX FLO SC

BETTIX FLO SC is one of the building blocks integral to the UPL portfolio of quality sugar beet herbicides.

BETTIX FLO SC is a contact and residual acting selective herbicide for the control of annual weeds in sugar beet, red beet, fodder beet and mangels.

Product Profile
Brand
BETTIX FLO SC
Active ingredient
metamitron
Inclusion rate
700g/L
Formulation
Suspension Concentrate (SC)
Crops
Sugar beet, fodder beet, red beet and mangels
Maximum individual dose
3.0L/ha
Maximum total dose
10.2L/ha per crop
Pack size
5L
LERAP
- 
Water volume
100 – 200L/ha

Weeds Controlled

Source: British Beet Review Winter 2012 Volume 80 No. 4

<table>
<thead>
<tr>
<th>T1</th>
<th>T2</th>
<th>T3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Betanal maxPro 1.0 + metamitron 0.75</td>
<td>Betanal maxPro 1.0 + Venzar Flowable 0.4</td>
<td>Betanal maxPro 1.25 + metamitron 1.0</td>
</tr>
<tr>
<td>Betanas Trio 1.5 + metamitron 0.75 + Oil</td>
<td>Betanas Trio 2.0 + Venzar Flowable 0.4 + Oil</td>
<td>Betanas Trio 2.5 + metamitron 1.0 + Oil</td>
</tr>
<tr>
<td>Betanas Trio 1.75 + metamitron 0.75 + Oil</td>
<td>Betanas Trio 2.0 + Venzar Flowable 0.4 + Oil</td>
<td>Betanas Trio 2.5 + metamitron 1.0 + Oil</td>
</tr>
</tbody>
</table>

1 = Bayer (including Bayer D) 2 = UPL 3 = UPL delayed

Site 1 LSD 5.07 Site 2 LSD 12.51 Site 3 LSD 18.14 Site 4 LSD 3.12

LSD = 6.95 (Comparison of untreated and treatments 1 and 2)
LSD = 9.44 (Comparison between treatments 1 and 2)

MAPP No 18245
## Weed Control Chart

<table>
<thead>
<tr>
<th>Common Name</th>
<th>BEETUP COMPACT SC</th>
<th>BETASANA SC</th>
<th>BETASANA TRIO</th>
<th>BETTIX FLO SC</th>
<th>EFECKT</th>
<th>SHIRO + BETASANA SC</th>
<th>VIVENDI 200</th>
<th>Foliar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Contact</td>
<td>Contact</td>
<td>Contact-residual</td>
<td>Contact-residual</td>
<td>Contact-residual</td>
<td>Contact-residual</td>
<td>Contact-residual</td>
<td>Foliar</td>
</tr>
<tr>
<td>Active ingredient</td>
<td>phenmedipham</td>
<td>phenmedipham</td>
<td>ethofumate, phenmedipham</td>
<td>ethofumate</td>
<td>metimeton</td>
<td>ethofumate</td>
<td>triflusulfuron-methyl + phenmedipham</td>
<td>dicyopralid</td>
</tr>
<tr>
<td>Annual bugloss</td>
<td>cypros arvensis</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Annual meadow-grass</td>
<td>Poa annua</td>
<td>MS</td>
<td>R</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Annual small nettle</td>
<td>Urtazurus</td>
<td>S</td>
<td>MS</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Black bind-weed</td>
<td>Fallopia convolvulus</td>
<td>S</td>
<td>MS</td>
<td>S</td>
<td>MR</td>
<td>S</td>
<td>S</td>
<td>MS</td>
</tr>
<tr>
<td>Black nightshade</td>
<td>Solanum nigrum</td>
<td>S</td>
<td>S</td>
<td>MR</td>
<td>MS</td>
<td>S</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Black-grass</td>
<td>Atriplex microrrhiza</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>R</td>
</tr>
<tr>
<td>Charlock</td>
<td>Sinapis arvensis</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Cleavers</td>
<td>Galium aparine</td>
<td>MS</td>
<td>S</td>
<td>R</td>
<td>S</td>
<td>S</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Common chickweed</td>
<td>Stevia media</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>R</td>
</tr>
<tr>
<td>Common field speedwell</td>
<td>Veronica spp</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Common poppy</td>
<td>Papaver rhoeas</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Corn marigold</td>
<td>Chrysanthemum segetum</td>
<td>S</td>
<td>MS</td>
<td>S</td>
<td>S</td>
<td>MS</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Corn spurrey</td>
<td>Spergula arvensis</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Creeping thistle</td>
<td>Cirsium arvense</td>
<td>R</td>
<td>S</td>
<td>R</td>
<td>S</td>
<td>S</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Cut-leaved crane's-bill</td>
<td>Geranium dissectum</td>
<td>MS</td>
<td>S</td>
<td>R</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>R</td>
</tr>
<tr>
<td>docks seeding</td>
<td>Rumex spp</td>
<td>S</td>
<td>R</td>
<td>R</td>
<td>S</td>
<td>R</td>
<td>R</td>
<td></td>
</tr>
</tbody>
</table>

| Common Name                  | Contact           | Contact     | Contact-residual | Contact-residual | Contact-residual | Contact-residual | Contact-residual | Foliar |
| Fat-hen                      | Chenopodium spp   | S           | MS             | S             | S       | S       | S             | R       |
| Fieldspurge                  | Viola arvensis    | S           | MS             | S             | S       | MS      | S             | R       |
| Fieldpenny cross             | Thlaspi arvensis  | S           | MS             | S             | S       | S       | MS            | R       |
| Fools' parsley               | Aethusa cynapium  | MS          | R             | S             | R       | S       | R             |        |
| Forget-me-not                | Myosotis arvensis | S           | MS             | S             | S       | S       | R             |        |
| Fumitory                     | Fumaria officinalis | S          | S             | S             | MS      | S       | S             | R       |
| Groundsel                    | Senecio vulgaris  | S           | S             | S             | S       | S       | S             |        |
| Hemp-Nettle                  | Galeopsis tetrahit | S           | S             | S             | S       | S       | R             |        |
| Knotgrass                    | Polygonum aviculare | S           | MS             | S             | S       | S       | S             | R       |
| Mayweeds                     | Matricaria spp    | S           | MR            | S             | S       | S       | S             | S       |
| Orache                       | Atropa patula     | S           | S             | S             | S       | S       | S             | R       |
| Pale persicaria              | Polygonum lapathfolium | S       | S             | S             | MS      | S       | S             | MS      |
| Parsley-pint                 | Aphanes arvensis  | S           | MS             | S             | S       | S       | R             |        |
| Pickly sowthistle            | Sonchus asper     | S           | S             | S             | MS      | S       | S             | R       |
| Red dead-nettle              | Lamiun purpureum  | S           | S             | MS             | S       | S       | R             |        |
| Redshank                     | Polygonum persicaria | S           | R             | S             | MS      | S       | S             | R       |
| Rundh                        | Raphanus sativus  | S           | S             | S             | S       | S       | S             | R       |
| Scarlet pimpernel             | Anagallis arvensis | S           | S             | S             | S       | MR      | S             | S       |
| Shepherd's needle             | Scandia p-veneris | S           | S             | S             | S       | S       | S             | R       |
| Shepherd's purse              | Cephaelis p-pastoris | S           | S             | S             | S       | S       | S             | R       |
| Sun spurge                   | Euphorbia helioscopa | S        | R             |             |         |         | R             |        |
| Volunteer oilseed rape       | Brassica napus    | S           | S             | MS             | S       | R       | S             |        |
| Volunteer potatoes            | Solanum tuberosum | S           | S             | S             | S       | MS      | R             |        |
| Wild oat                     | Avena fatua       | S           | MS             | S             | S       | S       | S             | R       |

Sugar Beet Portfolio

www.uplsugarbeet.co.uk
**BETTIX FLO SC**

**Best Use Advice for BETTIX FLO SC in Different Programmes, A Flexible Tank Mix Partner**

### BETTIX FLO SC Options in a FAR Programme

<table>
<thead>
<tr>
<th>Crop Growth Stage</th>
<th>Comments</th>
<th>Best Use Advice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop Growth Stage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Betasana SC 0.5 + Efeckt 0.2 + Bettix Flo SC 0.5**

No restriction

- Very safe and broad spectrum
- Better weed kill in dry conditions
- Good choice for brassica weeds and volunteer potatoes on heavy soils

**Betasana SC 0.5 + Efeckt 0.2 + Bettix Flo SC 0.5 + Oil 0.5**

- Cotyledon
- Better weed kill in dry conditions
- Good choice for brassica weeds and volunteer potatoes on heavy soils

**Betasana SC 0.5 + Efeckt 0.2 + Debut/Shiro 10g + Venzar Flowable 0.2 + Oil 0.5**

- 2TL
- Good choice for brassica weeds and cleavers on heavy soils

**Tank Mixes**

Please note that the following tank mixes have been tested for physical compatibility with BETTIX FLO SC at recommended rates of use and will mix in the sprayer tank. Physical compatibilities may not be approved tank mixes. These tests have not been undertaken to check for any adverse crop phytotoxicity or for the biological efficacy of the individual products when applied as a tank mix. UPL accepts no liability for physical compatibilities; therefore use is at grower’s own risk.

BETTIX FLO SC is physically compatible with any one of the following tank mix partners:

**Herbicides**
- Beetup Flo
- Beetup Compact SC
- Betanal maxxPro
- Betanal Maxxim
- Betanal Turbo
- Betasan SC
- Betasan Trio
- Debut
- Dow Shield 400
- Efeckt
- Ethofol
- Ethofol 500 SC
- Ethosat 500
- Oblix 500SC
- Rifle
- Shiro
- Sniper
- Venzar Flowable
- Vendi 200

**Adjuvants and Nutrients**
- Cropspray 11E
- Librel Mn
- Manganese Sulphate

For the latest information on tank mix recommendations, please visit our website at www.uplsugarbeet.co.uk.

**Notes**

Before using any tank mixture, consult and comply with the recommendations of the partner product.

Mixing instructions: One third fill the sprayer with clean water, start agitation and then add the BETTIX FLO SC and allow it to thoroughly disperse. Add the partner product and fill to mark. Use immediately. Continuous and effective agitation is essential, even during stoppages, until the tank is empty.

A Best Use Guide is available for BETTIX FLO SC.

**Summary**

- Pre-emergent and post-emergent weed control
- Contact and residual action
- Excellent crop safety
- Flexibility of timing, rates and tank mixes
EFECKT®

EFECKT® is one of the building blocks integral to the UPL portfolio of quality sugar beet herbicides.

EFECKT® is a contact and long lasting residual herbicide for pre and post-emergence use to control annual grasses and broadleaved weeds in sugar beet, red beet, fodder beet and mangels.

**Product Profile**

<table>
<thead>
<tr>
<th>Brand</th>
<th>EFECKT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active ingredient</td>
<td>ethofumesate</td>
</tr>
<tr>
<td>Inclusion rate</td>
<td>500g/L</td>
</tr>
<tr>
<td>Formulation</td>
<td>Suspension Concentrate (SC)</td>
</tr>
</tbody>
</table>

**Crops**

Sugar beet, red beet, fodder beet and mangels.

**Maximum individual dose**

- 2.0L/ha
- 0.6L/ha

**Maximum total dose**

- 2.0L/ha
- 1.2L/ha

**Latest timing of application**

- Before crop emergence
- Before crop leaves meet between the rows

**Pack size**

5L

**LERAP**

- 80 – 240L/ha*

**Water volume**

* Water volume has been reduced according to guidelines given in the Code of Practice for Using Plant Protection Products.
* 84 day harvest interval exists for red beet.

**Other Specific Restrictions**

To protect groundwater the maximum total dose must not exceed 1.0kg ethofumesate per hectare in any three year period.

**Weeds Controlled**

(see centre pages)

**Mode of Action Comparison**

<table>
<thead>
<tr>
<th>Group</th>
<th>Mode of action</th>
<th>Chemical family</th>
<th>Active</th>
<th>Product (examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Inhibition of acetyl CoA carboxylase (ACCase)</td>
<td>aryloxypheoxypropionates (fops)</td>
<td>e.g. fluazifop-P-butyl</td>
<td>Fusilade Max</td>
</tr>
<tr>
<td>C1</td>
<td>Inhibition of photosynthesis at photosystem II</td>
<td>triazinones</td>
<td>metamitron</td>
<td>Bettix Flo SC Defiant Target SC</td>
</tr>
<tr>
<td>N</td>
<td>Inhibition of lipid synthesis</td>
<td>benzoafurans</td>
<td>ethofumesate</td>
<td>Efeckt</td>
</tr>
</tbody>
</table>

**EFECKT®** can be used as part of a black-grass control strategy due to MOA being different to graminicides where resistance may be an issue.

**Tank Mixes**

Please note that the following tank mixes have been tested for physical compatibility with EFECKT at recommended rates of use and will mix in the spray tank. Physical compatibilities may not be approved tank mixes. These tests have not been undertaken to check for any adverse crop phytotoxicity or for the biological efficacy of the individual products when applied as a tank mix. UPL accepts no liability for physical compatibilities; therefore use is at grower’s own risk.

**EFECKT®** is physically compatible with any one of the following tank mix partners:

- Beetup Compact SC
- Beetup Flo
- Betanal Maxxim
- Betanas Trio
- Betanal Turbo
- Beetup Flo SC
- Corzal
- Debut
- Defiant
- Defiant SC
- Dow Shield 400
- Goltix Flo 70 SC
- Pyramin DF (pre-em only)
- Target SC
- Takron (pre-em only)

For the latest information on tank mix recommendations, please visit our website at www.uplsugarbeet.co.uk.

**Summary**

- Contact and long lasting residual weed control
- Enhances contact activity of other herbicides to control larger weeds
- Ideal partner product for other actives
- Activity against grass weeds
MICROTHIOL SPECIAL is a water dispersible granule containing sulphur for use against powdery mildew or as a foliar feed in sugar beet.

<table>
<thead>
<tr>
<th>Product Profile</th>
<th>MICROTHIOL SPECIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand</td>
<td>sulphur</td>
</tr>
<tr>
<td>Active ingredient</td>
<td></td>
</tr>
<tr>
<td>Inclusion rate</td>
<td>80%</td>
</tr>
<tr>
<td>Formulation</td>
<td>Water Dispersible Granule (WG)</td>
</tr>
<tr>
<td>Crops</td>
<td>Sugar beet</td>
</tr>
<tr>
<td>Rate of application</td>
<td>10kg/ha</td>
</tr>
<tr>
<td>Maximum number of treatments</td>
<td>2 per crop</td>
</tr>
<tr>
<td>Timing</td>
<td>Apply as soon as disease is seen in the crop, a second application may be necessary 2 – 3 weeks later</td>
</tr>
<tr>
<td>Pack size</td>
<td>25kg</td>
</tr>
<tr>
<td>Water volume</td>
<td>Minimum of 400L/ha</td>
</tr>
</tbody>
</table>

* Final date for the disposal, storage and use of existing stocks for MAPP No 06268 is 31 March 2019.

** See comment above about using inter-row.

Add a non-ionic surfactant adjuvant, which is not an organo-silicone, in accordance with the manufacturer’s instructions.

Summary
- Excellent rainfastness
- Preventative, curative and eradicant activity
- Naturally occurring compound
- Multisite mode of action

MISSION 200SL is a soluble concentrate formulation containing diquat for pre-emergence weed control in sugar beet.

Can be used at any time inter-row to control small weeds. Can form part of an integrated black-grass control program when used as a band spray. The use of crop guards is essential to prevent contact of the spray with the crop.

MISSION 200SL is a non-selective contact herbicide.

<table>
<thead>
<tr>
<th>Product Profile</th>
<th>MISSION 200SL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand</td>
<td>diquat</td>
</tr>
<tr>
<td>Active ingredient</td>
<td></td>
</tr>
<tr>
<td>Inclusion rate</td>
<td>200g/L</td>
</tr>
<tr>
<td>Formulation</td>
<td>Soluble Concentrate (SL)</td>
</tr>
<tr>
<td>Crops</td>
<td>Sugar beet</td>
</tr>
<tr>
<td>Maximum individual dose</td>
<td>2.0L/ha</td>
</tr>
<tr>
<td>Maximum number of treatments</td>
<td>One per crop</td>
</tr>
<tr>
<td>Latest timing of application</td>
<td>3 days in advance of crop emergence**</td>
</tr>
<tr>
<td>Pack size</td>
<td>5L</td>
</tr>
<tr>
<td>LERAP</td>
<td></td>
</tr>
<tr>
<td>Water volume</td>
<td>200 – 500L/ha</td>
</tr>
</tbody>
</table>

* Final date for the disposal, storage and use of existing stocks for MAPP No 16475 is 30 June 2018. Final date for the disposal, storage and use of existing stocks for MAPP No 16977 is 31 December 2019.

** See comment above about using inter-row.

Summary
- Contact, non-selective weed control
- Pre-emergence use only as an overall spray
SHIRO is a water-dispersible granule formulation containing 50% w/w triflusulfuron-methyl, a sulfonylurea for the control of broad-leaved weeds in sugar beet and fodder beet.

SHIRO works mainly by foliar action, and in tank mix with other herbicide actives it will control a wide range of broad-leaved weeds. It is most effective if applied when the weeds are small and actively growing. SHIRO should always be applied in conjunction with a recommended adjuvant or suitable herbicide tank mix partner(s).

**Product Profile**

- **Brand**: SHIRO
- **Active ingredient**: triflusulfuron-methyl
- **Inclusion rate**: 500g/kg
- **Formulation**: Water dispersible granule (WDG)
- **Crops**: Sugar beet and fodder beet
- **Maximum individual dose**: 0.03kg/ha
- **Maximum number of treatments**: 4 per crop
- **Latest time of application**: BBCH 39 (before the first leaves of the crop meets between the rows)
- **Pack size**: 120g
- **LERAP**: B
- **Water volume**: 80 – 150L/ha

**Mode of Action**

SHIRO contains triflusulfuron-methyl, a sulfonylurea which is an ALS inhibitor that causes the Inhibition of acetolactate synthase (ALS). It belongs to Group B (HRAC).

**Tank Mixes**

Please note that the following tank mixes have been tested for physical compatibility with SHIRO at recommended rates of use and will mix in the sprayer tank. Physical compatibilities may not be approved tank mixes. These tests have not been undertaken to check for any adverse crop phytotoxicity or for the biological efficacy of the individual products when applied as a tank mix. UPL accepts no liability for physical compatibilities; therefore use is at grower’s own risk.

SHIRO is physically compatible with any one of the following tank mix partners:

- Beetup Compact SC
- Beetup Flo
- Beta-Team
- Betanal Maxxim
- Betasan SC
- Betasan Trio
- Bettix Flo
- Bettix Flo SC
- Corzal
- Defiant
- Defiant SC
- Dow Shield 400
- Efeckt
- Ethofol
- Ethofol 500 SC
- Ethosat
- Oblix 500 SC
- Oblix MT
- Phemo
- Rifle
- Target SC
- Teamforce
- Trilogy
- Venzar Flowable

UPL will support SHIRO in a Broadacre Programme from the beet at first true leaves each 1cm long where beet are growing actively and are not under any stress.

**BETASANA TRIO 2.0L/ha + SHIRO 20g/ha + BETTIX FLO SC 0.5L/ha + Venzar Flo 0.4L/ha**

For the latest information on tank mix recommendations, please visit our website at www.uplsugarbeet.co.uk.
**Product Performance**

In trials carried out by Dewar Crop Protection for UPL Europe Ltd, SHIRO has proven to be comparable to other triflusulfuron-methyl products, see Graph 1 ‘Cleaver Control in Sugar Beet 2015’. The addition of SHIRO to a BETASANA TRIO programme has given excellent cleaver control.

**Graph 1 Cleaver Control in Sugar Beet 2015**

![Graph showing cleaver control percentages](image)

**Following Crops and Crop Failure**

In the event of crop failure, sow only spring barley, linseed or beet within four months of application of SHIRO, provided this agrees with the recommendations of any partner product.

Only winter cereals should be sown in the same calendar year after applying SHIRO, any crop may be sown or planted in the following spring (next calendar year).

**Spray Tank Clean-out**

To avoid damage to crops other than sugar beet, immediately after spraying SHIRO clean all spray equipment with a product such as All Clear® Extra. See SHIRO label for full details.

**A Best Use Guide is available for SHIRO.**

**Summary**

- Proven efficacy in trials
- Strong on Cleavers and Volunteer OSR
- + BETASANA TRIO = excellent weed control
- Comprehensive

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**VIVENDI 200**

VIVENDI 200 is a post-emergence foliar acting herbicide. It is fully translocated throughout the plant and affects all parts of susceptible weeds.

VIVENDI 200 is used for the control of some annual broad-leaved weeds, but especially for the control of thistles and volunteer potatoes.

**Product Profile**

- **Brand**: VIVENDI 200
- **Active ingredient**: clopyralid
- **Inclusion rate**: 200g/L
- **Formulation**: Soluble Concentrate (SL)
- **Crops**: Sugar beet, red beet, fodder beet and mangels
- **Maximum individual dose**: 1.0L/ha
- **Maximum total dose**: 1.5L/ha
- **Earliest timing of application**: 1 March in the year of harvest
- **Latest timing of application**: When the crops meet between the rows (BBCH39)
- **Pack size**: 1L
- **LERAP**: –
- **Water volume**: 80 – 300L/ha

* Final date for the disposal, storage and use of existing stocks for MAPP No 15017 is 31 March 2019.

**Creeping Thistle Control**

For optimum control of creeping thistles a sequence of VIVENDI 200 applications is the most appropriate approach. The first application should be made when the weeds are at the rosette growth stage, followed by a second application 3–4 weeks later. It is likely that applications of VIVENDI 200 will be part of a sequential low dose programme in 80–100L of water with tank mix partners. It is worth noting one creeping thistle stem per square metre can reduce the yield of sugar beet by one tonne per hectare.

**Volunteer Potato Control**

A total of 1.0L/ha of VIVENDI 200 is required for control and ideally this should be applied as two doses of 0.5L/ha. Where emergence is protracted this can be split over 3 or 4 applications. The first application should be made when the volunteer potato shoots are 5–10cm tall. The second application should be made when untreated volunteer potatoes are 10–20cm tall. For an accurate guide to when this stage is reached, it is advisable to leave a small area of untreated volunteer potatoes in the field. Typically the second application is made 7–14 days after the first.

VIVENDI 200 applied in tank mixture with ethofumesate as in EFECKT is the best treatment against volunteer potatoes in sugar beet.

The effect on progeny tubers is carried through to succeeding generations, thus reducing the threat from volunteers in the second year after treatment.
Tank Mixes

Please note that the following tank mixes have been tested for physical compatibility with VIVENDI 200 at recommended rates of use and will mix in the sprayer tank. Physical compatibilities may not be approved tank mixes. These tests have not been undertaken to check for any adverse crop phytotoxicity or for the biological efficacy of the individual products when applied as a tank mix. UPL accepts no liability for physical compatibilities; therefore use is at grower’s own risk.

VIVENDI 200 is physically compatible with any one of the following tank mix partners:

<table>
<thead>
<tr>
<th>Beetup Compact SC</th>
<th>Bettix Flo SC</th>
<th>Ethofol</th>
<th>Ethofol 500 SC</th>
<th>Safari WSG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beetup Flo</td>
<td>Corzal</td>
<td>Ethosat 500 SC</td>
<td>Shiro</td>
<td></td>
</tr>
<tr>
<td>Betanal Maxim</td>
<td>Corzal SC</td>
<td>Goltix Flowable</td>
<td>Sniper</td>
<td></td>
</tr>
<tr>
<td>Betanal Turbo</td>
<td>Debut</td>
<td>Oblix 500 SC</td>
<td>Target SC</td>
<td></td>
</tr>
<tr>
<td>Betasana SC</td>
<td>Defiant</td>
<td>Oblix MT</td>
<td>Trilogy</td>
<td></td>
</tr>
<tr>
<td>Betasana Trio</td>
<td>Defiant SC</td>
<td>Rifle</td>
<td>Venzar</td>
<td></td>
</tr>
<tr>
<td>Bettix Flo</td>
<td>Efeckt</td>
<td></td>
<td></td>
<td>Volcano</td>
</tr>
</tbody>
</table>

For the latest information on tank mix recommendations, please visit our website at www.uplsugarbeet.co.uk.

Summary

- Excellent control of thistles
- Additional control of some broad-leaved weeds, particularly mayweeds
- Aids volunteer potato control in conjunction with cultural control methods
Common poppy
(Papaver rhoeas)
Cut-leaved crane’s-bill
(Geranium dissectum)
Fat hen
(Chenopodium album)
Field pansy
(Viola arvensis)
Forget-me-not
(Myosotis arvensis)
Fumitory
(Fumaria officinalis)
Knotgrass
(Polygonum aviculare)
Pale persicaria
(Polygonum lapathifolium)
Pale persicaria
(Polygonum persicaria)
Red dead-nettle
(Lamium purpureum)
Scentless mayweed
(Matricaria perforata)
Shepherd’s-purse
(Capsella bursa-pastoris)