



## Technical Update 21

### The choice of herbicides for broad beans

January 2024

There are no extensions of use arrangements in place which allow products approved for use on vining peas to be used on the broad bean crop and where there is no on-label approval, products must have EAMU's for broad beans before they can be used. For most pre-emergence bean herbicides there are recommendations that the land is ploughed or deep cultivated before sowing the following crop - please check the label. Where buffer zones are required near surface waters or ditches these are denoted by a BZ Category A or B. A LERAP can be applied to Category B OR more recently specific product instruction regarding the required BZ.

#### General broad-leaved weed control

Since there is only one approved post-emergence herbicide it is essential to use a pre-emergence material where possible. Pre-emergence residual herbicides require soil moisture for activity. They are ineffective at economic rate on highly organic soils, and some are damaging on gravelly or very light soil types. They are less effective on cloddy seedbeds and rolling the seedbed will improve weed control with pre-emergence materials. Any cultivation after spraying should be avoided as weed control will be compromised.

#### Perennial broad-leaved weeds

Thistles and docks are difficult to control using herbicides in beans. Many perennial weeds may be eradicated using an appropriate glyphosate product pre-harvest of the preceding cereal crop.

### GENERAL WEED CONTROL

#### PRE-EMERGENCE HERBICIDE PRODUCTS (active ingredients)

Clomazone (Gamit 36 CS and Cleancrop Covert) EAMU No buffer zone requirement.

A pre-emergence residual herbicide for the control of cleavers and broad-leaved weeds. It also has good activity on red dead nettle, fool's parsley, chickweed and shepherds' purse, but control of other species can be variable. It is best mixed with a partner product for a better spectrum of control. Clomazone is an effective tool if cleavers are predicted to be a problem. Bean leaves can become bleached after clomazone applications but providing the crop is not under any additional stress the symptoms should disappear over time and leave yield unaffected.

Pendimethalin (various products) – EAMU LERAP: B

Pendimethalin should be applied as soon as possible after drilling. It may be used on all except organic and gravelly soils. Pendimethalin should not be used on soils where surface water is likely to accumulate. There is activity on AMG, speedwells, knotgrass and chickweed amongst others but, control of mayweed is variable. Charlock and mustard are resistant. The activity of pendimethalin is very moisture dependent. The maximum permitted dose of Stomp Aqua is 2.2 l/ha other products will be different as the concentration of the active ingredient varies in other products.

Nirvana (imazamox + pendimethalin) EAMU LERAP: B

Nirvana can be used pre-emergence and provides wide spectrum residual broad-leaved weed control. Nirvana has not been tested on broad bean varieties, but no problems have been seen in the field bean varieties tested. Seed should be drilled to a depth of 25 mm and fields prone to water logging should be avoided. Maximum persistence is seen with the full permitted dose of 4.5 l/ha and this may allow a 'one-hit' herbicide programme. However broad beans appear a little sensitive to this full dose, a max dose of 3.5 l/ha would be advised. The 3.0 l/ha application appears to be a good compromise with the additional option of perhaps a further drop to 2.5 l/ha when considering a mix with clomazone to maximise cleaver control. It shows excellent activity against polygonum, black-bindweed, redshank and knotgrass. Charlock is also effectively controlled as is chickweed. Nirvana also gives improved control of early emerging volunteer oilseed rape when compared to pendimethalin alone.

Defy, Spinnaker (prosulfocarb) EAMU LERAP: B

Prosulfocarb can be used up to 5 l/ha. There is some grass weed activity on meadow grasses and loose silky bent. Broad leaved weeds controlled include speedwells, black nightshade, red dead nettle and cranesbill, which seems to be increasingly a problem.

Flexidor (isoxaben) EAMU, No buffer zone requirement.

Isoxaben can be used up to BBCH: 14. Full approvals in other crops allow it to be applied at 0.5 l/ha however the EAMU in broad beans restricts the rate to 0.1l/ha. There is no PGRO work to indicate how useful isoxaben is at this much reduced rate.

## POST-EMERGENCE HERBICIDES

Bentazone (Basagran SG and Benta 480, Clayton Baritone) No buffer zone requirement.

This is the only approved post-emergence treatment for broad-leaved weeds in broad beans. Do not add adjuvant oils. It does not control a wide weed spectrum but is useful as a follow-up treatment to control cleavers and volunteer oilseed rape. It is most effective on small weeds and when applied in warm weather. A minimum of 6 hours free from rain is required after application. To avoid scorch the crop must be healthy, and at the correct stage of crop development (see label) and the temperature below 21°C. Beans at advanced stages of development are more susceptible to damage. Basagran is an expensive herbicide if used at full rate for beans, and there are recommendations for split-dose rates (see label for growth stages). Use the full dose rate for cleavers. However, the reduced dose rates must be used for the variety Talia which is sensitive.

Please note, there have been changes to the Basagran SG label and rates of application altered. There is also advisory information regarding water stewardship with the aim of maximising product longevity. Please check product labels.

## VOLUNTEERS

**OILSEED RAPE & POTATOES:** Oilseed rape can be a problem weed several years after cropping. Allowing shed seed to germinate after harvest, before ploughing or deep cultivating, will help prevent carry-over. Bentazone will control oilseed rape at early stages of growth.

It is not possible to kill potatoes in bean crops, or to suppress berry formation with bean herbicides, but the latter is unlikely to be a contaminant problem in large-seeded produce.

**GRASS WEEDS:** The selective post-emergence grass weed killers Fusilade Max and other products (fluzifop-p-butyl) and Laser & other products (cycloxydim) will not control annual meadow-grass. Where these are used in sequence with other post-emergence treatments, care must be taken that the crop has recovered and is undamaged (see labels).

Fusilade Max (fluzifop-p-butyl) EAMU

This material is applied post-emergence. Fusilade Max requires no additional wetters. Providing the wild oats are actively growing, good control of well tillered plants is possible. Beans may be treated from second node stage onwards. Latest application stage is before bean flower buds visible. **Check product labels for dose rates.**

Falcon & other products (propaquizafop)

Falcon is a post-emergence treatment for wild oats at optimum timings from two leaves folded to early tillering. Falcon may be applied to beans with two pairs of leaves until before crop flower buds are visible. Minimum harvest interval is 49 days. No adjuvant is needed, and it is rain-fast in one hour after application.

Laser (cycloxydim) EAMU

Laser + Toil adjuvant oil (at 0.5% final spray volume) is a post-emergence treatment for control of wild-oats and other grasses. Optimum timing for wild oats is at two fully expanded leaves to 2-3 tillers. It may be applied from two bean leaf pairs until before the crop canopy prevents adequate spray penetration. It is very safe to the crop. Minimum harvest interval is 35 days for broad beans.

Centurion Max (clethodim) EAMU

Centurion Max has activity on volunteer wheat, barley, and annual meadow grass. It has been shown to have increased activity on black-grass populations which have exhibited resistance to fop and dim chemistry.

**BLACK-GRASS:** Pre-emergence herbicides for broad-leaved weeds will have little effect on germinating black-grass, but where extensive germination is expected the most satisfactory control will be obtained by integrating cultural techniques with chemical options e.g. Centurion Max

## VOLUNTEER CEREALS

Volunteer cereals can be controlled by the wild-oat rates of the post-emergence herbicide Fusilade Max and at a slightly higher rate than for wild-oats with Laser. Centurion Max also has activity.

**COUCH:** The best and cheapest means of eradication is by application of Roundup (glyphosate) either pre-harvest in the previous cereal crop or in the autumn. Some control of this weed can be achieved by standard autumn cultivations or herbicide treatments.

Post-emergence, Laser can give control of couch in the bean crop and is applied when most couch shoots have emerged. However, rates are high (2.25 l/ha) and uneconomical. **Long term control should not be expected from any of the graminicides**

Laser has a recommendation for control of onion couch. Roundup may also be used pre-harvest in field beans **to eradicate** couch and clean-up other problem weeds before the next crop is sown, but it cannot be used in seed crops.

**BARREN BROME:** There are label recommendations for control of barren brome using Fusilade Max post-emergence.

## WEED SUSCEPTIBILITY TO HERBICIDES FOR BROAD BEANS

| Weed Species<br>Common Name | PRE       | PRE           | PRE                         | PRE          | POST      | POST      | POST       | POST             | POST     | POST          |
|-----------------------------|-----------|---------------|-----------------------------|--------------|-----------|-----------|------------|------------------|----------|---------------|
|                             | clomazone | pendimethalin | pendimethalin +<br>imazamox | proflufocarb | bentazone | clethodim | cycloxydim | fluzifop-p-butyl | isoxaben | propaquizafop |
| Annual meadow-grass         | MS        | MS            | MS                          | MS           | R         | S         | R          | R                |          | S             |
| Annual mercury              | MS        |               | MS                          |              |           |           |            |                  |          |               |
| Barren brome                | R         | R             |                             |              | R         |           | S          | S                |          |               |
| Black-bindweed              | MS        | MS            | S                           |              | MS        |           |            |                  |          |               |
| Black-grass                 | R         | MS            | MR                          |              | R         | S         | MR         | S                |          | S             |
| Black-nightshade            | MS        | MS            | MS                          | S            | S         |           |            |                  |          |               |
| Charlock                    | MR        | R             | S                           | S            | S         |           |            |                  |          |               |
| Chickweed, common           | S         | S             | S                           | S            | S         |           |            |                  | S        |               |
| Cleavers                    | S         |               | MS~                         | MS           | MS        |           |            |                  |          |               |
| Corn marigold               |           |               |                             |              | S         |           |            |                  |          |               |
| Couch, common               | R         | R             |                             |              | R         |           | S          | (S)              |          | S             |
| Creeping thistle            |           |               |                             | MR           | MS        |           |            |                  |          |               |
| Dead-nettle, red            | MS        | S             | S                           | S            | MR        |           |            |                  | S        |               |
| Dock                        |           |               |                             |              | R         |           |            |                  |          |               |
| Fat-hen                     | MS        | S             | S                           |              | MR        |           |            |                  |          |               |
| Fool's parsley              | S         | R             | MR                          |              | S         |           |            |                  |          |               |
| Forget-me-not               |           | S             |                             | S            | S         |           |            |                  |          |               |
| Fumitory, common            | MR        | MS            | S                           | S            | MS        |           |            |                  |          |               |
| Groundsel                   | MS        | R             | MR                          | S            | MS        |           |            |                  | S        |               |
| Hemp-nettle, common         | MR        | S             |                             |              | R         |           |            |                  |          |               |
| Henbit dead-nettle          |           | S             | S                           |              | MS        |           |            |                  |          |               |
| Knotgrass                   | MS        | S             | S                           | MR           | R         |           |            |                  | S        |               |
| Mayweeds                    | MR        | MS            | MS                          |              | S         |           |            |                  | S        |               |
| Nettle, small               | MS        | S             | MS                          |              | S         |           |            |                  | S        |               |
| Orache, common              | MS        | S             | S                           |              | MS        |           |            |                  |          |               |
| Pale persicaria             | MS        |               |                             | MR           | S         |           |            |                  |          |               |
| Pansy, field                | MR        | S             | MR                          | MR           | R         |           |            |                  | S        |               |
| Parsley piert               |           | S             |                             |              |           |           |            |                  |          |               |
| Poppy, common               | MR        | S             | S                           |              | MS        |           |            |                  |          |               |
| Redshank                    | MS        | MS            | S                           | MR           | S         |           |            |                  |          |               |
| Scarlet pimpernel           |           | S             | S                           |              | S         |           |            |                  |          |               |
| Shepherd's purse            | S         | MS            | MR                          | S            | S         |           |            |                  |          |               |
| Sow-thistle, smooth         | MS        | S             | MS                          | S            | MS        |           |            |                  |          |               |
| Speedwell, common field     | MS        | S             | S                           | S            | R         |           |            |                  | S        |               |
| Volunteer cereals           | R         | R             |                             |              | R         | S         | S          | S                |          | S             |
| Volunteer oilseed rape      | R         | MS            | MS~                         | MR           | S         |           |            |                  |          |               |
| Wild-oats                   | R         | R             |                             |              | R         |           | S          | S                |          | S             |
| Wild radish                 |           | MS            | MS                          |              | MS        |           |            |                  |          |               |

|   |             |    |                        |   |           |    |                      |
|---|-------------|----|------------------------|---|-----------|----|----------------------|
| S | Susceptible | MS | Moderately susceptible | R | Resistant | MR | Moderately resistant |
|---|-------------|----|------------------------|---|-----------|----|----------------------|

~ best results from 4.5 l/ha application

S\* - non label weeds

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