



## Miscanthus Weed Control

TILLAGE SPECIALISTS 2008

### Background

Weeds if not controlled, will compete with the crop for light, water and nutrients and thus reduce yields. The level of weed interference will depend on the stage of maturity of the crop (i.e. its ability to out-compete weeds), the degree of weed infestation at the site and the diversity of the weed species (affected by location, season, climate and previous land use). Weed control is essential in the establishment phase of the crop because the slow initial growth of miscanthus reduces its ability to compete. The planting process causes soil disturbance which promotes seed germination. Furthermore, the low planting densities which are used results in large

unoccupied spaces where weed growth can occur. At this stage the young miscanthus plantlets can easily become overwhelmed by weeds. As the miscanthus crop becomes more established, a range of selective herbicides can be used for weed control. Table 1 gives a list of herbicides which have been successfully used for weed control in miscanthus with notes made beside herbicides which can only be used pre-emergence. Any active ingredient which is appropriate for cereals should also be suitable for miscanthus (with the exception of graminicides) and some C4 specific herbicides can also be used.

Table 1:

| Active ingredient(s)                 | Example Product(s)  | Notes   |
|--------------------------------------|---|---|
| Bromoxynil/ioxynil/Diflufenican      | Capture   | 1.1 l/ha  |
| Bromoxynil/ioxynil                   | Oxytril CM  | 2 l/ha  |
| Bromoxynil/Mecoprop-P/ioxynil        | Swipe P   | 5 l/ha  |
| Diflufenican/isoproturon             | Panther or Cougar   | 2 l/ha  |
| Isoxaben                             | Flexidor 125  | 2 l/ha Isoxaben is used within 14 days of planting i.e. pre emergence   |
| Fluroxypyr                           | Starane 2,Floxy, Tomahawk, Tandus, Hurler, Binder               | 2 l/ha  |
| Glyphosate                           | Roundup or touchdown quattro                                    | 6 l/ha. Glyphosate is applied prior to establishment and see note below on its <b>careful</b> use to control grass weeds. |
| Isoproturon                          | Tolkan Liquid   | 5 l/ha  |
| Metsulfuron-methyl                   | Ally SX   | 30 g/ha   |
| Metsulfuron methyl/Tribenuron-methyl | Ally Max SX   | 42 g/ha   |
| Tribenuron-methyl                    | Cameo SX  | 30 g/ha   |
| Metsulfuron-methyl/fluroxypyr        | Ally  | 20 g/ha   |
| MCPA                                 | Mortone M50, Mastercrop, MCPA amine 500, Agroxone or Agritox 50 | 5 l/ha<br>3.5 l/ha  |
| Mecoprop-P                           | Duplosan New Syst   | 2.3 l/ha  |
| Mecoprop-P/Dicamba                   | Foundation  | 1.25 l/ha   |
| Pendimethalin                        | Stomp or Alpha Pendimethalin                                    | 3.3 l/ha<br>4 l/ha. Pendimethalin is only applied within 14 days of planting i.e. pre-emergence of crop.                  |

Once the full canopy develops, the germination of new weed seedlings is dramatically reduced, and only shade tolerant varieties such as *black-bindweed* and *chickweed* or particularly mature individuals will survive. Autumn germinating species such as *Annual Meadow Grass* may present problems after crop senescence has occurred in the establishment year.

Weeds compete with the crop for light, water and nutrients and can reduce yields. Weed control in the establishment phase of the crop is essential, because poor control can severely check the development of the crop. It is vital that proposed sites should be cleared of perennial weeds before any planting takes place. The Department of Agriculture Fisheries & Food Pesticides Control Service has given off-label approval for some herbicides used for cereals, grass and maize to be used on miscanthus. Visit: <http://www.pcs.agriculture.gov.ie/>.

### Pre-Planting weed control

It is important that this is carried out effectively particularly on old pasture land where the presence of perennial weeds such as docks and nettles is more likely. A translocated (systemic) herbicide (e.g Glyphosate at 4-6 l/ha) should be applied to actively growing vegetation from January 15<sup>th</sup>. To allow the herbicide to fully translocate, a period of ten days post herbicide application should be allowed before ploughing.

### Weed control post planting

Within 14 days of planting, spray onto a moist soil a pre-emergence weed killer and insecticide (The insecticide is only necessary if following a grass ley and thresholds of leatherjackets are found to be high). A high water volume of 500 litres per hectare is essential to give a good coverage of chemical on the soil. Apply the 500 litres of water together with 4 litres of Stomp (Pendimethalin) together with 1.5 litres of Flexidor 125 (Isoxaben) and 1.5 litres of Dursban 4 (Chlorpyrifos insecticide).

### Post Emergence Year 1

Once miscanthus shoots have emerged, selective herbicides may be used for the control of vigorous annual dicotyledonous weeds. A weed wiper may be used to apply post-emergence roundup to the taller, more persistent weeds such as thistles. From May to August walk the fields on a weekly basis. Check for rabbit and leatherjacket damage. Monitor weed populations and take remedial action in worst case scenarios. Spring cereal broad leaf weed herbicides can generally be used on miscanthus. Sulphonylureas such as Metsulfuron – Methyl can be used for general broad leaf weed control, as can hormone herbicides, such as MCPA, CMPP, and HBN. Foundation or Swift (Mecroprop P + Dicamba) 1.25 l ha, has worked well at the Teagasc Kildalton miscanthus site.

### Weed Control towards end of year 1

Miscanthus crops while dormant have only very small amounts of green material present in the Miscanthus leaf or stem. Growth will only re-commence in late March or early April.

#### Further information:

**Dr John Finnan**  
Crops Research Centre, Oak Park, Carlow  
e-mail: [john.finnan@teagasc.ie](mailto:john.finnan@teagasc.ie)

**Barry Caslin**  
Tillage Specialist Service, Teagasc, Oak Park, Carlow  
e-mail: [barry.caslin@teagasc.ie](mailto:barry.caslin@teagasc.ie)

Tel: 059 9170200  
[www.teagasc.ie](http://www.teagasc.ie)

Patch-planting or infilling should be carried out during March/April where significant gaps appear in the crop – typically those gaps that amount to the size of a small car in area. In order for those patch-planted rhizomes to have a chance to survive, grass growth will have to be suppressed or killed in those areas particularly.

Glyphosate (e.g. roundup) being a systemic herbicide will kill or check the plant if there is green material in the plant. Some first year crops do not lose all their green leaf so in order to spray glyphosate in such circumstances the crop should be topped within 48 hours after the application of glyphosate. This will prevent any glyphosate taken in by any green matter in the plant from translocating down to the rhizome.

Glyphosate (4 litres/ha.) should be sprayed across the entire crop normally from mid-February onwards where grass weeds are present. If there are little or no grasses present, there should be no requirement for roundup. Spraying of glyphosate should normally be completed by Mid-March. Note this is a very delicate and time critical operation and only if carried out correctly will eliminate the grass weeds which otherwise cannot be treated as miscanthus itself is a grass species.

### Weed control in older crops

Ally Sx (Metsulfuron-S-Methyl) is completely safe up to 1 metre height of the Miscanthus crop, and can be safely tank mixed with Duplosan, MCPA, Starane, HBN, and have no side effects (obviously not all mixed together!) but Ally Sx + 2 partners.

Generally from year 2 onwards the crop will surpass weed growth and chemical control should no longer be required.

### Second or Third year

Once the crop is mature (i.e. from the summer of the second or third year, depending on site and climate), weed interference is effectively suppressed, initially by the leaf litter layer on the soil surface and subsequently by the closure of the crop canopy, which reduces the light penetrating into the under-storey. Weeds that do survive offer little competition to the crop. Since there are no label recommendations, all products are used at the users own risk.

Weed control is likely to be relatively intensive after planting and during the establishment phase. However once the crop has become established, the demand for weed control is low. The development of new weed fauna in long term plantations must be monitored in order to identify any 'new' weed species which will pose a threat to the crop. Glyphosate applied during the dormant phase to mature crops is an effective weed control strategy for grasses.

