

TrainingModule 029

WEED CONTROL IN MAIZE



BELCHIM
—Crop Protection—



The importance of early weed control in maize

Early control of weeds in maize is essential to optimise yield and benefit from a break in autumn cropping. Maize is very sensitive to weed competition and a clear strategy should be employed to optimise the benefit of this important crop

WHY GROW MAIZE?

Traditionally grown as a forage crop, the area of maize has more than doubled in the last 15 years as more cold-tolerant varieties have been bred, allowing a wider geographical spread of the crop.

The more recent growth has been due to the developing number of anaerobic digester (AD) plants which use the product of microbial breakdown, methane, to produce electricity. This increase in area has seen maize grown further East, away from the traditional livestock and mixed farming systems. Whether grown for forage or energy production, there are some key factors essential for maximising the yield and profitability of maize:

- Yield is key to a profitable crop.
- Even ripening is important for quality.
- Early weed control can give a significant boost to both yield and quality.
- Early weed control maximises the benefit of maize as a spring break crop.

WHY IS MAIZE SO SENSITIVE TO WEED COMPETITION?

Maize is able to 'detect' weeds long before they are competing for light, water or nutrients. Small weeds reflecting far-red light will trigger changes in the growth of the neighbouring maize plants. To avoid future competition these plants will change the orientation of their leaves, reduce the number of branches and mature more quickly. A small amount of weed



Figure 1: The maize will be reacting to the weed cover before this stage

competition can result in reduced yield and quality, eg a reduction in dry matter.

The critical period for weed control is between the third and fifth leaf of the maize plant.

Weeds remaining after this growth stage will already have caused a negative response in the crop. Control will be more difficult and potentially more expensive as the crop and weeds grow. The prolonged competition for resources by delaying weed control will further affect yield and quality.

Start before the crop is in the ground. A late-spring crop such as maize presents an opportunity to control weeds outside of continuous autumn-crop rotations by using both cultural and chem-



Figure 2: A high standard of early weed control will ensure even crop growth and maximise yield

ical methods. Straight after the harvest of the previous crop, a light cultivation will produce a tilth allowing germination of weed seeds. Rolling to consolidate the stale seedbed will increase the germination of weeds. The late spring drilling date for maize gives several opportunities to control resistant weeds such as black-grass, ryegrass and wild oats with glyphosate. This can be repeated with further light cultivations and glyphosate application. A final cultivation one month before drilling followed by glyphosate 24-48 hours prior to drilling will ensure that the maize crop will go into the cleanest possible seedbed and relieves pressure on in-crop herbicides.

HERBICIDE OPTIONS

Pre-emergence

Pre-emergence herbicides can be used for maize planted into plastic, which holds moisture and thereby helps residual activity. A pre-emergence herbicide can support post-emergence herbicides, for example when stale seedbed weed control has been compromised or when a particular weed problem is predicted.

Post-emergence

The majority of the herbicides applied to maize are post-emergence. A recent survey conducted by market research company Kleffmann Group drew the following conclusions about herbicide applications:

- 95% of the maize crop was treated with herbicide.
- The average number of treatments was 1.24.
- Pre-emergence products were applied to approximately 3% of the maize crop.

Post-emergence spray programmes are commonly built around nicosulfuron (Samson Extra 6%, Fornet 6OD). This sulfonylurea herbicide is active against a wide range of grass and broad-leaved weeds. The oil-dispersion (OD) formulation has been optimised to produce a stable liquid formulation that rapidly delivers the active to its site of action. Rainfastness, leaf coverage and efficacy are improved when compared with suspension concentrate (SC) formulations. This is very important when late-spring rain showers are common and effective weed control is so



important for the crop. Additional tank-mixed herbicides can widen the broad-leaved weed spectrum or target specific weeds. Tank mixing with other herbicides with a different mode of action forms part of a weed resistance management strategy. HRAC code B (sulfonylureas) should not be used as the sole

method of grass weed control, nor be applied in tank mixture or sequence.

SUMMARY

- Maize yield and quality is adversely affected even by very small weeds.
- Utilise the break between crops to control difficult weeds

with stale seedbed techniques.

- Pre-emergence is the main herbicide option for maize grown under plastic.
- Pre-emergence can be useful to sensitise weeds to a post-emergence application.
- Post-emergence grass weed control is commonly based on nicosulfuron (Samson Extra 6%,

Fornet 60D).

- Resistance management must be carried out:
 - ◆ understand the resistance status of target weeds;
 - ◆ use mixtures of herbicides with different modes of action;
 - ◆ apply at effective robust rates;
 - ◆ apply to small weeds.



The increase in the number of anaerobic digester plants has seen maize being grown further East

TABLE 1: POST-EMERGENCE CONTROL OF WEEDS IN MAIZE

Active	Product	HRAC code	Latest timing
Nicosulfuron	Samson Extra 6%/Fornet 60D	B	8 leaves unfolded
Rimsulfuron	Titus	B	4 collar stage
Prosulfuron	Peak	B	10 leaves unfolded
Mesotrione	Callisto	F2	8 leaves unfolded
Fluroxypyr	Starane 2	O	Before 7 leaves
Clopyralid	Dow Shield	O	9 leaves unfolded
Mesotrione/Terbuthylazine	Calaris	F2/C1	8 leaves unfolded
Dicamba/Prosulfuron	Casper	O/B	Before 6 leaves
Mesotrione/Nicosulfuron	Elumis	F2/B	8 leaves unfolded
Bromoxynil/Terbuthylazine	Templar	C3/C1	Before 9 leaves
Bromoxynil	Butryflow	C3	Before 9 leaves

Post-emergence herbicides for control of weeds in maize

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SELF-ASSESSMENT

Use the questions below to check your understanding, or that of the people who work on farm with you. Readers can claim two BASIS points if the questions are answered correctly. ★★

BASIS REFERENCE NUMBER CP/35992/1314/g – Circle the correct answer (more than one may apply).

- To optimise crop yield weed control is best achieved by which growth stage?**
 - A) Pre-crop emergence
 - B) Three-five leaf stage
 - C) Beginning of tassel emergence
 - D) Beginning of stem elongation
- Which of the following is NOT a benefit of Samson Extra 6%, Fornet 60D?**
 - A) OD formulation giving improved efficacy and rainfastness
 - B) A wide range of susceptible grass and broadleaf weeds
 - C) Excellent tank-mix compatibility
 - D) Possibility of late application for 'fire-brigade' weed control
- Why are pre-emergence herbicides particularly effective under plastic?**
 - A) The plastic protects from ultra-violet breakdown
 - B) The plastic maintains a moist, warm seedbed
 - C) The plastic traps herbicide vapour
 - D) The plastic reduces moisture to emerging weeds
- Which of the following are controlled by nicosulfuron (Samson Extra 6%, Fornet 60D)?**
 - A) Grassweeds only
 - B) Broad-leaved weeds only
 - C) Certain specific perennial weeds
 - D) A wide range of broad-leaved weeds and grasses
- HRAC stands for**
 - A) Herbicide Research and Communication
 - B) Herbicide Resistance Avoidance Campaign
 - C) Herbicide Resistance Action Committee
 - D) Harvest Revenue and Cost
- Use of cultural control can help to control herbicide-resistant weeds. True or false?**
 - A) True
 - B) False

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