ON FARM LEVEL
Barley

Have your weeds tested for resistance

The presence of weeds in any crop has a negative influence on crop yield. Extensive studies have been performed on the impact of weeds during wheat cultivation, but little is known about the impact of weeds on barley yield.

Some research in India found that weeds are causing substantial losses to agricultural production and that the annual economic loss was substantial. It has also been reported that with the production of each kilogram of wheat, one kilogram of barley yield was lost. In a recent article published by Mahajan (2008), yield loss due to weed interference might vary between 30-60% for different weed species.

The DNA extraction process.

Resistant weed biotypes, on average, require 10 to 30 times higher herbicide dosages than susceptible types

In the past seven years, ARC-Small Grain was able to optimise the identification of target-site resistance, especially in grasses, through molecular screening. In recent years, screening has been performed, to a lesser extent, on broad-leaved weeds as well. Target-site resistance is when a herbicide is unable to bind to the target site it was intended to, due to a DNA sequence change or mutation. The herbicide is therefore unable to inhibit specific enzymatic/biochemical pathways and the plant survives.

Herbicides must be rotated so that the same herbicide is not used year after year.

Never make unregistered mixtures. Stick to label recommendations at all times.

Keep records of herbicides used and also the rates at which the herbicides were applied.

Regularly monitor your crops so that resistant patches can be observed in time to be treated with more specific interventions, like spot spraying or physical removal.

Apply the herbicide at the correct leaf stage of the weed and the crop.

Make sure that the correct rate is always used, because rates that are too high or too low can select for herbicide resistance.

Ensure that the spray equipment is correctly calibrated and cleaned thoroughly and that the person in charge of the spraying knows what he/she is doing. This helps to prevent or reduce the introduction of weed rhizomes, slugs and seeds into the fields.

Follow the instructions on the herbicide label.

Summary

Target-site resistance may render some Group A and Group B herbicides useless in the spraying programmes that are used during barley cultivation throughout South Africa. Therefore, it is necessary to know the resistance status of the weeds in your crop, to be able to apply effective herbicide management strategies and achieve optimum barley yields.

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What is target-site resistance? It is when a herbicide is unable to bind to the target site it was intended to, due to a DNA sequence change/mutation. The herbicide is therefore unable to inhibit specific enzymatic/biochemical pathway and the plant survives.

References


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