Clethodim damage in canola

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Evidence shows that canola is an ideal crop for crop rotation systems in the Western Cape. Not only does it offer the benefit of good returns, but it also provides the opportunity to control weeds with chemical agents from different groups. There are several herbicide options that can contribute to ryegrass control. Clethodim (cyclohexanedione) is also widely used under various brands for grass control in canola and especially on conventional cultivars.

Moisture strain

During the past 2016 season, clethodim damage occurred in various fields, varying from mild to severe. It was not only limited to certain farms and occurred across the Swartland and Southern Cape. The reason for the damage is mostly attributed to the dry month of May 2016.

It is important to understand canola's development, since its seedlings do not cease development during periods of drought. *Image 1* shows seedlings that underwent severe moisture strain five weeks after sowing. The plants had already formed five leaves. The problem is that herbicides do not function properly under such conditions. As a result, producers sprayed only clethodim for grass control after the rain in June.



Seedlings subjected to drought stress five weeks after planting, with severe clethodim damage visible on the insert.

Visible symptoms

Studies in Australia found that a late spray application and a double dose of clethodim during bud formation resulted in a yield loss of up to 55% (Zerner and Wheeler, 2013). The damage was between 0 and 15% at the recommended dosage. Up until the eight-leaf stage, no damage occurred when using the recommended dose, although damage did occur at the higher dosage. However, there were differences among cultivars, with some exhibiting no yield loss – a good reason to maintain the recommended dosage.

The symptoms are best visible when the plants flower. From a distance, the field appears to be less yellow in the areas where the damage occurred (*Image 2*). The flowers are deformed and in severe cases it appeared as if the flower buds had melted (*Image 3*).



Plants were less yellow where damage occurred.



Severely deformed flowers.

Poor pod formation occurred with severe damage. With less severe damage (plants in the middle of *Image 4*), the pods were deformed. *Image 4* depicts plants exhibiting conditions from zero to severe damage. They were derived from the same field as the plants in *Image 1*. Although the field did not exhibit any signs of damage, damage occurred where the sprayer turned and a consequently higher dosage was applied.

Plants with slight clethodim damage flowered over a longer period. (Later on, plants continued flowering to compensate.) For most seasons, the climate in the Western Cape is not favourable for pod development late in the growing season.

Recommendations made

The recommended sowing date of canola in the Western Cape province is from the beginning of April in the eastern parts of the Southern Cape to the end of April in the Swartland – provided that there is sufficient soil moisture. End of April and May is also a time when dry periods can occur and when weed control cannot be applied effectively.



Plants with no, slight and severe clethodim damage, from left to right.

It is crucial that clethodim is sprayed onto canola after the two-leaf stage, but before flower bud formation. (Note that at this stage no flower buds are visible). Effective pre-emergence weed control is essential, since the risk of clethodim spraying can become too high if late application becomes necessary. Any late application can be defined as the stage where the canola plant has already developed too far. This stage differs among cultivars.

Do not under any circumstances consider spraying clethodim and a fungicide together in a tank mixture. The result will be severe burn. When considering an early fungus spray (for instance for blackleg or white leafspot), first spray the fungicide and follow up seven to ten days later with the herbicide. It is important to adhere to the recommendations and dosage provided on the label at all times.

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