

Broadleaf Weed Control in Pulse Crops

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ABSTRACT

As production of the four main pulse crops in western Canada, pea, lentil, bean and chickpea has increased over the past 10 years, one concern has been broadleaf weed control. Some herbicides are registered for broadleaf weed control in these crops but the majority of the registered herbicides are for peas.

Broadleaf weed control herbicides registered in 2003:

Pea – Pursuit[®], Odyssey[®], Sencor[®], Edge[®], Treflan[®], Tropolox[®] and MCPA

Dry Bean – Edge[®], Treflan[®], Basagran[®] and Pursuit[®] (pinto, pink & red)

Lentil – Sencor[®] and Edge[®]

Chickpea – Sencor[®]

With this limited number of registered herbicides there are many broadleaf weeds that are not controlled, particularly in lentil and chickpea. Over the past number of years the Crop Development Centre at the U of S and the AAFC Scott Research Farm have evaluated many products through the federal and provincial minor use registration programs. As of the fall of 2003 this is the status of the products we have tested:

1. Edge[®] – active ingredient – *ethalfluralin*.

Registered on pea, bean and lentil. Research has shown chickpea to be tolerant to fall applied Edge as well and the data has been submitted to PMRA but at this time PMRA is not allowing any expansion to the Edge label.

2. Pursuit[®] – active ingredient – *imazethapyr*

Registered in the black soil zone on pea and some varieties of bean. In-crop applications on lentil and chickpea will cause unacceptable injury most years. Pre-emergent applications of reduced rates of Pursuit have shown mixed results in our trials. When a light rain falls shortly after application residual weed control is often good but this is when we will also see increased crop injury. However when there is no rainfall after application we have seen poor weed control and low crop injury. A fall application of 1/3X rate of Pursuit has provided consistent weed control with minimal crop injury on both lentil and chickpea.

3. Odyssey[®] – active ingredient – *imazamox & imazethapyr*

Registered on pea only. In-crop and pre-seed applications on lentil and chickpea have caused unacceptable crop injury. In our research trials the injury from pre-seed and incrop Odyssey has always been greater than the injury from Pursuit.

4. Reflex[®] – active ingredient – *fomesafen*

Registered on dry bean in southern Manitoba when tank mixed with Basagran for improved control of cocklebur, lady's thumb, lamb's quarters, common ragweed, redroot pigweed and wild mustard. Submissions have been made to PMRA to add many of the bean varieties, from Sask. and Alta., to the label. In research trials Reflex caused severe injury to chickpea.

5. Lentagran[®] & Tough[®] – active ingredient – *pyridate*

Registered on cole crops for post emergent applications. Chickpea has good tolerance to this herbicide and the weeds controlled include chickweed, kochia, lamb's quarters, redroot pigweed, shepherd's purse and Russian thistle. This is an old herbicide and Syngenta is not willing to support a label expansion at this time.

6. Gesagard[®] – active ingredient – *prometryn*

Registered on carrot, celery and pea (fresh & dry) in a post-emergent application. Weeds controlled include lamb's quarters, redroot pigweed, wild mustard, chickweed and green foxtail. We tested this product in 1999 and 2000 and found that it caused significant injury to chickpea. Therefore we have not continued any further trials with this herbicide.

7. Spartan[®] & Authority[®] – active ingredient – *sulfentrazone*

Is not registered in Canada on any crop at this time. It is registered in the USA as a pre-plant soil applied herbicide for control of many broadleaf weeds in sunflower and tobacco. It has also received emergency registration in North Dakota to control wild buckwheat in chickpea and dry field pea. This herbicide requires moisture to activate it and move it into the soil. The label states that ½ to 1 inch of rainfall within 7 to 10 days after application is required for best results. Fall applications may work better in Saskatchewan as we could use the snowmelt to activate and move the product into the soil. Weeds controlled include chickweed, flixweed, kochia, lamb's quarters, redroot pigweed, shepherd's purse, Russian thistle, wild buckwheat and suppression of wild mustard. At this time there is no registrant for this herbicide in Canada. There are some recropping concerns; cereal crops appear to be tolerant to the residues the following year but canola is listed as having a 24-month interval from application to planting on the US label. Applications have been made to PMRA to register this product on chickpea under the User Requested Minor Use Registration.

8. Balance[®] & Converge[®] – active ingredient – *isoxaflutole*

Registered on corn in eastern Canada as a pre-plant, soil-applied herbicide. This product also requires rainfall to activate and move it into the soil. Weeds that are controlled include lamb's quarters, redroot pigweed, dandelion seedlings, wild mustard and suppression of green foxtail. At this time there are some soil residue concerns with this herbicide. Chickpea appears to be very tolerant and it appears that cereals may be re-cropped the following year. Further trials need to be conducted to look at other crops even seeded 2 years after application, as lentil and oilseed crops are very susceptible to injury from this herbicide.

9. Valor[®] – active ingredient – *flumioxazin*

This pre-emergence broadleaf herbicide is registered on peanut and soybean in the United States and is being evaluated in potato under the National Minor Use Program. It has been tested as a pre-emergence herbicide in chickpea at Scott and Saskatoon. Rates that were required to provide adequate weed control caused unacceptable injury to chickpea.

We are continuing to look at other herbicides that are available in Eastern Canada and the United States, but there is no “miracle herbicide” for broadleaf weed control in pulse crops on the horizon.