

Cleaning boomsprays after using Sulfonylurea herbicides

The aim of this demonstration was to raise awareness and highlight the importance of cleaning boomspray equipment properly after using SU herbicides.

Summary: Conventional and TT canola and many pulse crops are very sensitive to traces of sulfonylurea (Glean, Logran or Ally) remaining in the boomspray (tank, hoses and filters). It is recommended to clean out the boomspray using the recommended procedures with bleach. However, if a sensitive crop (such as regular canola) is to be sprayed after using one of the SU herbicides then it is suggested to also clean the boomspray with an EC formulated herbicide or insecticide.

Background

Every year many growers have problems with sulfonylurea (SU) damage in sensitive crops caused by boomspray contamination. Conventional and TT canola and many pulse crops are extremely sensitive to SU herbicides (especially Glean - chlorsulfuron, Logran - triasulfuron and Ally - metsulfuron-methyl). The SU herbicides have a tendency to bind to tank linings, filters and hoses, and accumulate in the dead ends in boomspray hoses. Toluene in EC (Emulsifiable Concentrate) formulated chemicals strips the SU residues out of the boomspray which causes the damage to sensitive crops. Even after cleaning the tank as recommended with household chlorine bleach, minute concentrations of the herbicide can still be stripped from the tank by EC formulated chemicals such as a grass spray or insecticide. After using a SU herbicide some farmers in WA are reportedly using EC formulated herbicides or insecticides to assist in the cleaning process before spraying sensitive crops. We used this demonstration to determine the best cleaning method after using Glean (chlorsulfuron).

Methods

A demonstration was designed to show the level of contamination at each stage of cleaning using bleach and an EC formulated insecticide (we used dimethoate at 0.5L per 100L of water) to clean out a boomspray which had been contaminated with Glean. The effects of each level of cleaning procedure was demonstrated on lentils, field peas and regular canola.

Blocks of lentils (Digger), field pea (Dundale) and canola (Mystic) were sown with Mallee Mix 1 at 80 kg/ha in June at the Birchip site. Tank loads, following different level of cleaning, were sprayed across the plots. Visual damage scores of the phyto-toxic effect of Glean on the crops were observed pre-flowering. The treatments were applied in a nearest neighbour design so that a control plot was always located adjacent to a treatment plot. The treatments were:

Demo 1	Demo 2
Glean	Glean
First rinse (used rinse water)	First rinse (used rinse water)
Second rinse (used rinse water)	Second rinse (used rinse water)
First rinse after chlorine bleach (use rinse water)	EC (dimethoate) used to spray crop
Second rinse after chlorine bleach (used rinse water)	First rinse after dimethoate (used rinse water)
EC (dimethoate) used to spray crop	
First rinse after dimethoate (used rinse water)	

Results

The effect of not cleaning out the tank, filters and hoses properly can be dramatic. For visual phyto-toxic assessment scores on the three crops see Table 1.

Table 1. Visual damage scores[#] (on lentils, field pea and conventional canola) following different cleaning procedures after using Glean.

Demo 1	Damage score			Demo 2	Damage score		
	Lent	Fpea	Can		Lent	Fpea	Can
Glean	7	7	9	Glean	9	8	9
1 st rinse	6	6	8	1 st rinse	8	7	9
2 nd rinse	6	6	8	2 nd rinse	7	6	7
1 st rinse after chlorine bleach	3	2	4	EC (dimethoate)	4	4	6
2 nd rinse after chlorine bleach	3	2	3	1 st rinse after dimethoate	2	1	2
EC (dimethoate)	2	2	3				
1 st rinse after dimethoate	2	2	3				

[#] Scores for weed control and crop effect: 1- no symptoms evident; 3 – slight symptoms; 5- severe symptoms; 7 – heavy damage; 9 – complete loss of plants

Interpretation

The first and second rinse after Glean showed extensive damage in the crop directly underneath a nozzle which was at the end of a spray line. The dead end in the spray line resulted in the SU chemical being difficult to clean out of this area. Chlorine bleach (4%) used at 300ml per 100L of water did a reasonable job in cleaning the tank and hoses but there was still some damage evident. Rinsing the tank, cleaning with an EC formulated product, followed by rinsing, cleaned out the tank very well and minimal damage was evident after the first rinse.

Commercial Practice

Growers who have used a sulfonylurea herbicide such as Glean, Logran or Ally should rinse and clean out the boomspray tank, hoses and filters following the recommended use of bleach. If they are planning to spray a highly sensitive crop such as regular or TT canola, or lentils it would be prudent to wash the tank out first with an EC formulated product such as dimethoate or Hoegrass. One way to achieve a proper clean out would be to clean the tank properly after using a SU herbicide and then spray an EC formulated chemical, such as Hoegrass, in a wheat crop before a SU sensitive crop is sprayed. BCG is putting taps into the ends of lines so thorough flushing can occur, avoiding dead-zones at the ends of the line.