

10. CEREAL AGRONOMY TRIALS

10.1 BARLEY YELLOW DWARF VIRUS TRIAL - HAMILTON (DPI)

Researchers: Steve Holden (DPI)
Sheldon Johnson (formerly DPI)

Location: Hamilton

Aim:

To evaluate the timing of insecticide treatments on deterring aphids from feeding on newly sown wheat and how this impacts on final wheat yield and to evaluate the use of an insecticide seed dressing to give early aphid control.

Trial Design: 6 treatments x 2 varieties
Variety: Kellalac & Chara
Sowing Rate: 100 kg/ha
Sowing Date: 23rd May

Background:

Barley yellow dwarf virus (BYDV) is an important disease of cereals in the high rainfall cropping regions of Victoria in most years. This disease is caused by a virus that is spread by aphids feeding within the crop. Autumn and spring flights of aphids from infected grasses or crops spread the disease into susceptible crops. The virus is not transmittable through seed, soil or sap hence if aphids can be deterred from feeding on susceptible crops then the disease will not be an issue.

Fertiliser: 100 kg/ha DAP
Insecticide Rate: 50 ml/ha

Results:

Variety	Insecticide Timing	Yield (t/ha)	
		Seed Dressing	
		Nil	Imidacloprid
Kellalac	Nil	6.66	6.66
	Alpha-cypermethrin @ 3 weeks emergence	7.22	----
	Alpha-cypermethrin @ 7 weeks emergence	----	7.01
	Alpha-cypermethrin @ 3 & 7 weeks emergence	6.79	7.15
Chara	Nil	7.41	7.58
	Alpha-cypermethrin @ 3 weeks emergence	7.68	----
	Alpha-cypermethrin @ 7 weeks emergence	----	7.94
	Alpha-cypermethrin @ 3 & 7 weeks emergence	7.58	7.89
LSD (5%)		0.71 t/ha	
CV %		5.7	

Discussion:

While aphids were observed on early sown oat crops in the Hamilton district during April and early May, they did not appear to breed up and cause problems by spreading BYDV through later sown crops. BYDV was not reported as a major problem in the western districts in 2003 and the symptoms of the disease were not observed in the trial at Hamilton.

While there was a slight increase in yield where insecticide was applied on the plots it did not relate to a significant difference between any of the insecticidal treatments. The only significant differences were between the two varieties.

There are a number of products registered for aphid control in cereals, including alpha-cypermethrin and imidacloprid (used as a seed dressing). Alpha-cypermethrin controls a broad range of insect pests but unfortunately can also be detrimental to any beneficial insects that may also be present at spraying. Alpha-cypermethrin should be applied three weeks after crop emergence to kill any aphids present in the crop at the time and to act as an anti-feeding agent for a number of weeks.

In a severe aphid year an additional spray at seven weeks emergence may be required.

The use of imidacloprid as a seed dressing has the advantage that it only controls insects that actually feed on the plant and hence is gentler on off target species that may be beneficial to the crop (including insects that prey on slugs). The use of this seed dressing should remove the need for an early spray of insecticide although a spray at 7 weeks emergence may still be necessary in a severe aphid year.

Varietal selection can also be used as tool to minimise the damage of BYDV. The newly released winter wheat variety Mackellar is the first wheat variety that is resistant to BYDV. All other wheat varieties are regarded as being susceptible. The barley varieties Franklin and Gairdner are the only varieties that have any resistance (both rated as MR) and there are a number of options in oats.