

What's the Best Management Package for Canola?

Background

Agriculture Kangaroo Island and the Kangaroo Island Grain Growers' Association have been working with SARDI for several years now to identify key ingredients of agronomic packages which deliver high yielding canola crops with high oil contents in the Parndana environment. Since there are now a sometimes bewildering number of options for managing canola, the trial in 2005 concentrated on treatments that have claimed to be important in other canola growing areas but are of uncertain value for Kangaroo Island. These included growth regulants, delayed applications of nitrogen, fungicides and boron (B) fertilisers.

What was done

The trial was set up on A. & T. Heinrich's property in a paddock which had been in long term pasture prior to 2005 and on a site with a reasonably deep soil for the district. The site was sprayed with glyphosate, simazine and endosulfan prior to direct

drilling Jockey[®]-treated ATR Beacon @ 5 kg/ha on 28 June. Aphid had broadcast 150 kg single super/ha prior to the break of the season.

Mid-season applications of nitrogen were applied on 17 August and delayed applications were applied on 14 September (crop just bolting). Folicur[®] (fungicide), foliar B and chlormequat (a growth regulant) were also applied on 14 September.

The approach taken in this trial was that we devised a management package that we thought would be pretty good for canola at this site (listed as the control in the table of results below). All the other options we tested were compared against this standard, ie was there anything extra we could do which would improve performance over and above the standard? In addition, some of the treatments left out components of the standard package to see how important they were to overall performance.

Treatment		Establish (plants/sq m)	Grain Yield (t/ha)	Grain Oil (%)
Control	20 N + 18 P at seeding + 50 N at pe + 50 N bolting	71	2.10	43.7
Apron seed dressing	20 N + 18 P at seeding + 50 N at pe + 50 N bolting + Apron seed dressing	75	2.03	43.3
Maxim seed dressing	20 N + 18 P at seeding + 50 N at pe + 50 N bolting + Maxim seed dressing	84	2.02	43.9
No P	20 N at seeding + 50 N at pe + 50 N bolting	86	1.85	42.8
High P	20 N + 30 P at seeding + 50 N at pe + 50 N bolting	80	1.86	43.5
Extra B at seeding	20 N + 18 P at seeding + 50 N at pe + 50 N bolting + extra B at seeding	86	1.83	43.5
Extra B + Ca at seeding	20 N + 18 P at seeding + 50 N at pe + 50 N bolting + extra B+Ca at seeding	80	1.91	43.8
Extra B foliar	20 N + 18 P at seeding + 50 N at pe + 50 N bolting + extra B at 8 weeks		1.94	43.3
Growth regulant	20 N + 18 P at seeding + 50 N at pe + 50 N bolting + growth regulant		1.93	43.2
Extra B + Growth reg	20 N + 18 P at seeding + 50 N at pe + 50 N bolting + growth regulant + B		1.92	43.4
Folicur fungicide	20 N + 18 P at seeding + 50 N at pe + 50 N bolting + Folicur fungicide		2.08	43.2
Low N	20 N + 18 P at seeding + 50 N at pe		2.03	44.4
Seeding N	120 N + 18 P at seeding	76	1.98	43.5
Early N	20 N + 18 P at seeding + 100 N at pe		1.94	43.7
Split N	20 N + 18 P at seeding + 50 N at pe + 50 N bolting		1.90	43.4
Late N	20 N + 18 P at seeding + 100 N bolting		1.79	44.1
No N	18 P at seeding	88	1.74	44.8

Results

Canola growth in this trial was very good all year with excellent establishment and no weed, pest or disease problems obvious. Grain yields were reasonable given that TT varieties normally yield about 20% less than conventional or Clearfield types and that seeding was not early.

The table, on the previous page, shows plant numbers, grain yields and oil contents for each treatment in the trial. Plant numbers did not change appreciably between the treatments counted and were more than adequate to produce high yielding crops. Treatments that were not counted were the same as the others at the time plant counts were taken. This means that the extra seed treatments we imposed (Apron® or Maxim®) or high N at seeding did not hurt establishment or early vigour of the crop.

Even though yields varied between 2.1 and 1.74 t/ha, these differences are unlikely to be due to the treatments imposed, and more likely to be due to natural variability across the trial site. However, you would have to be suspicious that using no fertiliser N (no N in the table) had limited grain yield and late N did not appear to do too well either. As the site had been in long term pasture prior to 2005 and had high reserves of nitrogen and phosphorus, it is not surprising that leaving out nitrogen or phosphorus had little impact on yields (especially with broadcasting super prior to the season), or that cutting back N rates (low N in the table) still gave good yields.

In the absence of any obvious diseases or pests, the additional treatments of Apron® or Maxim® seed dressings provided no benefits, remembering that the site had received endosulfan for red legged earth mites pre-seeding and the seed had also been treated with Jockey®.

There was no evidence that providing canola with B fertiliser resulted in any benefits to the crop. Extra fungicide as a foliar spray of Folicur® or the use of a growth regulant also had no impact on canola performance.

Grain quality was reasonable, with all treatments producing oil contents of 42.5 to

44.8 %, which is good for a TT variety (TTs tend to have lower oil contents). It is interesting to note that high oil contents were maintained in the absence of any fertiliser N, which was almost certainly due to the legume-dominant residues from the long pasture history at this site.

Take Home Message

- Our standard package of 100 kg 18:20/ha at seeding under the seed row (to avoid fertiliser toxicity), Jockey-treated seed, endosulfan and simazine pre-seeding, a follow up spray of atrazine and a grass herbicide mid-season, and two top-ups of nitrogen during the season (50 kg N/ha as broadcast urea each time) gave us a clean, high yielding and good quality crop with no pests or diseases.
- There was no evidence that extra management options provided any further benefits to canola performance (ie a fungicide spray, B fertiliser or use of a growth regulant) under the conditions of last year's trial.
- However, it would appear that we may have been a bit generous with our N and P inputs in the standard package because we could halve the mid-season N rate and not suffer any yield or quality loss. Additionally, leaving out P altogether had little impact so a rate lower than 20 kg P/ha may have been the best compromise last year.
- There seems little reason to change from a management strategy of plenty of N at seeding (providing you can avoid seedling toxicity by separating the N and the seed) followed up by an early season top-up. Delayed applications of N produced yields or quality no better than our standard.

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