Brome Grass Harvest Management

Government of South Australia
Northern and Yorke Natural Resources Management Board

Aim: To assess Brome Grass populations in the years following different cultural practices

Crop: Mace Wheat (2012—Gunyah Field Peas, 2011—Commander Barley)

Outcomes Desired: To quantify the practice that gives the best reduction in Brome Grass population. To assess harvest management strategies for Brome Grass control. To assess what effect burning has on sandy, light soil types.

Treatment	Timing	Brome Grass (plants/m^2 total of 3 assessments)	Percentage Reduction (%) in Brome Grass	Yield (T/Ha)
Conventional	nil	917	0%	4.44 T/Ha
Chaff Cart	December (harvest)	594	35.23%	4.02 T/Ha
Narrow Wind-row + Burn	December + April	516	43.75%	4.20 T/Ha
Chemically Fallowed	September 2011	76	91.70%	4.69 T/Ha
Hot Burn	April	631	31.17%	4.54 T/Ha

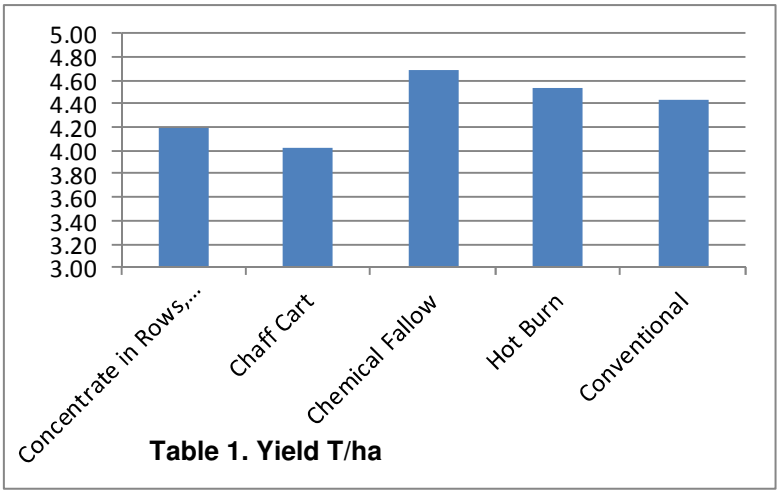

Table 1. Yield T/ha

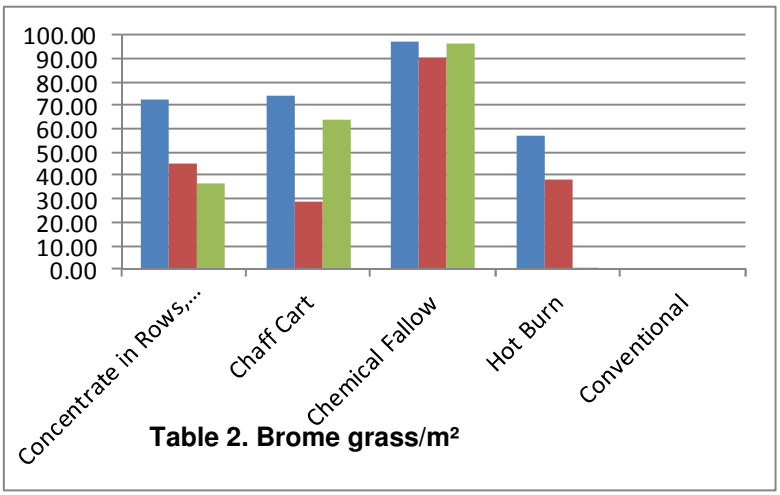

Table 2. Brome grass/m²

Brome Grass numbers were still very high in the Mace Wheat in 2013 in this trial. The trial was coming out of a Pea crop the previous year, which traditionally would have lead to a far lower weed population in the Wheat.

Harvesting of the trial was conducted in the middle of November. The Chemical Fallow treatment yielded the highest (Graph 1 left). This treatment was also the highest yielding in the 2012 Peas. The combined two year increase in Gross Margin over the Conventional treatment is $266/Ha.

Surprisingly, the Conventional treatment was quite high yielding. The Brome Grass population in these plots was very high, competitive and in spring, these plots showed signs of Crown Rot disease, most likely promoted by the Brome.

The Hot Burn plots were also a surprise as the Brome Grass numbers were second worst here (Graph 2 bottom). Removing the stubble by burning in 2012 may have lead to less nutrient tie-up during the season. A similar result was seen last year in the Pea yields and Brome numbers.

There was little difference between Chaff Cart and Narrow Wind-row Burning plots early on for Brome Grass. They both rely on catching the Brome Grass with the header front, but then process it differently. The third assessment (green) that was done, showed that the row burning plots had another flush of Brome Grass that emerged later in the year.

Take Home Messages:

- Chemical Fallow 2 years prior was still measures up to 92% less Brome Grass than Conventional plots.
- A 0.15-0.67 T/Ha increase in Wheat yield was recorded by the Chemically Fallow treatment. The $41-154/Ha improvement on gross margin was in addition to the $198/Ha gain in the 2012 Pea yield. This can then be coupled with an improvement in the long term viability of the paddock as weed control has been greatly improved.
- Crusader herbicide was applied to the paddock but there were still large numbers of Brome Grass present at the September assessment. Here, Crusader has more of a suppression effect than control.
- Chaff Carts, Narrow Wind-row Burning and the use of the Harrington Seed Destructor all rely on catching the weed seeds with the header front at harvest. The reduction in Brome Grass numbers with these means of management slipped from 40-60% in 2012, to 30-45% in the 2013 Wheat.
- A compromise has to be met when Hot Burning. An early burn results in the best weed seed kill, but leaves the soil exposed longer to erosion prior to seeding. A later burn performed just before seeding, like in this trial, results in less weed seed kill, but a reduction in erosion of our fragile topsoil.
- Conventional harvesting does not have a fit in a high pressure grassy weed situation. Particularly, if chemical resistance is becoming an issue.
- Herbicide group rotation and use of mechanical systems (hay, chaff cart, green manure, and autumn tickle amongst others) will all help in keeping Brome Grass numbers at manageable levels.

Conventional plot | **Narrow Wind-row Burning plot** (Photos taken on the 3rd of May 2013) | **Chemical Fallow plot**

Conventional plot | **Narrow Wind-row Burning plot** | **Chemical Fallow plot** (Photos taken on the 17th of September 2013)

Left—Crown Rot present in the Conventional plots.

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