EFFECT OF SEED SIZE ON MILL EFFICACY RATES

REDEKOP™

Newly released research by the Redekop Research team compares the efficacy performance of the SCU with different weed seed sizes that can be encountered in typical harvest conditions. Annual Ryegrass (*Lolium Rigidum*) typically found in Australia's small grains production systems were gathered throughout Australia and sized to be methodically tested at different chaff throughput rates with the results grown out in a controlled environment.

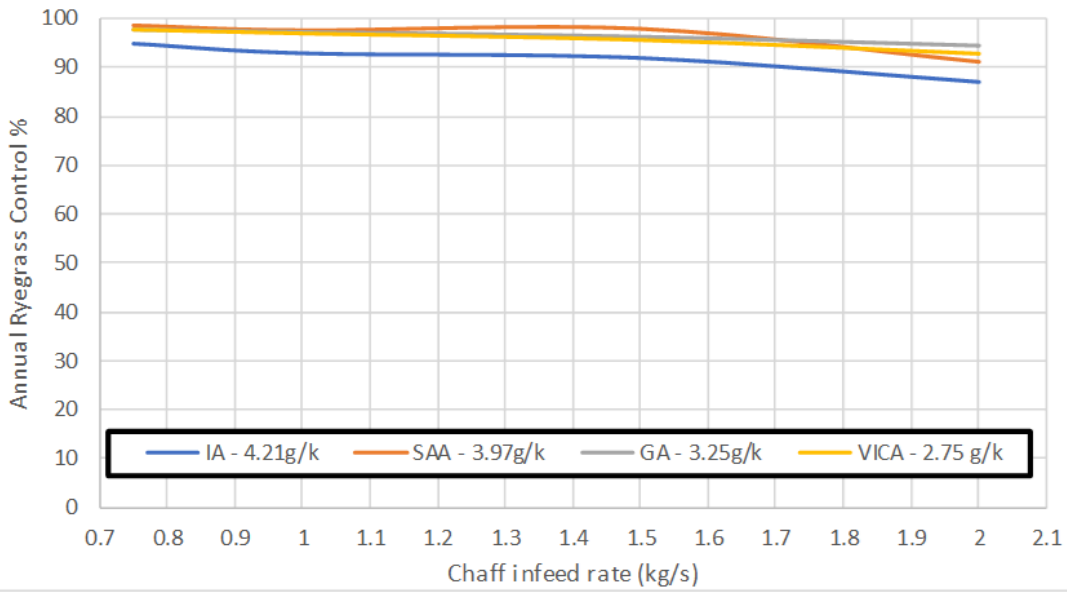
TESTING PROCESS

Chaff was spread out evenly on a conveyor belt and weed seeds were added to the middle 80% of the chaff row. The SCU was brought up to the recommended speed, and once stable the conveyor delivered the wheat chaff into the mills at a typical harvest rate of 1.0 kg/s, and alternate rates of 0.75, 1.5 and 2 kg/s corresponding to 75%, 1.5x and 2x the typical rate. The chaff was caught as it exited the mill using a 500-micro mesh bag. The chaff and weed seeds collected were mixed 1:1 with potting mix and remained in a green house for 12 weeks. A minimum of 40% of each test was grown out to ensure an accurate seed count. All tests were triple replicated. Seeds tested were Italian Annual (Lolium Perenne) Ryegrass (IA) – 4.21g /1000 seeds, South Australian Annual (Lolium Rigidum) Ryegrass (SAA) – 3.97g /1000 seeds, Gulf Annual (Lolium Multiflorum) Ryegrass (GA) – 3.25g /1000 seeds, Victoria Annual (Lolium Rigidum) Ryegrass (VICA) – 2.75g /1000 seeds.

Table 1: Individual treatment efficacy (%) for annual ryegrass control vs. seed size

Chaff infeed (kg/s)	IA - 4.21g/k	SAA - 3.97g/k	GA - 3.25g/k	VICA - 2.75 g/k
0.75	95%	99%	98%	98%
1	93%	98%	97%	97%
1.5	92%	98%	96%	96%
2	87%	91%	94%	93%

Figure 1: Annual Ryegrass control vs chaff feed rate vs weed seed size



RESULTS

Mill Efficacy does not significantly change with weed seed size in a small grains production system. Other environmental factors such as chaff moisture have a more significant effect on efficacy, however efficacy rates greater than 90% are exemplary, and will reduce seed banks quickly.