Agronomic performance of dwarf milling oat varieties in Western Australia

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Background:

- Western Australia produces approximately half of the total national oat pool.
- In the past only oat varieties from non-dwarf backgrounds have been acceptable to the milling industry. The development of dwarf milling oat varieties has the potential to offer growers improved yields and improved agronomy.
- Three new dwarf milling varieties – Kojonup, Mitika and Possum – were compared against two non-dwarf milling varieties Carrolup and Mortlock and the dwarf feed variety Wandering on two soil types over two dates of seeding at three locations from 2004 to 2006 (a total of 36 trials).

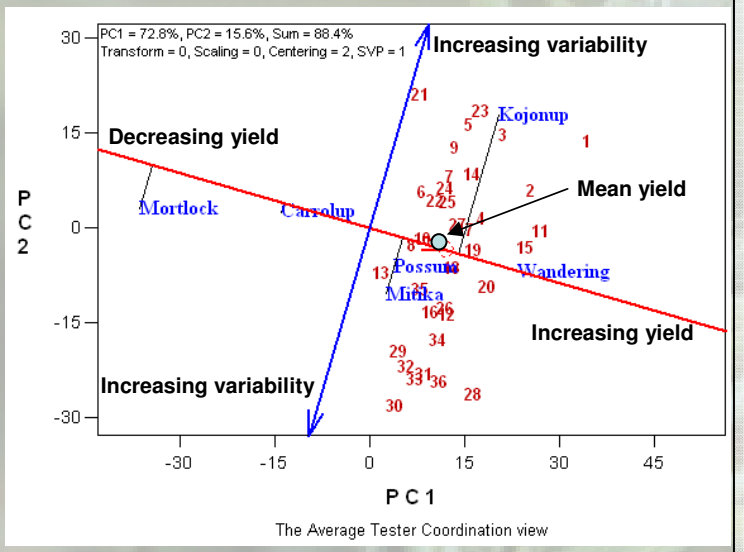

Figure 1. Biplot showing mean yield and stability of oat varieties grown in different environments.

Results:

- Varieties performed differentially when tested in multiple environments due to G x E interactions (Figure 1).
- Wandering was consistently the highest yielding with good stability across years, locations, date of seeding and soil type, than the other varieties.
- Of the three new dwarf varieties, Kojonup was found to be the best performing variety.
- Where post-sowing rainfall was more than 200 mm, Kojonup yields were comparable to Wandering and higher than Carrolup, Mitika and Possum.
- Where growing season rainfall was less than 200 mm, Kojonup yields were lower than Carrolup, Mitika, Possum and Wandering.
- Kojonup had the better grain weight and grain shape of the three new dwarf varieties and its grain quality was more stable across locations, soil types and dates of seeding.
- A higher proportion of Kojonup's grain met the milling targets for hectolitre weight (>51 kg/hl) and screenings below a 2.2mm sieve (<10%) than Mitika and Possum.
- The reliability of Kojonup meeting milling grain quality targets was similar to that of the dominant milling variety in Western Australia - Carrolup.

Conclusions:

- Kojonup is the first dwarf variety to be accepted for use by the milling industry in Western Australia.
- Kojonup was found to be the best performing dwarf milling variety in terms of yield and quality, but unstable under moisture stress conditions (<200mm).
- Time of seeding and soil type experiments can be very useful in providing information on the stability and risk assessment of new lines being released for the milling market.

For more information refer to abstract in the conference proceedings or contact Dr. Raj Malik (rmalik@agric.wa.gov.au).