

Development of New Wheat Varieties For the Pig Industry: Digestible Energy Yield of Candidate Wheats

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Securing more reliable and consistent energy supplies for pig diets is one of the major challenges facing Australian pig production due to volatility of the international grain price and variable grain yields between seasons. A more reliable and consistent energy supply will reduce variation in the annual cost of pig feed and total cost of pig feed. The aim of this experiment was to identify specific lines of wheat that are high yielding and contain high levels of digestible energy (DE) from the InterGrain (Kensington, WA) gene pool for potential commercial release.

Pre-screened, potentially high yielding and high DE wheats from 25 genetic lines were grown in the 2010/2011 season and included released varieties. The 25 lines were grown in 35 sites across Australia (NSW 454 plots, SA 568 plots, Vic 511 plots and WA 618 plots), and a total of 2151 wheat samples were collected at harvest and scanned through an established NIRS calibration (AusScan Calibrations, Pork CRC Ltd, Roseworthy, SA). To account for the variation within plot and across variety, as well as to compare candidate varieties to currently grown varieties, the data were transformed to a selection index $((DE \times Yield)/1000)$ and expressed as total DE production/ha (Gigajoules (GJ)/ha). Data were pooled across state and analysis of variance was used to test the effects of variety on DE yield per hectare. Fishers-protected least significant difference test was used to separate difference between varieties.

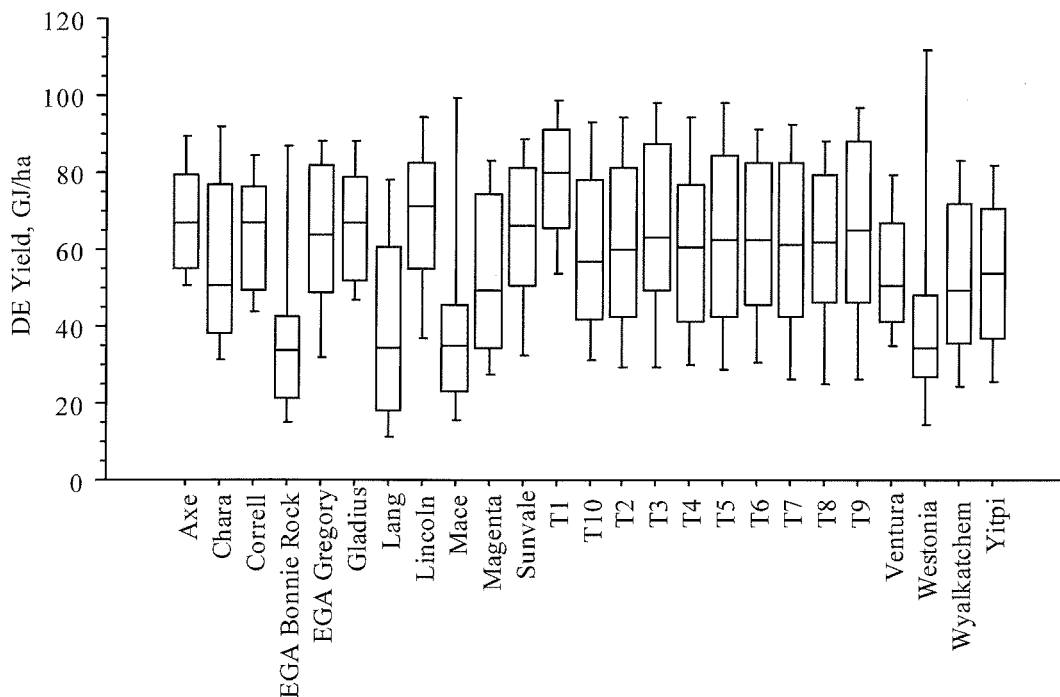


Figure 1. The digestible energy (DE) yield (expressed as GJ/ha) of candidate wheats (T1–T10) and selected benchmark wheat varieties grown across Australia in the 2010/2011 season.

Results showed that of the test varieties T1 outperformed selected benchmark wheat varieties ($P < 0.01$) in terms of the DE yield/ha, showing the potential of new lines of wheat that could be used in the Australian pig industry to improve overall production efficiency.