

VARIETY, GROWING REGION AND ADDITION OF EXOGENOUS XYLANASE INFLUENCES DIGESTIBLE ENERGY CONTENT OF WHEAT FED TO WEANER PIGS

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Variety, rainfall zone and addition of exogenous enzymes are known to affect the digestible energy (DE) content of wheat fed to pigs (Anderson and Bell, 1983; Wiseman, 1997; Choct *et al.*, 1999). However, few studies have been conducted to examine the influence of these three factors on the DE content of wheat simultaneously. The aim of this study was to examine the influence of the variety, growing region and arabinoxylanase on the DE content of wheat for weaner pigs.

A 3 × 3 × 2 factorial experiment {3 varieties of wheat: Arrino (A); Stiletto (S); Westonia (W) × 3 rainfall zones [High (H, ≥ 450 mm annual rainfall); Medium (M, 320-450 mm annual rainfall); Low (L, ≤ 320 mm annual rainfall)] × 2 enzyme treatments (presence or absence)} was conducted with 5-week old male pigs (Large White × Landrace, 6 kg average live weight). The enzyme was an arabinoxylanase having a minimum activity of 4000 U/g and was included in the diet at 0 or 1 kg/tonne. The experiment was completed 5-7 weeks after harvest. The experimental diet consisted of 90% wheat and 10% additives (i.e., canola oil, vitamin/mineral mix, Celite® as an indigestible marker). The test diets were fed for a 5-day adaptation period followed by 5 days of consecutive faeces collection for determination of DE content. Analysis of variance was used to examine the effects of variety, rainfall zone and enzyme and all interactions between these factors on DE content.

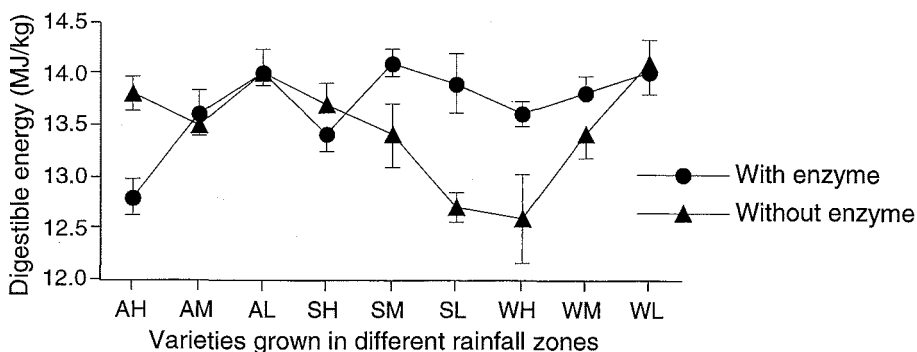


Figure 1. Interaction line plot for DE content of three wheat varieties Arrino (A), Stiletto (S) and Westonia (W) grown in high (H), medium (M) and low (L) rainfall zones with or without arabinoxylanase.

There was a 3-way interaction ($P \leq 0.01$) between wheat varieties, rainfall zone and enzyme use in determining the DE content of wheat fed to weaner pigs (Figure 1). These data highlight the need to account for a variety of factors when assessing the energy availability of wheat. The use of rapid assay techniques, such as near infrared spectrophotometry, to predict DE content will reduce errors in feed formulation associated with factors such as wheat variety and its growing region.

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