

Comparison of Heirloom and Modern Wheat Varieties

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Highlights

- Heirloom and landrace varieties Kamut, Mediterranean, and Westar yielded 40-60% less than modern varieties
- Modern and landrace varieties were among the highest Ca (66.9 ppm) and the lowest Zn (2.6 ppm) values.
- Kamut had higher Zn concentrations, but lower Fe and Si concentrations, whereas Oberkulmer Spelt was very high in Si (17.4 ppm).
- Market premiums would need to be >200% of base wheat prices for Kamut and the landrace varieties to be economically feasible for producers

Interest in production potential and nutritional differences of heirloom wheat cultivars has increased with recent consumer trends and marketing. Heirloom wheat is promoted for gluten-sensitive diets and as being more nutrient-dense compared to modern wheat. However, comparisons of yield and nutritive value in uniform production environments are extremely limited.

Therefore, a small-plot trial was planted as a randomized complete block design with 4 replications in Wall, Texas. The goal of this trial was to compare yields and nutritional components between two heirloom wheat (spelt and Kamut), landrace wheat varieties, and two modern wheat varieties in semi-arid West Texas (Photo 1 and Photo 2). Measurements included grain yield, test weight, and a range of elemental concentrations in the grain.



Photo 1. Left to right Modern, Landrace, Kamut and Spelt (Failed: poor seed)



Photo 2. Closeups of heirloom varieties. Left, Spelt seed head. Right, Kamut seed heads.

Grain yield

Modern varieties produced the greatest yields (Figure 1), followed by Westar, Mediterranean, and Kamut.

Heirloom and landrace varieties Kamut, Mediterranean, and Westar yielded 40-60% less than modern varieties.

Einkorn, Knox, Frisco, and Fulcaster failed to establish due to poor seed viability. Oberkulmer Spelt, however, yielded less than 3 bushels per acre.

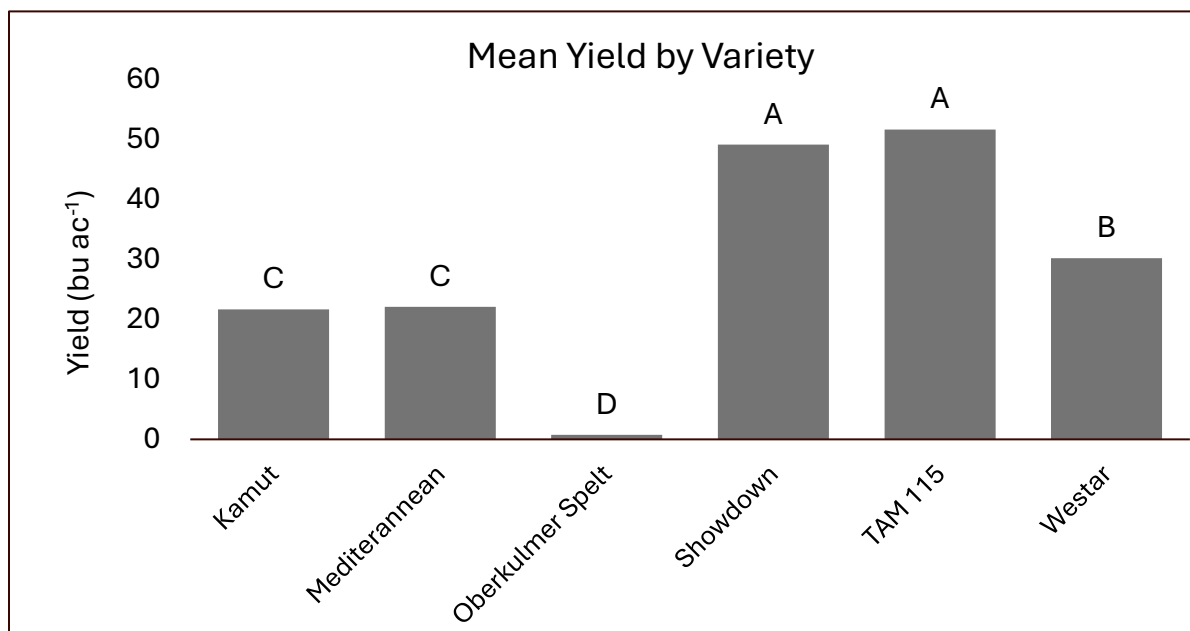


Figure 1. Grain yield (bushels acre⁻¹) of varieties tested.

Elemental composition

Ca, Zn, Fe, and Si concentrations varied among entry groups (Table 1).

Kamut had the lowest Ca, Fe, and Si concentrations (Table 1), although Kamut and Spelt had the greatest, Zn concentrations.

Modern and landrace varieties resulted in the highest Ca and the lowest Zn concentrations. Though there was broad variation in elemental concentration, modern and landrace varieties were among the highest Ca (66.9 ppm) and the lowest Zn (2.6 ppm) values.

Table 1. Element concentration (ppm) of varieties tested.

Entry Group	Ca	Zn	Fe	Si
Kamut	49.3 b	3.5 a	3 b	2.7 c
Oberkulmer Spelt	62.3 a	3.3 ab	5.7 a	17.4 a
Landrace	61.1 a	2.8 bc	3.9 b	5.3 b
Modern	66.9 a	2.6 c	4.3 ab	4.7 b

Test weight

Test weight varied statistically for each entry (Figure 2), with TAM 115 resulting in the greatest test weight.

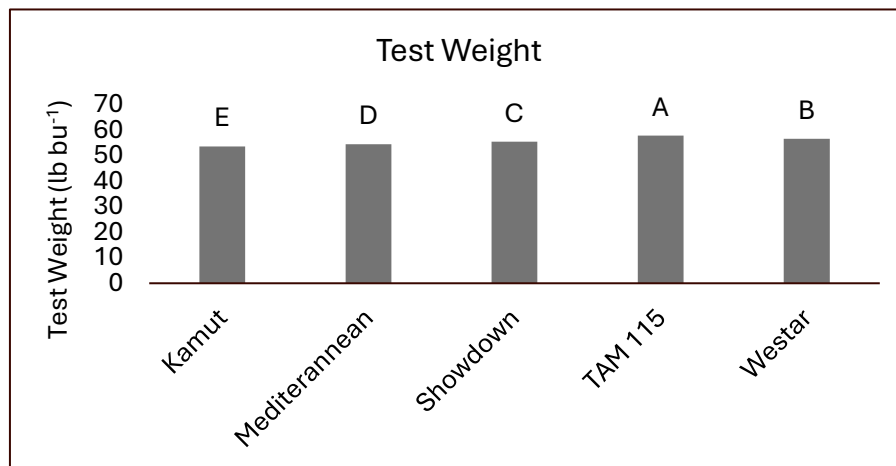


Figure 2. Variety effect on test weight.

Findings suggest that market premiums would need to be >200% of base wheat prices for Kamut and the landrace varieties to be economically feasible for producers, and that spelt did not yield sufficiently to be economically competitive in this site-year.

Acknowledgement

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