



THE LAND INSTITUTE

Breeding legumes for intercropping with Kernza

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Can we breed for intercropping with Kernza?

The Breeders Equation

$$\Delta G = (i \ r_A \ \sigma_A) / L$$

- i – the selection intensity
- r_A – related to selection accuracy
- σ_A – related to selectable genetic variance
- L – the breeding cycle

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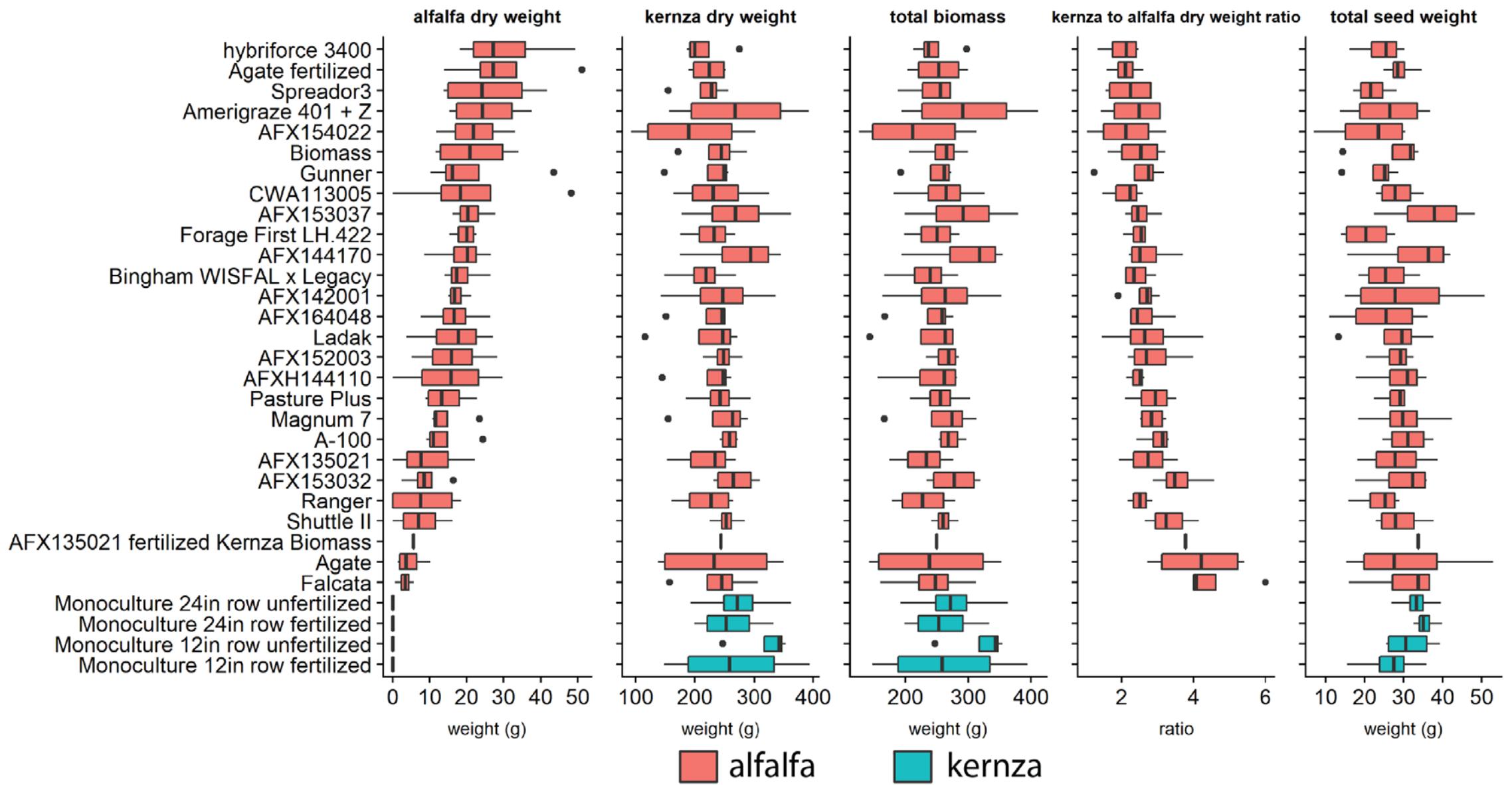


Optimal alfalfa germplasm types and characteristics for compatibility and performance in mixed cropping systems

- Planted fall 2017
- Four locations: MN, UW (x2), KS
- Up to 26 alfalfa varieties per location
- Monoculture IWG controls
- Spring defoliation, Summer grain harvest + defoliation,
Fall defoliation

Summer grain harvest + defoliation: Kansas







Progeny Testing: Selection in IWG+alfalfa swards



Effect of cutting timing on intermediate wheatgrass above ground net primary productivity and reproductive output in Kansas.

- Started spring 2019
- One location KS
- Defoliation of IWG monocultures (3.5 inches)
- Every Monday (April 1 – May 13)





Can alfalfa bicultures meet the N demand of intermediate wheatgrass.

3 Planting types:

- 30 in rows Kernza with 2 rows alfalfa
- Kernza monoculture in 10 in rows
- Kernza monoculture in 30 in row

5 different fertilization levels:

- 0 kg N
- 25 kg N
- 50 kg N
- 75 kg N
- 100 kg N







Collaborators:

- Craig Sheaffer
- Jake Jungers
- Luis Diaz-Garcia
- Valentin Picasso Risso

Thank You:

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