Breeding legumes for intercropping with Kernza

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Can we breed for intercropping with Kernza?

The Breeders Equation

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

- $i$ – the selection intensity
- $r_A$ – related to selection accuracy
- $\sigma_A$ – related to selectable genetic variance
- $L$ – the breeding cycle
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*The Breeders Equation*

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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
A company is an association or collection of individuals, whether natural persons, legal persons, or...

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

Thank You:
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