Yield Component Traits in Intermediate Wheatgrass Spaced Plants

Kayla Altendorf
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University of Minnesota
n = 1,200
10 families
1 common parent
$n = 1,200$
10 families
1 common parent

Flag Leaf Area
Spike Emergence
Flowering Time
Height
Fertile Tillers
n = 1,200
10 families
1 common parent

Flag Leaf Area
Spike Emergence
Flowering Time
Height
Fertile Tillers

Spikelets Spike\(^{-1}\)
Florets Spike\(^{-1}\)
Spike Compactness
Stem Diameter
n = 1,200
10 families
1 common parent

Flag Leaf Area
Spike Emergence
Flowering Time
Height
Fertile Tillers

Spikelets Spike⁻¹
Florets Spike⁻¹
Spike Compactness
Stem Diameter

Thousand Grain Weight
Floret Site Utilization
n = 1,200
10 families
1 common parent

Flag Leaf Area
Spike Emergence
Flowering Time
Height
Fertile Tillers

Spikelets Spike\(^{-1}\)
Florets Spike\(^{-1}\)
Spike Compactness
Stem Diameter

Thousand Grain Weight
Floret Site Utilization

Yield Spike\(^{-1}\)
Yield Plant\(^{-1}\)
<table>
<thead>
<tr>
<th></th>
<th>Fertile Tillers</th>
<th>Emergence Percent</th>
<th>Feekes Coded</th>
<th>Flag Leaf Area</th>
<th>Stem Diameter</th>
<th>Florets Spikelet-1</th>
<th>Spikelets Spike-1</th>
<th>Spikelet Density</th>
<th>Height</th>
<th>Floret Site Utilization</th>
<th>Thousand Grain Weight</th>
<th>Yield Spike-1</th>
<th>Yield Plant-1</th>
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<tbody>
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<td>Fertile Tillers</td>
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<td>Emergence Percent</td>
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<tr>
<td>Flag Leaf Area</td>
<td>0.32</td>
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<td>-0.05</td>
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<td>0.44</td>
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<td>Spikelet Density</td>
<td>-0.04</td>
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<td>-0.04</td>
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<td>-0.01</td>
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A Correlation and Path-Coefficient Analysis of Components of Crested Wheatgrass Seed Production

Douglas R. Dewey and K. H. Lu

Agronomy Journal, 1959

Structural equation modeling in the plant sciences: An example using yield components in oat

Eric G. Lamb, Steven J. Shirtliffe, and William E. May

Canadian Journal of Plant Science, 2011
Common Parent Mean

Donor Parent Mean

Progeny Mean

\[ h^2 = 0.63; H^2 = 0.84 \]

\[ h^2 = 0.62; H^2 = 0.76 \]

\[ h^2 = 0.91; H^2 = 0.87 \]

\[ h^2 = 0.61; H^2 = 0.80 \]

\[ h^2 = 0.62; H^2 = 0.76 \]

Family
Fertility Index
Reducing Sample Size

Sample Size $n = 1$

Sample Size $n = 2$

STP

TLI

2017

2018

Observed Spikelet Average

Observed Spikelet Average

$r = 0.91$

$r = 0.97$
8.5% fewer in the bottom 1/3, 12.5% fewer in the top 1/3
$r = 0.83 - 0.92$ depending on environment, increasing in the second year
Seed Count

• **Measured**: Seed Counter
• **Approximated**: Yield / Avg Seed Weight
  • $r = 0.94 = 0.99$ depending on environment
$r = 0.87, 0.89, 0.93, 0.99$
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