Growing recommendation
Hybrid Rye

Claus Nymand
Product Manager Hybrid Rye
USA and Canada
New type of rye – hybrid rye
Hybrid vigour

Continued yield progress through higher harvest index (grains/ear) – a key feature of modern hybrids
Big and heavy heads
Hybrid vigor – many tillers
Even distribution of seeds is necessary

Poor distribution will decrease the effect of hybrid vigor
Tillering capacity is considerable
Crop development at same stage
Wheat versus Rye
The root system as basis for high N-efficiency; description by Reid and Goss

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Root weight, g/plant</th>
<th>Root length, cm/plant</th>
<th>Root length, cm per cm³ soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loamy, sandy soil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maize</td>
<td>4,47</td>
<td>2406</td>
<td>10,8</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>1,43</td>
<td>1401</td>
<td>6,3</td>
</tr>
<tr>
<td>Rye</td>
<td>2,82</td>
<td>6121</td>
<td>27,6</td>
</tr>
<tr>
<td>Loam silt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maize</td>
<td>2,48</td>
<td>2146</td>
<td>8,2</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>0,98</td>
<td>1237</td>
<td>4,4</td>
</tr>
<tr>
<td>Rye</td>
<td>3,42</td>
<td>6621</td>
<td>23,6</td>
</tr>
</tbody>
</table>

- The root growth is an indicator for nutrient efficiency with Rye showing exceptional root length per plant.
Rye differs substantially from wheat in terms of its yield components with the stem contributing close to 60% of final yield.
Competition to weed

Winter triticale

Spring oat

Winter wheat

Hybrid rye
Hybrid rye field, Iowa 2018 (Jude Bekker)
Open spaces weed are seen but still depressed
Field kept clean right till harvest
When mature the Allelopathy disappears quickly!
Harvest direct first time it is under 18% of moisture
Ergot
Pollen Plus effect

PollenPlus: The amount of pollen released by PollenPlus hybrids (right) v a competitor Hybrid (left)
PollenPlus® in action!

- **Rapid fertilisation** minimises the opportunity for ergot to infest the ear.
- The picture is pollination in a commercial crop in Yorkshire spring 2015.

Photo courtesy of Agrii.
No crucial damage on plant before elongation
- 90% of ergot comes from plants delayed in development
Prevent development of ergot!

- Use Pollen Plus varieties (All KWS Hybrids are Pollen Plus®)
  - never use F2
- Follow the growing recommendation given.
Crop rotation

- Where do hybrid rye fit in?

  ➢ After an early
    • soya bean, dry beans, peas, canola, set a site
    • grass, alfalfa, corn for silage, spring crop for silage

  ➢ In general an early harvested crop which allow the hybrid rye to be planted in September.
Planting time – what will be optimum?

We assume optimum will be mid to end Sep., but need local approval.
- The goal will be to get root and tiller development in Autumn before the winter.
- Also to find the economic best seeding rate.
Seeding rate

- 0.8 unit/acre

  - Means 800,000 viable seeds/acre
  - Weight in lb per unit will be given on the bag/tote
  - Small bags (0.8 unit/bag) or 12 and 25 unit totes will be available.
Correct establishment is the most important

- Establishment the most important at low seeding rates
- Correct planting depth is max 1 inch!

Effect of planting depth in hybrid rye, avr. of 9 trials in 2013-2014 (0,6 mill pl. pr. acre)

<table>
<thead>
<tr>
<th>Planting depth</th>
<th>Yield, lbs/acre</th>
<th>Difference, lbs/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,8 inch</td>
<td>8345</td>
<td>-</td>
</tr>
<tr>
<td>1,6 inch</td>
<td>8141</td>
<td>-204</td>
</tr>
<tr>
<td>2,4</td>
<td>8007</td>
<td>-338</td>
</tr>
</tbody>
</table>
Nitrogen strategy

- Early N-retention in spring time
- Plateau of N-retention already at EC 40
Fertilization strategy

Autumn
50-100% of PK (total need 20/50 lb/acre)
20 – 30 lb N/acre Autumn
If manure then apply all in autumn

Total N application = expected yield in Bushels x 1,12 – N-min (N available in soil)

Liquid manure until ST 32

<table>
<thead>
<tr>
<th></th>
<th>March</th>
<th>April</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC</td>
<td>29</td>
<td>30</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>37</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>51</td>
<td></td>
</tr>
</tbody>
</table>
Hybrid rye grain production

• Milling
  - For all kinds of baking
  - Rye flakes
  - Rye porage
  - Chips
  - Pasta

• Distilling
  - Whisky
  - Vodka

• Malting
  - Beer
  - Spirits (whisky)

• Feeding
  - Hogs
  - Cattle
  - Hens and boilers
Wisconsin trial results

Wisconsin 2018, Bu/ac

<table>
<thead>
<tr>
<th>Variety</th>
<th>Test weight (lb/bu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KWS Dolaro</td>
<td>54</td>
</tr>
<tr>
<td>KWS Binntto</td>
<td>53</td>
</tr>
<tr>
<td>KWS Serafino</td>
<td>55</td>
</tr>
<tr>
<td>Brasetto</td>
<td>54</td>
</tr>
<tr>
<td>KWS Bono</td>
<td>55</td>
</tr>
<tr>
<td>KWS Daniello</td>
<td>54</td>
</tr>
<tr>
<td>FS624</td>
<td>57</td>
</tr>
</tbody>
</table>
New fertilization research ongoing 2019 – the goal is to find the optimum nitrogen level
Rye for cattle feeding

- **Silage**
  - Early cut
  - Late cut
  - Grain silage

- **Grazing**

- **Grain and silage feeding**
**Silage trials results - Wisconsin**

<table>
<thead>
<tr>
<th>Cut Date</th>
<th>DM</th>
<th>lb/ac</th>
<th>Milk/acre (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KWS Daniello</td>
<td>6265</td>
<td>9072.67</td>
<td></td>
</tr>
<tr>
<td>KWS Progas</td>
<td>6692</td>
<td><strong>9384.93</strong></td>
<td></td>
</tr>
<tr>
<td>KWS Propower</td>
<td>6591</td>
<td>8615.17</td>
<td></td>
</tr>
<tr>
<td>Trical 815</td>
<td>5895</td>
<td>8203.63</td>
<td></td>
</tr>
<tr>
<td>KWS Daniello</td>
<td>12025</td>
<td>13756.23</td>
<td></td>
</tr>
<tr>
<td>KWS Progas</td>
<td>12532</td>
<td><strong>15357.46</strong></td>
<td></td>
</tr>
<tr>
<td>KWS Propower</td>
<td>12842</td>
<td>15522.89</td>
<td></td>
</tr>
<tr>
<td>Trical 815</td>
<td>9772</td>
<td>10920.32</td>
<td></td>
</tr>
</tbody>
</table>

- KWS Progas will be the variety for silage.
- For early cutting it is important that this is done on late flag leaf – highest proteing and best quality.
- As whole plant silage it is important the hybrid rye is cut at milky stage (not dough stage) – this gives the highest yield and best quality.
Early cut for high quality silage

- High moisture at cutting – leave in windrow for a day before chopping.
One day growth
Why Hybrid Rye for forage?

- Higher biomass yield than any other cereal
  - more beef/acre
  - Higher stocking rates/acre
  - More milk/acre
- Early spring feed source
- Possibility for double cropping
  - Silage or grazing
- Diversity
- Strong competitor to weed
- Soil Health
Later - Ear silage (dough stage)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>65</td>
</tr>
<tr>
<td>Ashes</td>
<td>3,3</td>
</tr>
<tr>
<td>Protein</td>
<td>10,1</td>
</tr>
<tr>
<td>Sugar</td>
<td>6,0</td>
</tr>
<tr>
<td>Starch</td>
<td>51,9</td>
</tr>
<tr>
<td>Mj/kg dm</td>
<td>7,3</td>
</tr>
</tbody>
</table>
How Does Ryelage Compare to Other Silages?

- **ME**
- **NEm, Mcal/lb**
- **NEg, Mcal/lb**
- **CP, % DM**

1. Wheat Silage
2. Triticale Silage
3. Corn Silage

1NASEM (2016)
Grazing Research

- Initial results, AAFC Lacombe fall 2018 – 1 year
  - Cows gained 2.2lbs/day on whole trial (annual cereal) vs loss 0.9lb/day barley swath grazing
  - Body condition improved from 2.88 to 3.96 on whole trial vs reduction of 3.36 to 2.7 on swath grazing
- Crude protein
  - Rye - 18-30% crude protein, estimated 75-80% digestible
  - Barley - 12% crude protein, estimated 65% digestible
- Forage yield
  - Individual yields still being calculated
  - Hybrid fall rye had the most dense dry matter by the eye
AAFC Research – hybrid rye
Hybrid rye for hog producers – Tom Franzen
Thanks for attending

Claus Nymand