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INTRODUCTION
Successful hybrid fall rye production relies on effective planning. Hybrid fall rye agronomy differs from open pollinated varieties because roots more aggressively, tillers more and has a much higher capacity for yield. These differences significantly impact production techniques and it is our pleasure to provide production tips to help growers have a great experience with hybrid fall rye.

WHY HYBRID FALL RYE
✓ Profit potential – It is the most profitable cereal crop.
✓ Risk management – It diversifies weather related risks from planting only spring crops.
✓ Workload management – It allows management of more acres with similar overhead costs.
✓ Marketing management – It diversifies cereal production to include different food, feed and fuel markets.
✓ Environmental management – It uses less water, nitrogen and crop protection than other cereals. It reduces soil erosion, improves soil health and minimizes wildlife disturbance.

FIELD SELECTION AND SEEDING PREPARATION
Field selection and seeding preparation is very important for all winter cereal crops. Here are some key guidelines to optimize establishment, winter survival and yield for hybrid fall rye.

PREPARATION CHECKLIST
✓ Field selection
  o Choose a field with good drainage and standing straw greater than 6”.
  o Planting after canola provides good stubble and disease rotation from ergot and fusarium
  o Choosing a field without straw cover requires more attention to seeding and emergence, as outlined below, along with good snow cover and/or moderate winter temperatures.
✓ Controlling weeds in fall is critical to eliminate weed competition and reduce/eliminate spring spraying.
✓ Conduct fall soil tests to develop a fertilization plan to maximize yield potential.
✓ Mowing grasses around selected fields in the previous year can further reduce ergot inoculum.
SEEDING AND FALL ESTABLISHMENT

Seeding and fall establishment are critical for winter survival and yield. Hybrid fall rye is different from other cereals in that it has a much more robust root system and develops significantly more tillers. This is why hybrid fall rye is planted at significantly lower seeding rates than winter wheat or conventional fall rye.

SEEDING CHECKLIST

✓ Hybrid fall rye should generally be seeded between August 15 and September 15. Earlier seeding provides for improved root and crown development for best winter survival and emergence next spring. Preference is to establish 2 leaves with 2-4 tillers prior to winter onset.

✓ Hybrid fall rye must be seeded at a rate of 0.8 units (800,000 viable seeds) per acre to achieve 18.5 plants per square foot for best yields. Higher or lower seed rates will result in lower yield potential.

✓ Seeding to a depth of ¾” -1” with 7-8” row spacing is preferred. This will optimize emergence and even tillering which is key to ergot management, crop quality and maximum yields.

✓ Use tramlines if any ground spraying is planned. Mechanical damage to hybrid fall rye plants from equipment trampling heightens ergot infections. Good field selection, seed preparation, seeding practices and strong emergence may eliminate the need for this operation. Alternately consider aerial application.

✓ Apply starter fertilizer (some N and all PKS) as per soil test with the same placement as other cereals. Sulfur levels are important in hybrid fall rye production and the entire nitrogen plan may be applied in fall at seeding if release can be planned for early spring activation.

SPRING SCOUTING AND FERTILIZATION

Spring scouting should be done early in spring to evaluate plant survival and to plan for early application of nitrogen fertilizer that was not done in the fall. Apply spring nitrogen as soon as roots are starting to activate. Early fertilization in hybrid fall rye is key to maximizing early and even tillering which will promote the highest yields, best quality and least ergot.

SPRING SCOUTING AND FERTILIZATION CHECKLIST

✓ Scout your crop early in spring when average soil temperatures exceed 0°C.

✓ Uproot plants and look for new white roots protruding from the crown. Do not rely solely on above ground appearance as it’s the live roots that will determine survival at this early stage. Waiting for above ground growth may result in applying fertilizer too late. Early fertilizer application and timing for hybrid fall rye is critical as most yield potential is already determined by stem elongation (BBCH30).

✓ Hybrid fall rye is 20% more efficient at utilizing N than wheat, so apply 20% less N than you would for similar wheat yields.
PEST MANAGEMENT
In hybrid fall rye, much of the weed management is completed in fall at seeding. In many cases no further crop protection in spring is required. Good field selection, fall weed control, early seed timing, early fertilization, correct seed rate and row spacing will have a strong influence on whether further weed control is required. Hybrid fall rye is an allelopathic plant which will further augment weed control. If in-crop spraying is required for any reason, use tramlines or spray aerially to minimize ergot production.

SPRING PEST MANAGEMENT CHECKLIST
✓ Scout fields early to determine economic weed threshold. If spraying is required, early use of registered products when the crop is under 3-4” tall and before jointing is recommended.
✓ A foliar spray of fungicide may be a good option if any early leaf diseases such as tan spot, septoria, or rusts are present or are expected to be a concern.
✓ Hybrid fall rye is less susceptible to fusarium head blight than wheat. In Europe, results have shown a correlation of increased ergot with fungicide spraying during anthesis. Spraying at this stage should be avoided unless there is a high risk of fusarium head blight infection.
✓ There are no pesticide options for ergot control. All actions are cultural and discussed previously.

HARVESTING
Hybrid fall rye is known for its uniformity and easy harvesting when days are longer, warmer and drier.

HARVESTING CHECKLIST
✓ You can straight cut hybrid fall rye as grain filling and ripening is generally uniform.
✓ When combining, use lower cylinder threshing speeds and manage concaves to minimize broken and peeled kernels. This will maintain the highest quality for millers, distillers and maltsters.
✓ Rye is generally stored under 13.5% moisture. Harvesting at slightly higher moisture levels can reduce harvest damage and help achieve good grain quality. Harvesting with moisture levels over 18% can adversely affect quality and falling number when dried.
✓ Preharvest glyphosate applications are not registered in fall rye and could affect marketability of the crop.
Appendix A

1. Planting timing is key for optimum yields.

2. Seeding depth has a clear effect on yields.

3. Seeding rate has a high correlation to yield results.

4. Seeding rate has numerous effects on agronomy.

All slides are courtesy of KWS SAAT SE Group. KWS is a world class crop breeder and breeder of FP Genetics hybrid rye located in Einbeck, Germany.
5. Rye tillers earlier and more than wheat.

6. Consistent plant growth and uniform heading is key to ergot management.

7. Rye has an extensive roots system compared to corn and alfalfa.

8. Rye is the most winter hardy of the European winter cereals and has improved water and nitrogen use.

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The root system as basis for high N-efficiency; description by Reid and Goss

<table>
<thead>
<tr>
<th></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>
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<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>
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<tr>
<td>Loam silt</td>
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<tr>
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<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.