

Hybrid Rye Product pipeline USA

SEEDING
THE FUTURE
SINCE 1856



Our core competence is crop breeding



Higher yields, superior disease and pest resistance, suitability for a wide range of end uses, and improved performance in adverse conditions are all key criteria we seek to establish in our product portfolio.

KWS is widely recognized as one of the key breeding companies world wide with leading maize, sugar beet and cereal products and operates in over 70 countries. The KWS Group has a worldwide seeds turnover of over €1.0 billion and employs around 5000 people.

Most importantly, the KWS Group reinvests 15% of its annual turnover in breeding and research and this ensures the continuing pipeline of innovative new varieties.

Growers anywhere across USA can be assured that whatever KWS select, it has been developed using the same professional competences applied across all our breeding teams. It will be a variety that is one of the most reliable, innovative and market-leading selections available, tailored and tested for the conditions and regions they farm.

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KWS Daniello

Hybrid Rye

Pollen

PLUS

CO₂

EFFICIENT

SEEDING
THE FUTURE
SINCE 1856

KWS



Pollen +

Leading multi-purpose hybrid rye!

- **Multi-purpose hybrid (grain and silage)**
- **Very stiff straw**
- **Robust disease resistance**
- **Very high grain yield**

KWS Daniello offers high yield performance for grain with a strong harvest index (grains/ear). End markets for grain include milling and distilling as well as increasing interest for swine feeding diets.

As silage the hybrids delivers high biomass yield when cut on an early stage.

Ergot resistance is assured using KWS' PollenPlus® technology. The vigorous growth gives an aggressive competition to weed and an ideal addition to all arable rotations.



Variety Profile	
Type	Hybrid 100% F1
Seeding depth	0.8 inch
Seeding rate	0.8 unit/acre
1 unit = 1 Mill viable seed	
Agronomics	
Winter hardiness	very high
Heading	mid-late
Plant height	short
Lodging	very low
Ability to tiller	Very high
Yield potential	
biomass	high
Grain	high - very high
Disease profile	
Ergot	Very low
Leaf rust	Very low
Mildew	mid
Rhynco	low
Falling number	high
Amylogramm (temp)	mid-high

The Importance of Whole Grains and Dietary Fibre



Cereals are the most important source of dietary fibre in the diet. The fibre in cereals is located mainly in the outer layers of the kernel, particularly in the bran. Rye is of special importance in contributing dietary fibre, because it is generally consumed as whole grain products, and has a high dietary fibre content in the starchy endosperm.

Dietary fibre is the part of plant foods that is not digested and absorbed in the upper gastrointestinal tract. It may be described as non-starch polysaccharides, enzyme-resistant starch and lignin. Non-starch polysaccharides and lignin mainly originate from the cell walls of plant foods

The Chemical Composition of Rye, Wheat and Oats

Component	% of dry matter			
	Rye 100	Wheat 100	Wheat 66	Oat Groat
Protein	10-15	12-14	13	13-16
Fat	2-3	3	1	6-7
Starch	55-65	67-70	84	54-64
Ash	2	2	0,5	2
Total dietary fibre	15-17	10-13	3	11-13
of which soluble fibre	3-4	1-2	0,9-2,0	3-5

Key advantages for monogastric feed - pigs:

•Unique characteristics of rye grain

- Higher **lysine:protein ratio** in comparison to other cereals
- Low Glycemic Index (GI) and **high satiety**
- Decreased gut ulceration** from a higher dietary fibre content
- High levels of occupation [chewing] and less boredom
- Increased welfare and **reduced stress** (nipping, bruising, mounting etc..)

•Rye supports a very high fructane content

- Fructan is a structural component of all cereal grains, however rye has the highest fructane content amongst all cereal species
- Fructan is digested in monogastics via the hind gut
- is subsequently **converted to butyrate**
- In pigs this has the potential to **limit skatol release** (a contributing factor in boar taint and low consumer acceptability)
- Additionally a **lower risk of salmonella** (via the higher absorption of butyrate) from high fibre diets using rye

•Rye inclusion recommendations: (LW basis and % Rye inclusion)

- Fattening pigs:** (28- 40 kg) **30% Rye**, (40 – 60 kg) **40% Rye**, (60 kg) + **50% Rye**
- Sows: 25%Rye
- Piglets: (15 kg +)– 10 - 20% Rye

Key advantages for Rye for ruminant feed - cattle:

- The lower protein content of rye compared to wheat and triticale make it suitable both for maize silage-based, starch-rich rations as well as for protein-rich rations with a high volume of grass and leguminous crops
- TMR (Total Mix Ration) systems for **dairy nutrition** also offers the possibility of directly mixing in rye, preferably in crushed / crimped form
- Rye for **beef finishing** can safely supplement wheat depending on the target LGW, and acts as a cost-effective concentrated feed grain in beef cattle rations

Management recommendation



Agronomic advantages of hybrid rye:

- Extreme winter hardiness and frost resistance
- Aggressive tillering capacity
- Drought tolerance – ideal for sandy soils
- Blackgrass suppression – via light reduction in the canopy
- Extends crop rotation
- Very high take-all tolerance – ideal as a second cereal
- Minimal ergot risk – via PollenPlus®
- CO₂ efficient



Ergot

Ergot is a fungus that occurs on over 400 species of grass, including most types of cultivated grain and the mycotoxin that the fungus produces are highly toxic to humans and livestock. There are no resistant varieties, seed treatments or pesticides that will control ergot; high pollen producing varieties (such as PollenPlus) and correct management of the crop is the only method to control this disease.

The susceptibility of common grains in descending order is:

Rye

Triticale

Sorghum

Durum and corn

Wheat and barley

Oats



Infection Factors: Weather, Location, Agronomy

Cold, rainy weather or irrigation during flowering hinders pollination and promotes ergot infection. While there is nothing to be done about the weather, irrigation can and must be controlled.

Irrigation should only be done in 3 stages - at first and second elongation of the stem is the most important. Under very dry conditions it will also be recommended to irrigate at grain filling approximately 2 weeks after finished flowering. Hybrid rye only need 250- 300 mm water for the whole growing season.

Agronomy

One of the most important factors to prevent ergot is correct establishment. By this is meant to have even seeding depth, even distribution of seeds planted and right seeding rate. If all this is correct it will secure even plant development and thereby even and quick flowering. The most pollen is available when all plants flowers at the same time and pollen will always win the competition to the ergot spores in order to pollinate the flower.

- **Seeding rate:** We recommend a seeding rate of 0,8 unit per acre (800.000 viable seeds per acre) You will get the weight per unit by the seed distributor – use this weight to set your planter. 1 unit holds 1 mill viable seeds. To ensure the correct amount of plants emerging you have to take into account the seedbed conditions and adjust your seeding rate accordingly.
- **Seeding time:** The window for seeding is a bit wider than winter wheat due to much better winter hardiness. If the soil conditions are very dry then it is recommended to wait for moisture to secure even emergence (remember at low seeding rate we cannot lose any seeds to emerge!!)
- **Seeding depth:** We recommend to plant not deeper than 1 inc but 0,8 inc should be the goal – therefore be careful with the speed at planting as most planters are not good in even distribution of seeds at high speed and low seeding rates. If you plant too deep we often do not get the tillers in autumn that we want - tillers developed in autumn brings the main and strong stems with the nice big ears and big grain. It also secure an even development in spring.
- **Weed control:** It is recommended to clean the field well before planting. If a spring application is necessary, it should be done as early as possible and best before first elongation where hybrid rye is less susceptible to damage from herbicides. Use of MCPA is not recommended as it normally will be used after first elongation, when temperature is high enough for use. MCPA can affect the flowering and pollen setting which can lead to ergot development.
- **Fertility:** Ensure all nutrients are available as soon as the regrowth starts in spring. N-fertilization is normally depending on expected yield but can usually be set to about 20% less than what is required by winter wheat.

Management recommendation



- **Tramlines:** Always use tramlines if you plan to drive in the crop after the first elongation. Damage from tractor and equipment tires where there are no tramlines will damage plants – these plants will be delayed in development and flowering which very often means lots of ergot along the tramlines.
- **Fungicides:** Mostly it will not be needed to apply fungicides during growing season. If needed – **we recommend not to apply fungicides around flowering time:** Rye as an open pollinating crop is more susceptible to fungicide sprays than wheat. Rye is more resistant to head scab (Fusarium-Head Blight) than wheat – therefore also no need for fungicide at this stage.
- As written before all grasses can and do multiply the ergot fungi and the ergot can therefore be found in all soils. In cultivation systems with no till the ergot concentration on the soil surface and upper layer of soil is higher than where plowing is used. Therefore, it is even more important that establishment and correct management is followed as recommended to ensure even development and flowering. Wherever it is possible keep the grasses away and prevent them to multiply ergot – mow them or spray against. Good rotation will also keep the grasses down.
- Finally – keep a good eye on the field during the last 3 weeks before the harvest and observe if some areas of the field have more ergot than other areas. If so it leaves the infected areas and harvest them separately not to infect the whole grain lot.
- IN WHOLE IT ALL LOOKS VERY COMPLICATED, BUT IT IS ACTUALLY VERY SIMPLE AS IT DOES NOT REQUIRE SPECIAL EQUIPMENTS – JUST GOOD MANAGEMENT.
- **Remember all KWS hybrids rye are PollenPlus hybrids – best security for good pollination**

Notes

KWS

