

Farming Spelt for Fun and Profit

by

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Heritage and Ancient Grains

Spelt (image on left) *Triticum aestivum*
ssp. spelta

Einkorn

Emmer

Heritage hard and soft wheat varieties

Other small grains

Cereal rye

Barley – feed and malting

Winter wheat

Numerous other grains are out there, too!



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Spelt Production in the United States

1st reported in the 1909 census with most of production in Central Plains states

In 2011, top four organic spelt producing states:

1. New York (2,927 acres)
2. Michigan (2,187 acres)
3. Ohio (1,861 acres)
4. Pennsylvania (1,009 acres)

PA is a top 5 producer!



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**In 2012, Pennsylvania
farmers harvested 2,423
acres of organic and
conventional spelt and
emmer.**

Spelt Production in Pennsylvania



Differences between spelt and other small grains

- Hulled, or “covered” wheat
 - Emmer & einkorn also
- Similar nutrition to oats
- Favorable protein profile for flour
- More post-harvest processing required



Agronomics

- Calibrate for **hulled** seed at 80 - 130lb/A
 - Start with oats setting on your drill
- 1 1/4" deep
- Tilled or no-till
- Aim for planting similar to wheat timing



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- Emerges a bit slower than wheat, but puts on biomass rapidly
 - Fertilize similar to wheat, but avoid excess N on tall varieties
 - Timely fall establishment ensures good winter survival



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- Harvest mid-late July
 - Aim for 14% moisture
 - Set concave to avoid de-hulling the kernels during combining



**Small scale thresher for
hulled grains such as
spelt, einkorn, and
emmer.**



Small scale thresher for hulled grains such as spelt, einkorn, and emmer.



Winnower for separating the threshed hull from the grain.



Cleaned spelt grain with a few remaining hulls to the right in the photo.



Cleaning grain prior to milling is one of the hurdles for local mills.

Farming Spelt Challenges



Production Challenges

Prone to lodging

Longer season than wheat—difficult to work in a double crop

Particular storage and processing needs

Disease susceptibility

cv. 'Maverick' at SEAREC 2018





Disease Challenges in Mid-Atlantic

Powdery mildew

Septoria blotch

Stagonospora blotch

Leaf rust

Fusarium head blight (a.k.a. scab)



Farming Spelt

Opportunities





Opportunities

Produces ample straw

Less susceptible than wheat to
FHB

Can serve as animal feed
forage
grain (treat as oats)

Valued in organic and specialty
products



Image: Deer Creek Malthouse





October 2017 – July 2018: three varieties on-farm and four varieties on station
October 2018 – July 2019: same as 2017
October 2019 – July 2020: same as 2018

USDA-NIFA's Sustainable Agriculture Research and Education program (project SARE LNE17-356-32231)



'Comet'

USDA-NIFA's Sustainable Agriculture Research and Education program (project SARE LNE17-356-32231)



'Maverick'

USDA-NIFA's Sustainable Agriculture Research and Education program (project SARE LNE17-356-32231)



'Sungold'

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Heading and flowering timing can vary among varieties. May 28, 2018



Spelt varieties at ripening, 2020



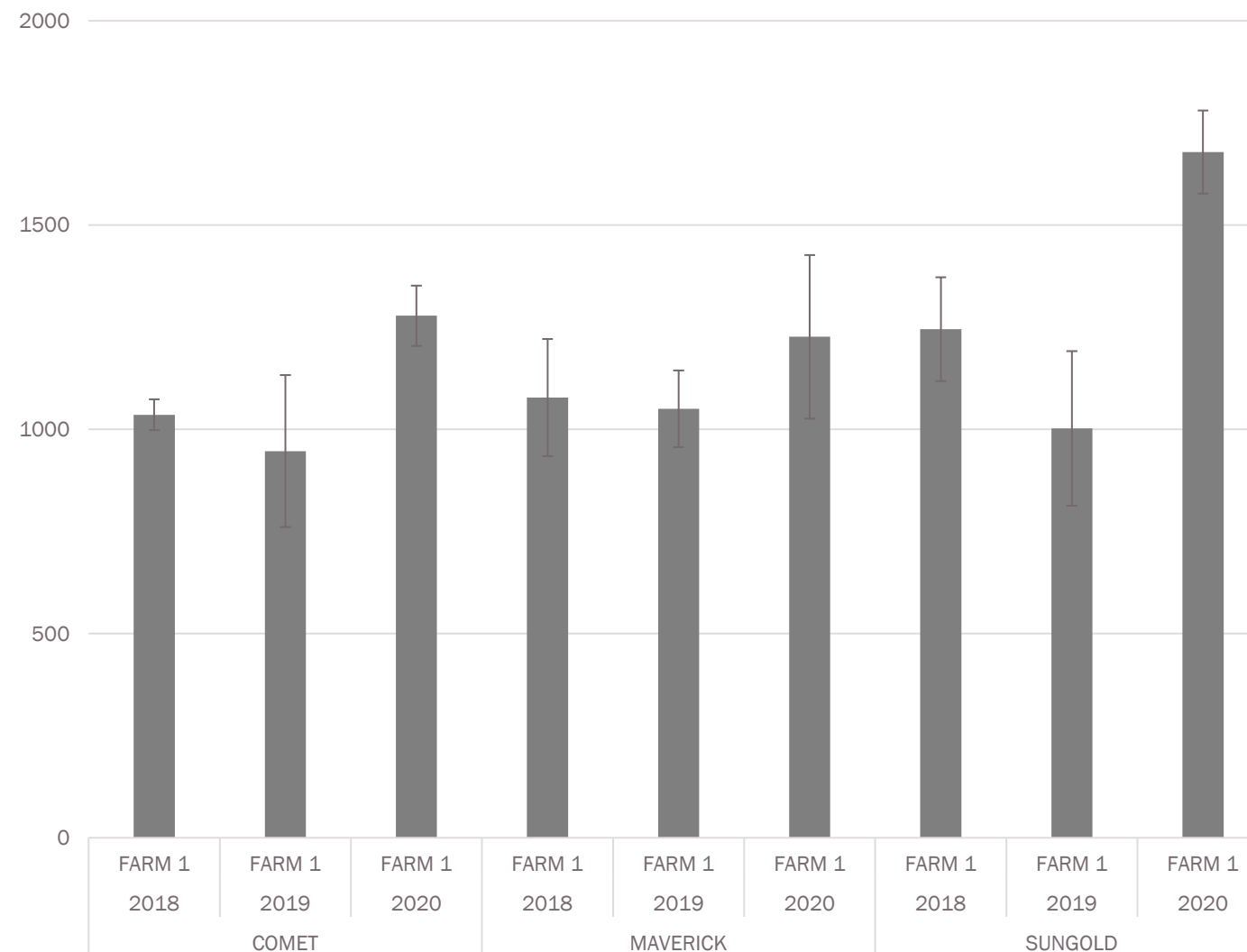


Drill calibration is essential for both hulled and de-hulled seed!
Actual seeding rates can vary widely. Target seeding rate is 130 lb/A.

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Spelt Yield (lb/A)



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Understanding quality measures

- Protein
 - Optimal range is subjective depending on intended use
- Falling number
 - FN>300 No sprout damage
 - 300>FN>200 Some sprouting
 - 200>FN Severe sprout damage



MOISTURE CONTENT (%, NIR)		PROTEIN CONTENT (%, NIR)	FALLING NUMBER (SEC)
2018			
COMET			
FARM 1	13.0	14.5	350
FARM 2	12.7	14.2	371
SEAREC	12.8	16.2	352
MAVERICK			
FARM 1	13.0	10.4	360
FARM 2	12.9	11.4	353
SEAREC	12.8	12.5	343
SUNGOLD			
FARM 1	12.9	11.2	372
FARM 2	13.0	13.4	366
SEAREC	12.8	13.2	336
SONIC			
SEAREC	12.6	15.1	353



Take home

- Spelt performs well compared to wheat with few extra agronomic complications
- Requires a bit of preplanning
 - Work with your buyer to determine their needs first
 - Choose your variety and its placement in your rotation accordingly



Support provided by

This material is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, through the Northeast Sustainable Agriculture Research and Education program under subaward number project SARE LNE17-356-32231



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All images by A. Collins or E. Bosak, Penn State, except where otherwise noted.



Questions? Comments?

- Please also share your experiences with spelt!