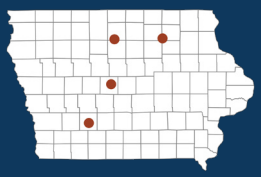
PRACTICAL FARMERS OF IOWA
COOPERATORS' PROGRAM Farmer-Led Research

EXPERIMENT



2025

# Cereal Rye Variety Trial 2026


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## In a Nutshell:

- 12 cereal rye varieties were trialed at four Iowa State University research farms.

## Key Findings:

- Across all sites and varieties, hybrid cereal rye varieties averaged 84 bu/ac while open-pollinated varieties averaged 62 bu/ac.
- No one hybrid variety yielded statistically significantly higher than other hybrid varieties across sites.
- Not one open-pollinated variety yielded statistically significantly higher than other open-pollinated varieties. However, ND Gardner, ND Dylan and Elbon were consistently the lowest yielding varieties across sites.

## Cooperators

ISU Northern Research Farm (Matt Schnabel) – Kanawha
ISU Northeast Research Farm (Ken Pecinovsky) – Nashua
ISU Ag Engineering and Agronomy Farm (Mike Fiscus) – Boone
ISU Southwest Research Farm (Matt Schnabel) – Greenfield


## Funding

USDA-NIFA; Albert Lea Seed House; Green Cover Seed; North Dakota State University; KWS; FP Genetics


## BACKGROUND

This was the eighth year that Practical Farmers of Iowa coordinated cereal rye variety trials at Iowa State University research farms at Nashua (northeast Iowa); the seventh year at ISU research farms at Kanawha (north-central Iowa); and the sixth year of trials at ISU research farms at Boone (central Iowa) and Greenfield (southwest Iowa).

In the previous seven years of rye variety trials on ISU farms, SU Cossani, SU Performer, KWS Receptor and KWS Serafino have been the top yielding varieties across sites [1], [2], [3], [4], [5], [6], [7]. Overall, yields in PFI's small-grains variety trials have varied quite a bit between years due to weather conditions and the retention and addition of higher performing varieties in the trials. In 2025, the average cereal rye yield across the three participating Iowa research farms was 53 bu/ac [7]. Wet conditions throughout late spring and summer led to challenging weather conditions and the experiment at Kanawha was abandoned. In contrast, cereal rye variety trials conducted by the University of Minnesota which included varieties Danko, Hazlet, KWS Receptor, KWS Rixor, KWS Serafino, KWS Tayo and Rymin reported an average yield of 114 bu/ac in 2025 [8]. In 2024, the average cereal rye yield across the four participating Iowa research farms was 89 bu/ac [6]. In 2023, the average cereal rye yield across the four Iowa research farms was 42.6 bu/ac [1].



*Rye test plots in Boone, IA. Photo taken June 30, 2026.*

## METHODS

*Design*

Variety trials were conducted at four locations in 2026: ISU Northern Research Farm in Kanawha; ISU Northeast Research Farm in Nashua; ISU Ag Engineering and Agronomy Farm in Boone; ISU Southwest Research Farm in Greenfield. Production characteristics and some breeding history about each of the trialed varieties can be found in **Table 1**. SU Cossani was trialed only at Nashua, which trialed twelve varieties. Kanawha, Boone and Greenfield trialed eleven varieties. Information on winter hardiness, days to heading, plant height and ergot susceptibility can be sourced from the University of Minnesota [9].

TABLE 1: Origin, characteristics and seeding rate of cereal rye varieties trialed in 2026.

| VARIETY | AGENT OR BREEDER | PVP[a] | TYPE | SEEDING RATE (lb/ac)[b] |
|---|---|---|---|---|
| Danko | Danko Hodowla Roślin | None | Open-pollinated | 83.2 |
| Elbon | Oklahoma St. Univ. | None | Open-pollinated | 59.7 |
| Hazlet | Agriculture and Agri-Food Canada | None | Open-pollinated | 92.9 |
| KWS Receptor | KWS | PVP (94) | Hybrid | 48.6 |
| KWS Rixor | KWS | PVP (94) | Hybrid | 52.1 |
| KWS Serafino | KWS | PVP (94) | Hybrid | 59.5 |
| KWS Tayo | KWS | PVP (94) | Hybrid | 48.5 |
| ND Dylan | North Dakota St. Univ. | PVP (94) | Open-pollinated | 75.6 |
| ND Gardner | North Dakota St. Univ. | PVP (94) | Open-pollinated | 66.0 |
| SU Bebop | FP Genetics | None | Open-pollinated | 90.7 |
| SU Cossani | FP Genetics | None | Hybrid | 67.3 |
| SU Performer | FP Genetics | None | Hybrid | 73.3 |

[a] Plant Variety Protection. The PVP Act provides a certificate to the developer of a variety granting exclusive rights for reproducing and marketing the seed.
[b] Calculated from seed lot weights (no. seeds/lb) and germination rates (%) to achieve target populations of 25 seeds/ft$^2$ (open-pollinated) or 18.4 seeds/ft$^2$ (hybrid).

Rye management information is provided with the results from each site. No herbicide, insecticide or fungicide were applied at any location. Rye was planted at seeding rates (lb/ac) listed in **Table 1** to achieve seeding rates of 25 seeds/ft$^2$ for open-pollinated varieties and 18.4 seeds/ft$^2$ for hybrid varieties. All varieties were planted on 7.5 in. row spacing at 1.25 in. depth. Each location measured grain yield, grain test weight, plant height at harvest and % lodging. Nashua also measured and reported straw biomass. Reported yields are corrected to 14% moisture content. Cumulative monthly precipitation and average monthly temperature during the cereal rye growing season sourced from the NASA POWER dataset are provided for each location [7,8].

We analyze and report variety results separately for each trial location. At each location, the 3-year average yield is provided for individual varieties that have been trialed at the site in previous years. At Nashua, Boone and Greenfield, this average includes the years 2026, 2025 and 2024. At Kanawha this includes the years 2026, 2024 and 2023 due to crop failure in 2025. A "% of site average" is also included to aid in comparing yields of varieties within each location; this is the 2026 yield of a variety divided by the average yield across all varieties grown at the site in 2026. We used Analysis of Variance (ANOVA) followed by a Tukey's Significant Difference test to determine if there were statistically significant differences in yield, test weight, plant height and lodging across varieties at individual sites. Tukey's test calculates a statistic called the Minimum Significant Differences (MSD); if the difference in yield, etc. between two varieties is greater than the MSD, we consider the yields significantly different. Statistical significance is determined at the 90% confidence level, meaning that if the experiment were repeated, we would expect to see the same results nine times out of ten.

## RESULTS AND DISCUSSION

Winter of 2025-2026 was dry and precipitation levels were almost double the average in April and half average in May at all four sites [10], [11].

Across all sites and varieties, average 2026 rye variety trial yield was 73 bu/ac. This is up from 53 bu/ac in 2025 but down from 89 bu/ac in 2024. No cereal rye varieties made test weight (56 lb/bu) this year at any of the four sites. However, all varieties at Kanawha, Nashua and Greenfield had test weights of 52 lb/bu or higher and likely could have made test weight after standard grain cleaning procedures. Lodging was higher at Kanawha and Greenfield than at Boone and Nashua, especially among open-pollinated varieties.

Hybrid cereal rye varieties averaged 84 bu/ac while open-pollinated varieties averaged 62 bu/ac across all sites. Hybrid varieties were, on average, about 6 in. shorter than open-pollinated varieties. Hybrid varieties were about 5% lodged at harvest while open-pollinated varieties were about 23% lodged on average.

Across all four sites, hybrids SU Cossani (90 bu/ac), KWS Rixor (90 bu/ac), SU Performer (86 bu/ac), KWS Serafino (83 bu/ac) and KWS Receptor (82 bu/ac) were the numerically highest yielding varieties. These five hybrid varieties yielded statistically significantly higher than open-pollinated SU Bebop (69 bu/ac), Danko (67 bu/ac), ND Dylan (53 bu/ac), ND Gardner (48 bu/ac) and Elbon (39 bu/ac) but not hybrid KWS Tayo (82 bu/ac) or open-pollinated Hazlet (70 bu/ac). There were no statistically significant differences in test weight across varieties. Across sites, lodging was significantly higher in ND Gardner and ND Dylan than all other varieties.

At Nashua and Boone, there were few statistically significant differences in yield between hybrid and open-pollinated varieties. At Greenfield all five hybrid verities outyielded all or most open-pollinated varieties. At Kanawha, KWS Rixor outyielded all open-pollinated varieties and the other four hybrids outyielded ND Gardner, ND Dylan and Elbon.

There were no statistically significant differences in yield between the five to six hybrid varieties trialed at individual sites, and no consistent differences across sites; no single variety had consistently numerically higher yields. There was similarly no open-pollinated varieties that consistently yielded significantly better than others across sites. SU Bebop yielded significantly higher than ND Gardner, ND Dylan and Elbon at Kanawha. Hazlet and Danko yielded higher than ND Gardner, ND Dylan and Elbon at Greenfield.

**ISU Northern Research Farm, Kanawha**

Previous crop: Soybeans

Replications: 3

Harvested plot size: 5 ft × 59.5 ft

Fertilizer applied: 27.5 lb N/ac, 130 lb P/ac, 150 lb K/ac applied on Nov. 5, 2025

40 lb N/ac applied on March 30, 2026

Planting date: Oct. 10, 2025

Harvest date: July 30, 2026

Kanawha

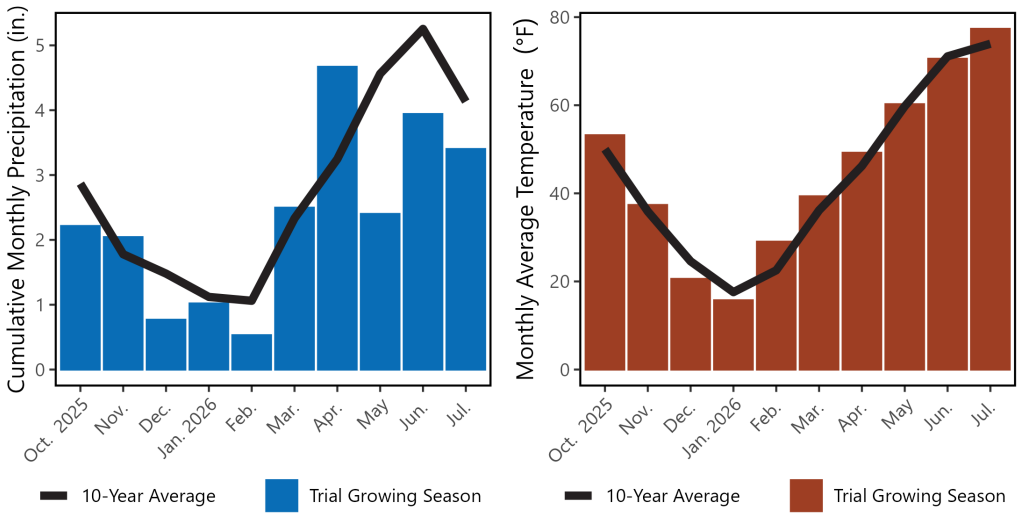



TABLE 2: 2026 Cereal Rye Variety Trial at Northern Research Farm, Kanawha.

| VARIETY | YIELD (bu/ac) | | YIELD (% of 2026 site mean) | TEST WEIGHT (lb/bu) | PLANT HT at HARVEST (in.) | LODGING (%) |
|---|---|---|---|---|---|---|
| | 2026 | 3-Year Average[a] | | | | |
| Danko | 70 | -- | 97% | 54 | 45 | 33 |
| Elbon | 36 | 43 | 51% | 55 | 50 | 65 |
| Hazlet | 76 | 68 | 106% | 54 | 46 | 52 |
| KWS Receptor | 74 | [89] | 103% | 54 | 41 | 22 |
| KWS Rixor | 93 | -- | 128% | 55 | 41 | 17 |
| KWS Serafino | 79 | 89 | 109% | 54 | 45 | 12 |
| KWS Tayo | 78 | 87 | 108% | 53 | 39 | 7 |
| ND Dylan | 50 | 50 | 70% | 53 | 53 | 80 |
| ND Gardner | 51 | 55 | 71% | 54 | 52 | 75 |
| SU Bebop | 71 | -- | 98% | 53 | 42 | 8 |
| SU Performer | 87 | -- | 120% | 53 | 40 | 8 |
| MSD (90%) | 19 | -- | -- | 1.5 | 4 | 35 |
| MEAN | 70 | 69 | -- | 54 | 45 | 34 |

By response variable, if the difference between any two entries is greater than the minimum significant difference (MSD) the entries are considered statistically different with 90% confidence.

[a] Average yield of each variety from the past three trial years at Northern Research Farm, including 2026, 2024 and 2023. '—' indicates a variety with less than a three-year history.

**ISU Northeast Research Farm, Nashua**

| | |
|---|---|
| Previous crop: | Soybeans |
| Replications: | 3 |
| Harvested plot size: | 10 ft × 50-57.5 ft |
| Fertilizer applied: | 32.1 lb P/ac and 185 lb K/ac applied on Nov. 3, 2025 |
| | 32 lb S/ac applied on Jan. 16, 2026 |
| | 35 lb N/ac applied on March 25, 2026 |
| Planting date: | Oct. 9, 2025 |
| Harvest date: | July 14, 2026 |

Nashua

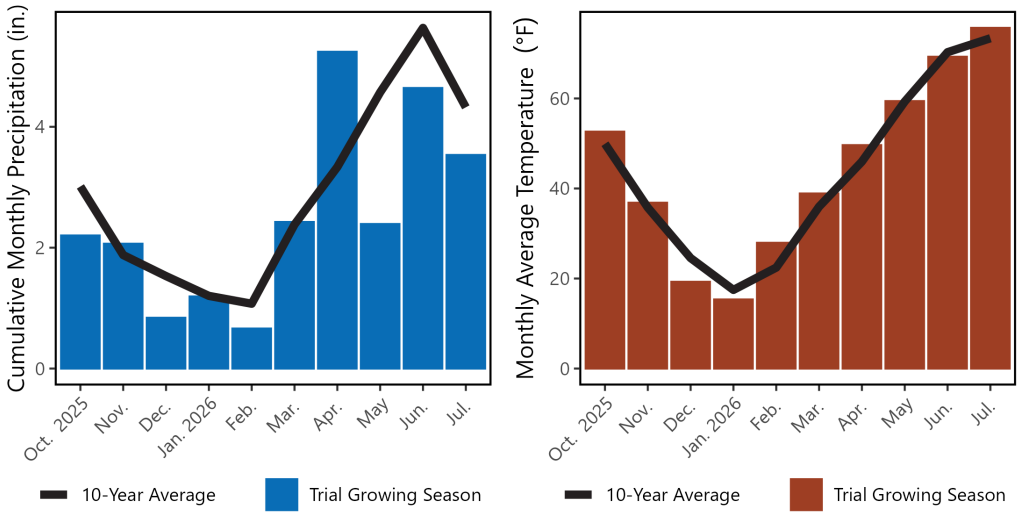



TABLE 3: 2026 Cereal Rye Variety Trial at Northeast Research Farm, Nashua.

| VARIETY | YIELD (bu/ac) | | YIELD (% of 2026 site mean) | TEST WEIGHT (lb/bu) | PLANT HT at HARVEST (in.) | LODGING (%) | STRAW BIOMASS (tons/ac) |
|---|---|---|---|---|---|---|---|
| | 2026 | 3-Year Average[a] | | | | | |
| Danko | 71 | -- | 88% | 55 | 48 | 1 | 2.7 |
| Elbon | 51 | 47 | 63% | 55 | 50 | 5 | 2.4 |
| Hazlet | 77 | 68 | 97% | 54 | 49 | 2 | 3.1 |
| KWS Receptor | 90 | 77 | 112% | 55 | 44 | 0 | 3.2 |
| KWS Rixor | 94 | -- | 117% | 55 | 45 | 1 | 2.4 |
| KWS Serafino | 91 | 85 | 114% | 54 | 46 | 1 | 2.6 |
| KWS Tayo | 87 | 74 | 109% | 54 | 43 | 0 | 2.7 |
| ND Dylan | 70 | 61 | 87% | 54 | 59 | 7 | 2.9 |
| ND Gardner | 59 | 57 | 74% | 54 | 54 | 7 | 2.5 |
| SU Bebop | 81 | 70 | 102% | 54 | 49 | 1 | 3.0 |
| SU Cossani | 90 | 81 | 113% | 55 | 47 | 1 | 2.8 |
| SU Performer | 97 | 84 | 122% | 55 | 45 | 0 | 3.4 |
| MSD (90%) | 42 | -- | -- | 1.4 | 3 | 4 | 0.2 |
| MEAN | 79 | 70 | -- | 54 | 48 | 2 | 2.8 |

By response variable, if the difference between any two entries is greater than the minimum significant difference (MSD) the entries are considered statistically different with 90% confidence.

[a] Average yield of each variety from the past three years at Northeast Research Farm, including 2026. '—' indicates a variety with less than a three-year history.

**ISU Ag Engineering and Agronomy Farm, Boone**

Previous crop: Soybeans

Replications: 3

Harvested plot size: 59 ft × 13.5 ft

Fertilizer applied: 10 lb N/ac, 5 lb P/ac, 40 lb K/ac and 2.5 lb S/ac applied on Oct. 24, 2025

40 lb N/ac, 45 lb P/ac, 60 lb K/ac and 18 lb S/ac applied on March 30, 2026

Planting date: Oct. 23, 2025

Harvest date: July 28, 2026

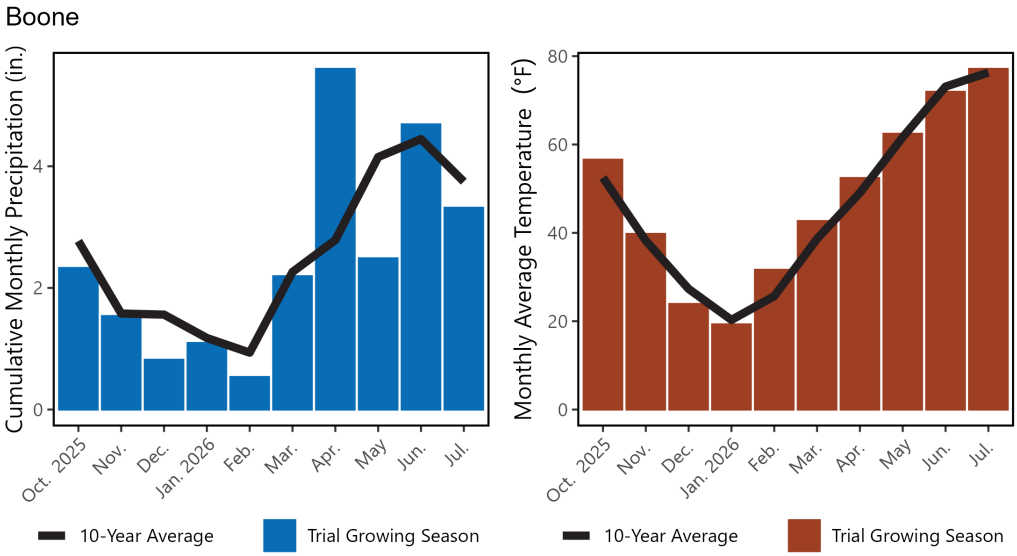



TABLE 4: 2026 Cereal Rye Variety Trial at Ag Engineering and Agronomy Research Farm, Boone.

| VARIETY | YIELD (bu/ac) | | YIELD (% of 2026 site mean) | TEST WEIGHT (lb/bu) | PLANT HT at HARVEST (in.) | LODGING (%) |
|---|---|---|---|---|---|---|
| | 2026 | 3-Year Average[a] | | | | |
| Danko | 68 | -- | 94% | 49 | 51 | 5 |
| Elbon | 45 | 52 | 62% | 49 | 54 | 8 |
| Hazlet | 65 | 67 | 90% | 49 | 52 | 10 |
| KWS Receptor | 87 | 95 | 120% | 48 | 45 | 5 |
| KWS Rixor | 86 | -- | 120% | 49 | 43 | 5 |
| KWS Serafino | 82 | 103 | 114% | 49 | 43 | 5 |
| KWS Tayo | 83 | 81 | 115% | 49 | 44 | 5 |
| ND Dylan | 65 | 59 | 91% | 49 | 51 | 18 |
| ND Gardner | 52 | 60 | 73% | 49 | 59 | 45 |
| SU Bebop | 72 | 75 | 100% | 49 | 47 | 5 |
| SU Performer | 87 | 91 | 121% | 49 | 45 | 5 |
| MSD (90%) | 22 | -- | -- | 1.4 | 14 | 28 |
| MEAN | 72 | 76 | -- | 49 | 49 | 11 |

By response variable, if the difference between any two entries is greater than the minimum significant difference (MSD) the entries are considered statistically different with 90% confidence.

[a] Average yield of each variety from the past three years at Ag Engineering and Agronomy Research Farm, including 2026. '—' indicates a variety with less than a three-year history.

**ISU Southwest Research Farm, Greenfield**

Previous crop: Soybean

Replications: 3

Harvested plot size: 5 ft × 50 ft

Fertilizer applied: 35 lb/ac N as urea applied on March 27, 2026

Planting date: Oct. 13, 2025

Harvest date: July 22, 2026

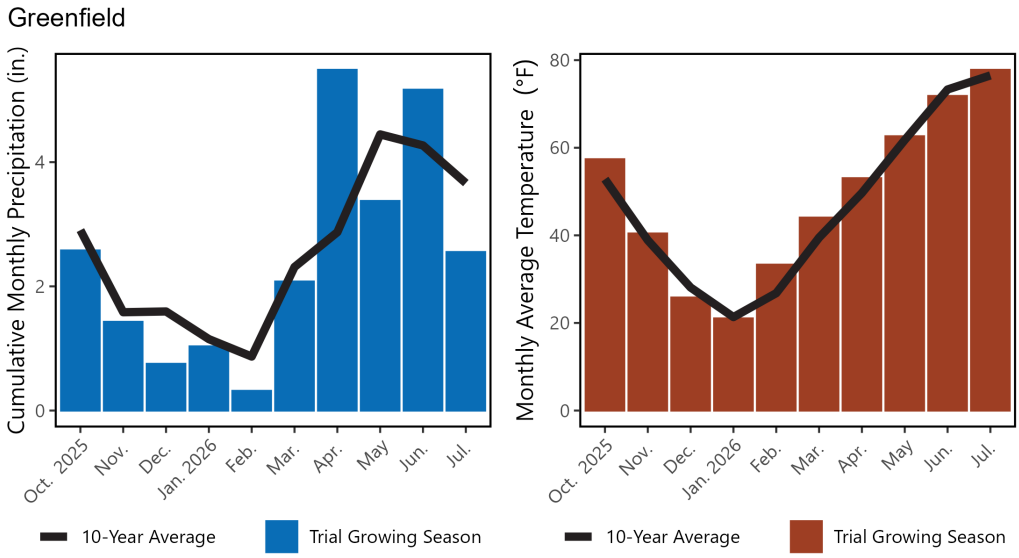



TABLE 5: 2026 Cereal Rye Variety Trial at Southwest Research Farm, Greenfield.

| VARIETY | YIELD (bu/ac) | | YIELD (% of 2026 site mean) | TEST WEIGHT (lb/bu) | PLANT HT at HARVEST (in.) | LODGING (%) |
|---|---|---|---|---|---|---|
| | 2026 | 3-Year Average[a] | | | | |
| Danko | 58 | -- | 99% | 54 | 59 | 5 |
| Elbon | 26 | 37 | 44% | 53 | 60 | 25 |
| Hazlet | 60 | 53 | 102% | 53 | 58 | 10 |
| KWS Receptor | 78 | 80 | 132% | 54 | 50 | 5 |
| KWS Rixor | 89 | -- | 150% | 54 | 50 | 5 |
| KWS Serafino | 81 | 86 | 136% | 54 | 50 | 5 |
| KWS Tayo | 78 | 81 | 132% | 52 | 50 | 5 |
| ND Dylan | 27 | 34 | 45% | 53 | 61 | 80 |
| ND Gardner | 29 | 39 | 49% | 53 | 60 | 67 |
| SU Bebop | 52 | 72 | 88% | 53 | 54 | 5 |
| SU Performer | 72 | 74 | 123% | 54 | 49 | 5 |
| MSD (90%) | 17 | -- | -- | 1.4 | 9 | 23 |
| MEAN | 58 | 62 | -- | 53 | 55 | 20 |

By response variable, if the difference between any two entries is greater than the minimum significant difference (MSD) the entries are considered statistically different with 90% confidence.

[a] Average yield of each variety from the past three years at Southwest Research Farm, including 2026. '—' indicates a variety with less than a three-year history.

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PRACTICAL FARMERS of Iowa

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