

# University of Wisconsin Potato Breeding Report 2020-21

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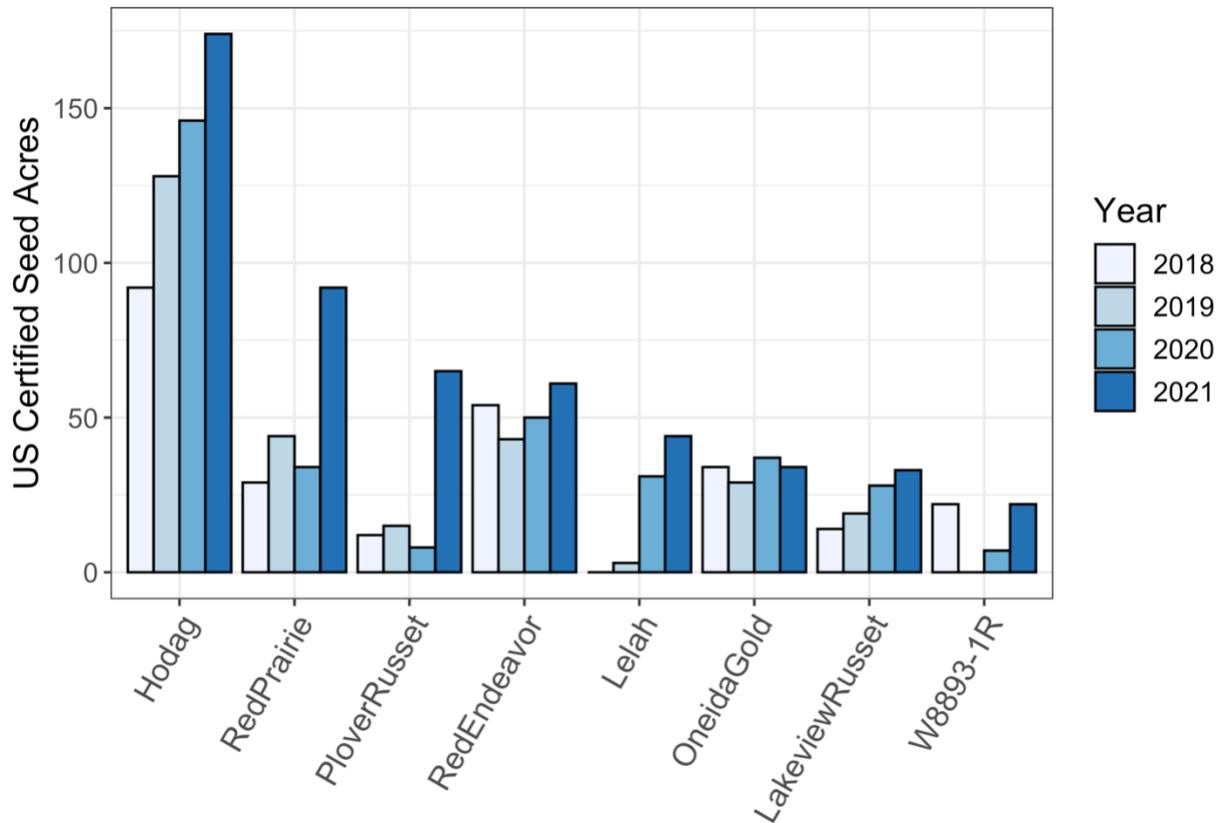
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<http://potatobreeding.cals.wisc.edu>

## Certified Seed Acreage

Figure 1 shows the 2018–2021 certified seed acreage for UW-Madison varieties released in the past 10 years. Notably, Hodag has now surpassed the 2003 UW release Megachip to become the second most widely grown UW variety, behind Snowden (released in 1990). Certified acreage of Red Prairie continues to increase, nearing 100 acres in 2021.



**Figure 1.** US Certified Seed Acreage for UW-Madison varieties released in the past 10 years.

## Lakeview Russet

In October 2020, the SpudPro committee voted to name W9433-1rus as 'Lakeview Russet'. The name honors Dennis Bula for his stewardship of the variety on Bula Potato Farms, which is next to Post Lake.



### Lakeview Russet (W9433-1rus)

Parentage: CalWhite x A96023-6

Lakeview Russet is a **dual purpose** variety, notable for its **low tuber set** (7-9 per plant) and **rapid bulking**.

**Pack out.** Produces a high percentage of U.S. No. 1 tubers due to its large size profile and consistent, blocky shape.

**Maturity.** Early emergence and bulking, but vine senescence and skin set are slow.

**Fry quality.** Specific gravity and color are similar to Russet Burbank.

**Storage.** Medium to long tuber dormancy (less than Burbank but similar to Norkotah).

**Management.** Tighter seed spacing and less nitrogen are recommended to control oversize and skin set. Good candidate for organic production.

## New Genotyping Platform

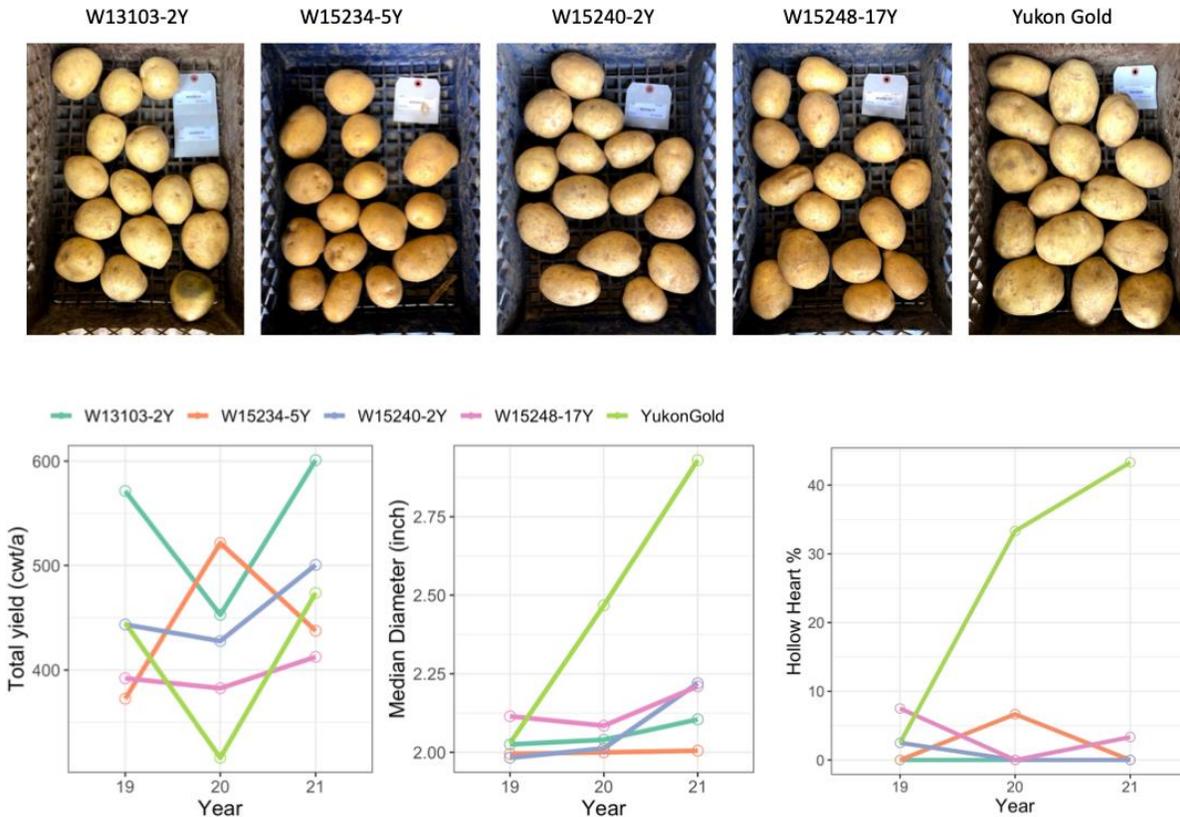
One highlight of the 2021 season was the debut of a new [“mid-density” genotyping platform](#) for potato. Endelman was the technical lead for the international project, which enables us to genotype potato at 2000 DNA markers for 20% of the cost of the existing “high-density” technology (with over 10,000 markers). Because of the lower price point, we were able to make genomic predictions for the FY2 stage of the breeding program for the first time (Figure 2). Predictions for total yield, specific gravity, fry color, and vine maturity, based on data from 1000 clones across 6 years at the Hancock Research Station, were used to augment the traditional visual selection that occurs during the FY2 harvest in Rhinelander.

Field Year	Stage	Number Varieties	Details
0	Crossing + Seedlings	20,000	10–15 parents, 50 F1 populations @ GH
1	Single Plant Selection	15,000	1 plant @ Rhinelander
2	Clone Selection	750	8 plants @ Rhinelander
3	Preliminary Yield Trial	150	15 plants @ Hancock 24 plants @ Rhinelander
4	Regional Yield Trial	20	Hancock, MI, MN, ND 96 plants @ Rhinelander
5–6	National Yield Trial	5–10	More than 5 locations 200+ plants @ Rhinelander
7–9	Foundation Seed	1–2	
10	Variety Release	0–1	

**Figure 2.** Overview of the selection stages in the potato breeding program. Prior to 2021, genomic selection of new parents occurred after FY3. Because of a new, cheaper genotyping platform, parent selection occurred after FY2 in 2021. Using a shorter breeding cycle is predicted to increase the rate of genetic improvement over time.

## SpudPro

W13103-2Y was accepted for foundation seed production at the November 2020 meeting of the Wisconsin SpudPro committee, and minitubers were grown in 2021 at the UW Lelah Starks Elite Foundation Seed Potato Farm. This variety has an attractive appearance for the yellow fresh market, medium maturity, high yield, moderate resistance to common scab, and excellent internal quality. Three other yellow breeding lines from the W15 cohort will be considered as candidates for SpudPro in November 2022 (Figure 3).

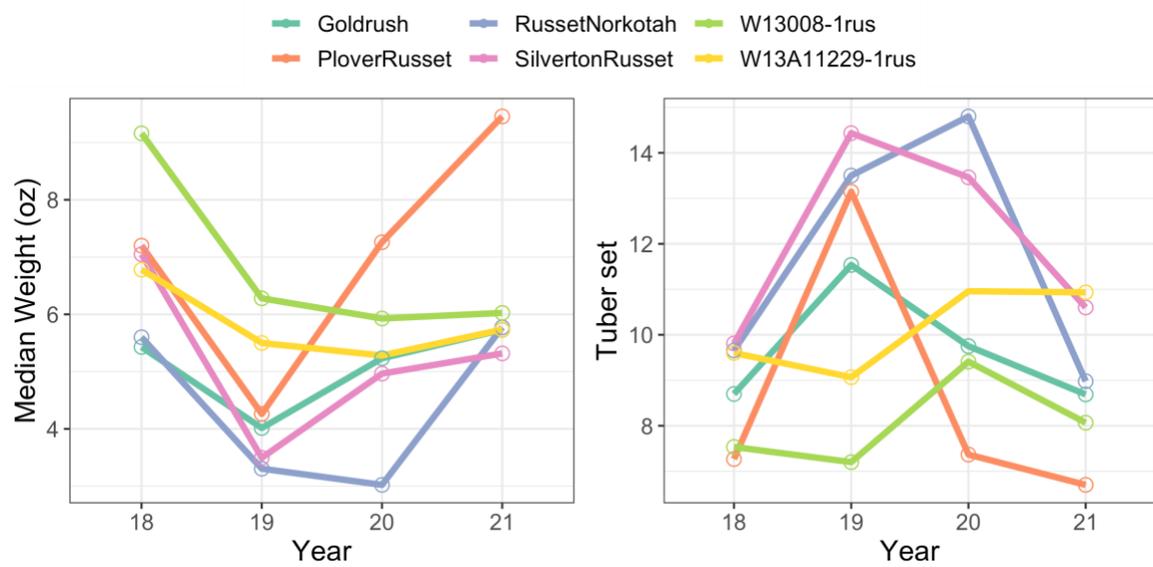


**Figure 3.** Promising new yellow varieties. Foundation seed minitubers of W13103-2Y were produced in 2021 by SpudPro. Results are from the Hancock Research Station, fertilized at 300 lb N/a, 11-12 inch seed spacing, and vine kill 100–110 days after planting.

At the November 2021 SpudPro meeting, the fresh market russet variety W13008-1rus was accepted for foundation seed production (Figure 4). This variety has a lower tuber set and early bulking potential (Figure 5). The internal quality is excellent, and long tuber dormancy offers the potential for long-term storage.



**Figure 4.** Appearance of the SpudPro variety W13008-1rus compared to Goldrush, grown at the UW Hancock Research Station.



**Figure 5.** Comparison of median tuber weight and tuber set for new UW russet varieties compared to existing standards. Results are from the UW Hancock Research Station, fertilized at 300 lb N/a, 11-12 inch spacing, and vine kill 105–115 days after planting.

### Acknowledgments

The UW breeding program is supported by students and staff at the Madison campus (Grace Christensen), the Rhinelander Research Station (Sam Eddy, Jaden Olski, Joshua Kunzman, Glenda Roesler), and the Hancock Research Station.