

## *A Fast-Track Program to Enhance Evaluation and Marketing of North Dakota Potatoes*

A potato fast track program would facilitate evaluation of advancing selections moving through the NDSU potato breeding program, culminating in release and commercialization of new cultivars from the ND Agricultural Experiment Station and adoption by potato producers and our potato industry (ideally in ND and beyond).

Currently, the potato breeding program cannot produce large quantities of seed potatoes (5,000 cwt or more required for commercial scale runs depending upon end use) of NDSU advancing selections for evaluation by certified seed producers, commercial potato growers, or their customers including potato packers, frozen or chip processors, or other end-users of NDSU cultivars. Limitations include financial, equipment/facilities, land, and personnel resources, skillset of current staff, and scope of the breeding program.

### *Utilization of funding:*

Based on the request of \$250K biennial funding of \$125,000 annual appropriation, the first priority for funds would be utilization for minituber production, certified seed multiplication, and commercial grow-out for commercial scale-runs by potato packers, frozen or chip processors, or other end-users. A secondary priority would be a Research specialist (1 FTE, ~\$60,000 and \$30,600 fringe @ 51%, or some part of an FTE) for the Potato Breeding project with specific responsibilities to include tissue culture and clone bank maintenance, and in conducting quality evaluation of advancing selections (including but not limited to chipping, French frying, glycoalkaloid testing, and sensory evaluations for of baked, boiled, microwaved, French fried, and reconstituted potato flakes) at the Peltier Complex Potato Quality Lab. Initiation and cleanup in tissue culture by our program facilitates more rapid movement of advance selections to minituber producers.

An advisory committee established to guide the system would annually review advancing selections to determine their merit for entry and continuation in the pipeline; one or two selections would be entered annually. If available in the seed pipeline, a few cwt would be diverted for trial seed (such as agronomic, screening, and evaluation trials) at NDSU including nutrient management studies for contributing to cultivar specific management guidelines at time of release to enhance grower/industry adoption. Based on current (Jan. 2023) potato production costs and average yield for non-irrigated certified seed production:

### 3-Year Seed Pipeline Schematic (1 selection)

	Year	Production	Fee/unit	Cwt.	Cost per line
Minituber Production	1	50 lbs.	\$65		\$3,250
Field Year (FY) 1 Seed	2	0.1 acres	\$12,000	21	\$12,000
Field Year 2 Seed	3	0.7 acres	\$12,000	186	\$12,000
Field Year 3 Seed	4	4 acre	\$12,000	725	\$48,000
Commercial Grow Out	5	29 acres		5,220	packout*
					\$75,250

\* Fresh pack, chip or frozen processing, etc.

*Impact on the breeding program's ability to release successful cultivars*

Funding of this project would provide a mechanism for enhanced evaluation of advancing selections by grower and industry stakeholders. Enhanced evaluations would create an environment/structure where superior selections were pulled from the breeding program pipeline, rather than the breeder pushing them to growers and end users without fully knowing their potential at commercial scale, thus requiring growers/end users to invest in and conduct the seed increase, large-scale testing, and market development themselves. A fast track system limits financial risk for seed and commercial producers and would not jeopardize Plant Variety Protection, as the fast track scheme would be under Material Transfer Agreement for Evaluation Purposes only. Currently, seed and commercial producers must gamble on the release and success of a potato selection, as they may not sell the materials under an MTA for evaluation to recoup costs.

Benefits of a fast track system may result in a larger number of successful cultivar releases and greater adoption by producers and end users. Additionally, a fast track structure may shorten the time to cultivar release by 3 to 5 years or more based on rapid multiplication of seed and an outcome of commercial scale evaluation; cultivar release is currently a 10 to 20-year process.

*Additional information:*

A small informal group has been loosely operating (providing discussion, potential guidance in establishing, and potential participation) since August 2021, based on the desire to have a fast track program in ND to support the NDSU potato breeding program.

A BILL for an Act to amend HB 1020 to provide an appropriation of \$250,000 for the North Dakota Spud Fast Track requirements:

1. 1 (one) FTE @ \$60,000 annual salary with @51% fringe of approximately \$30,600,00, Duties for Spud Fast Track project with specific responsibilities to include tissue culture and clone bank maintenance, and in conducting quality evaluation of advancing selections (including but not limited to chipping, French frying, glycoalkaloid testing, and sensory evaluations for of baked, boiled, microwaved, French fried, and reconstituted potato flakes) at the Peltier Complex Potato Quality Lab. Initiation and cleanup in tissue culture by our program facilitates more rapid movement of advance selections to minituber producers.
2. 300 pounds mini-tubers @ \$65.00/lb \$19,500
3. Minituber grow out \$48,000
4. Mileage, incidental expenses \$1,300
5. No monies from this appropriation may be used for any other purpose than as described in items 1-4.