

National clone evaluation for marketing potential



Marty Glynn

Joe Sowokinos



Collaborative Agreement



USDA, ARS



POTATO
RESEARCH
WORKSITE
(PRW)

ND State University



Northern Plains Potato Growers Association



USDA Potato Research Worksite East Grand Forks, MN



Storage, Time and Temperature Research



Physiology and Genetic Lab



Processing Facilities



Participating Potato Breeding Programs



Texas A&M Univ.
Dr. Creighton Miller



Colorado State U
Dr. David Holm



Cornell Univ.
Dr. Walter DeJong



Univ. of NE Dr.
Alex Pavlista



Univ. of ME
Dr. Garland
Grounds



Univ. of Idaho
Dr. Rich Novy



N. Dakota State Univ.
Dr. Susie Thompson



Univ. of MN
Dr. Christian



OR State Univ., Dr.
Sagar Sathualli



MI State Univ.
Dr. Dave Douches

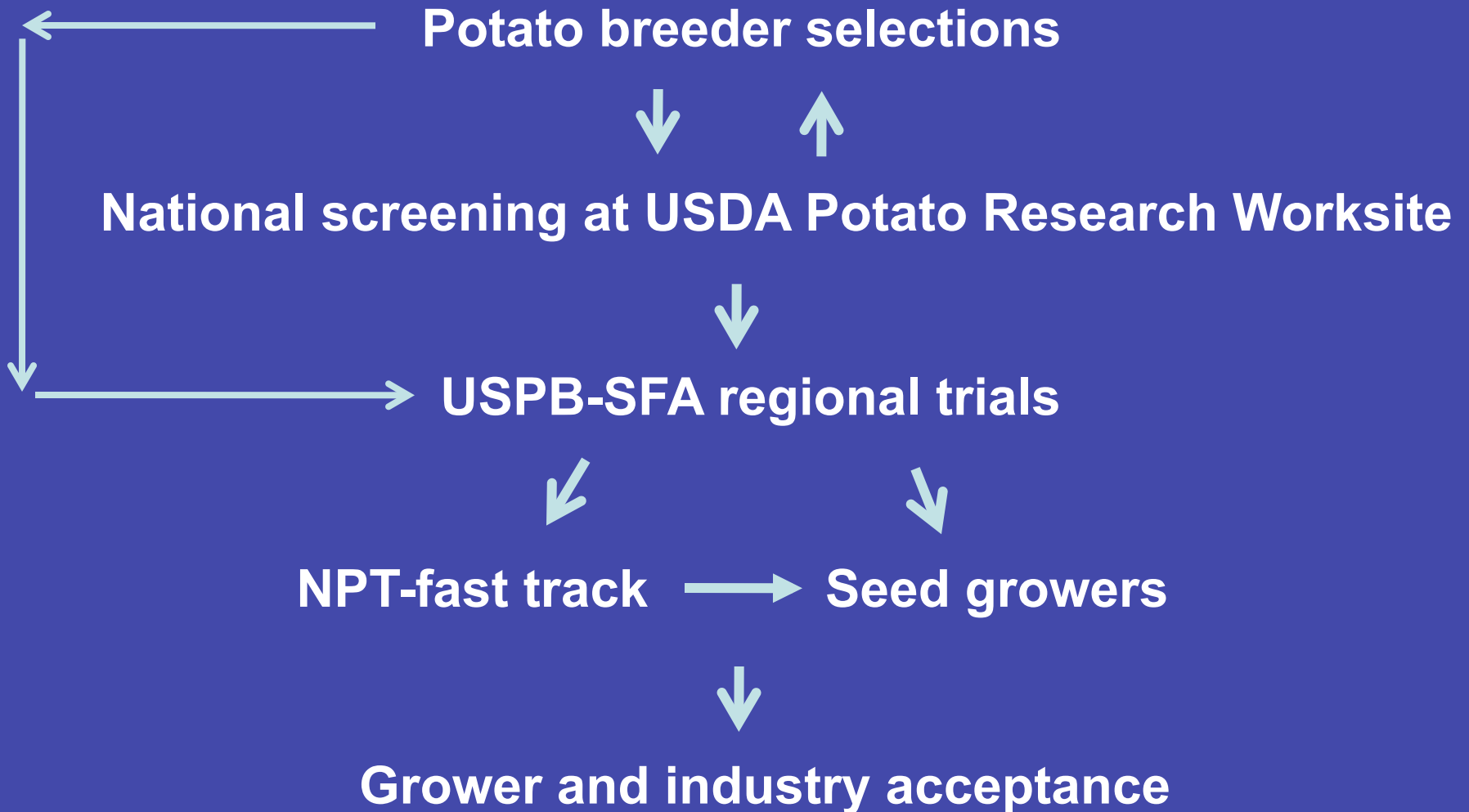


Univ. of WI, Dr.
Jeffrey Endelman



USDA-ARS
Dr. Kathy Haynes

Progression for new variety development



Standard protocol:

- Five lbs of each advanced clone are planted at a common farm site
- Culture, harvesting, storage, processing, and evaluation are identical with each advanced clone
- Results are published and sent to each of the cooperating potato breeders

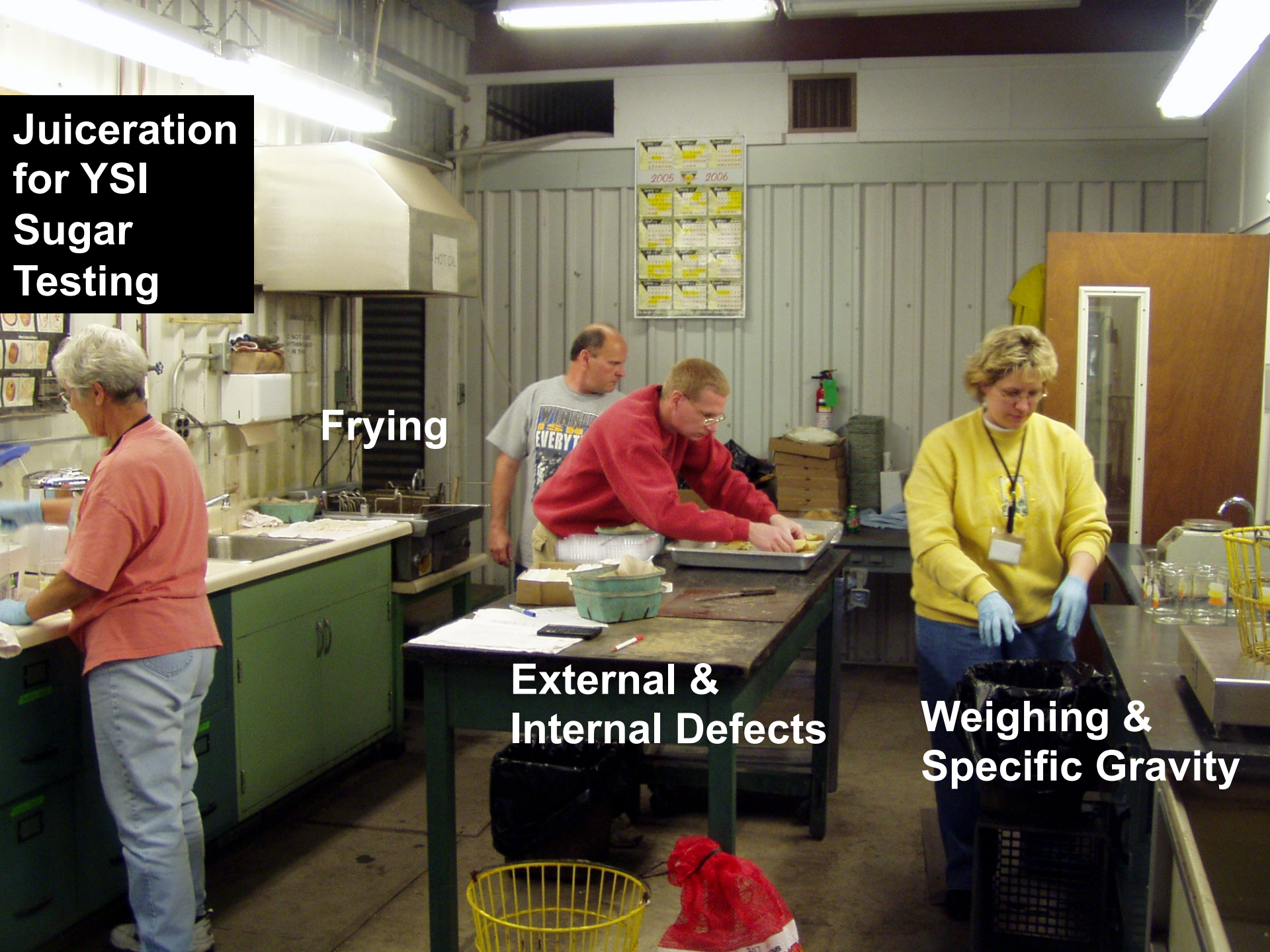
Larimore ND

Juiceration for YSI Sugar Testing

Frying

External &
Internal Defects

Weighing &
Specific Gravity



Standard Protocols and Statistics

- About 15,000 – 20,000 evaluations/year:
includes NCR trials, SFA clones, NPT, serial chipping,
individual experiments, others.
- Clones evaluated for specific gravity, Agtron value,
size distribution, internal and external physiological
defects, sugars, chip color and visual appearance.
- Samples are stored at 48, 45, 42, & 38 deg F storage
for 7 months, with or with reconditioning (RC) at
55 deg
F for 1 month.

Fry Line



“Marketing decisions”

Fries
only

Fries &
Chips

Chips
only

Chips
& Fresh

Fresh
only

Fries
& Fresh

Fresh
only

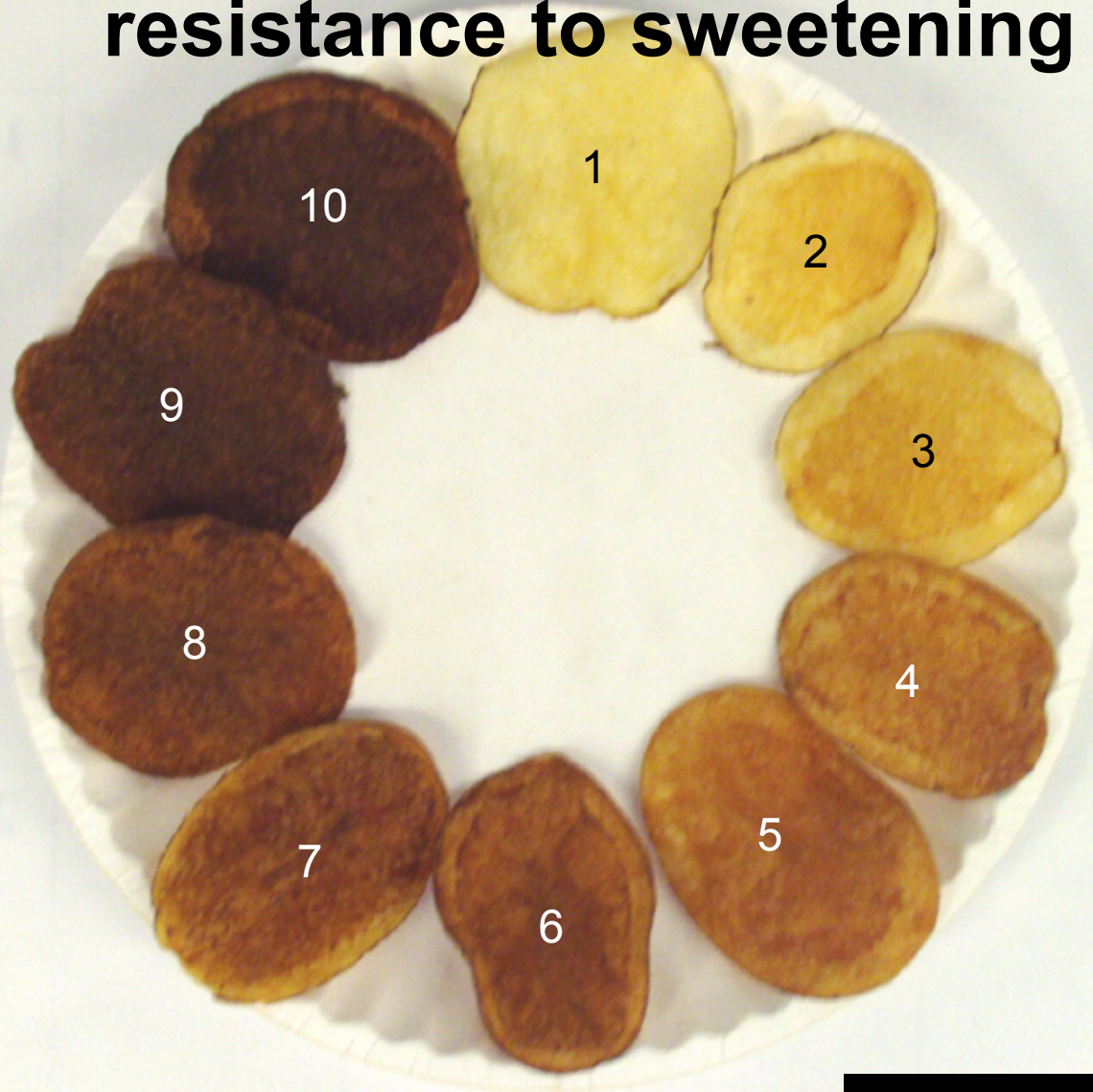
Sugar content limits marketing options



SAFE sugar levels
are monitored with
the YSI, model 2700
Select, Industrial
Sugar Analyzer

| | Chips | Fries |
|----------------|------------------|------------------|
| | mg/g FW | |
| Sucrose | < 1.0 | < 1.0 |
| Glucose | < 0.01 | < 0.05 |

Visual scale for the degree of resistance to sweetening



Identification of clones for marketing potential

Three classes based on sugars and color quality from storage


























Class A: Will process directly from 42° F following 7 months storage (mainly whites)

Class B: Will process directly from 45° F following 7 months storage (whites and russets)

Class C: Will only process directly from 48 F following 7 months storage (reds, russets, some whites)

M. Glynn and J. Sowokinos. 2013. *Valley Potato Grower*, May/June, pp. 10-14.

Evaluation of storage & processing characteristic's (4 temp.) of advanced selections from US public potato breeding programs

| | 7 MONTHS STORAGE | | | | | CLASS |
|---------------------|---|---|---|---|---|----------|
| | 48 F | 45 F | 42 F | 38 F | 38 F, RC | |
| White Pearl |  |  |  |  |  | A |
| Snowden |  |  |  |  |  | B |
| Atlantic |  |  |  |  |  | B |
| Dakota Pearl |  |  |  |  |  | A |
| NorValley |  |  |  |  |  | B |

JRS-LAB
7 MO 48F
AF 1866-8
CHIPS

JRS-LAB
7 MO 45F
AF 1866-8
CHIPS

JRS-LAB
7 MO 42F
AF 1866-8
CHIPS

JRS-LAB
7 MO 38F
AF 1866-8
CHIPS

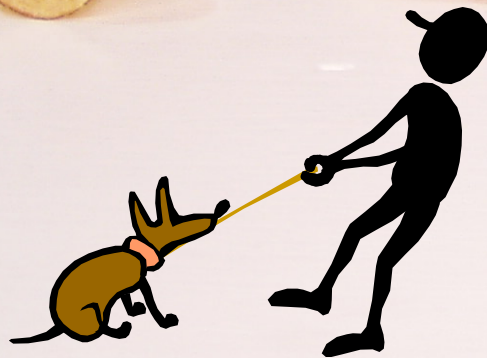
AF 1866-8 Class C: Fresh market

48 F

45 F

42 F

38 F



42 F + RC

38 F + RC

JRS-LAB
7 MO 48F
MSF 099-3

CHIPS

JRS-LAB
7 MO 45F
MSF 099-3

CHIPS

JRS-LAB
7 MO 42F
MSF 099-3

CHIPS

JRS-LAB
7 MO 38F
MSF 099-3

CHIPS

Class A: Chip Market

MSF 099-3

48 F

45 F

42 F

38 F



42 F +RC

38 F + RC

Clones previously identified/included in the USPB-SFA trials (1985-2013)

NY 148
(2011-2013)

W5015-12
(2010-2012)

NY 138
(2008-2010),
Waneta

NY 139
(2008-2010),
Lamoka

W2717-5
(2008-2010),
Lelah

W2133-1
(2005-2007),
Nicolet

ND 5822C-7 (2003-
2005),
Dakota Diamond

W1355-1 (2001-
2003), White Pearl

NY 112
(1998-2000), Marcy

ND 2676-10 (1997-
1999), Dakota Pearl

ND 2417-6 (1994-1996),
NorValley

NDO1496-1 (1993-1995),
Ivory Crisp

Other important clones

NY 102 (1994-1995)
Monticello

NYE55-35 (1991-1993)
Pike

Lady Claire (European)

Newest candidate clones for USPB-SFA consideration

ND 7519-1 (7 years in study)

NY 145 (2 years in study, number 1 this year)

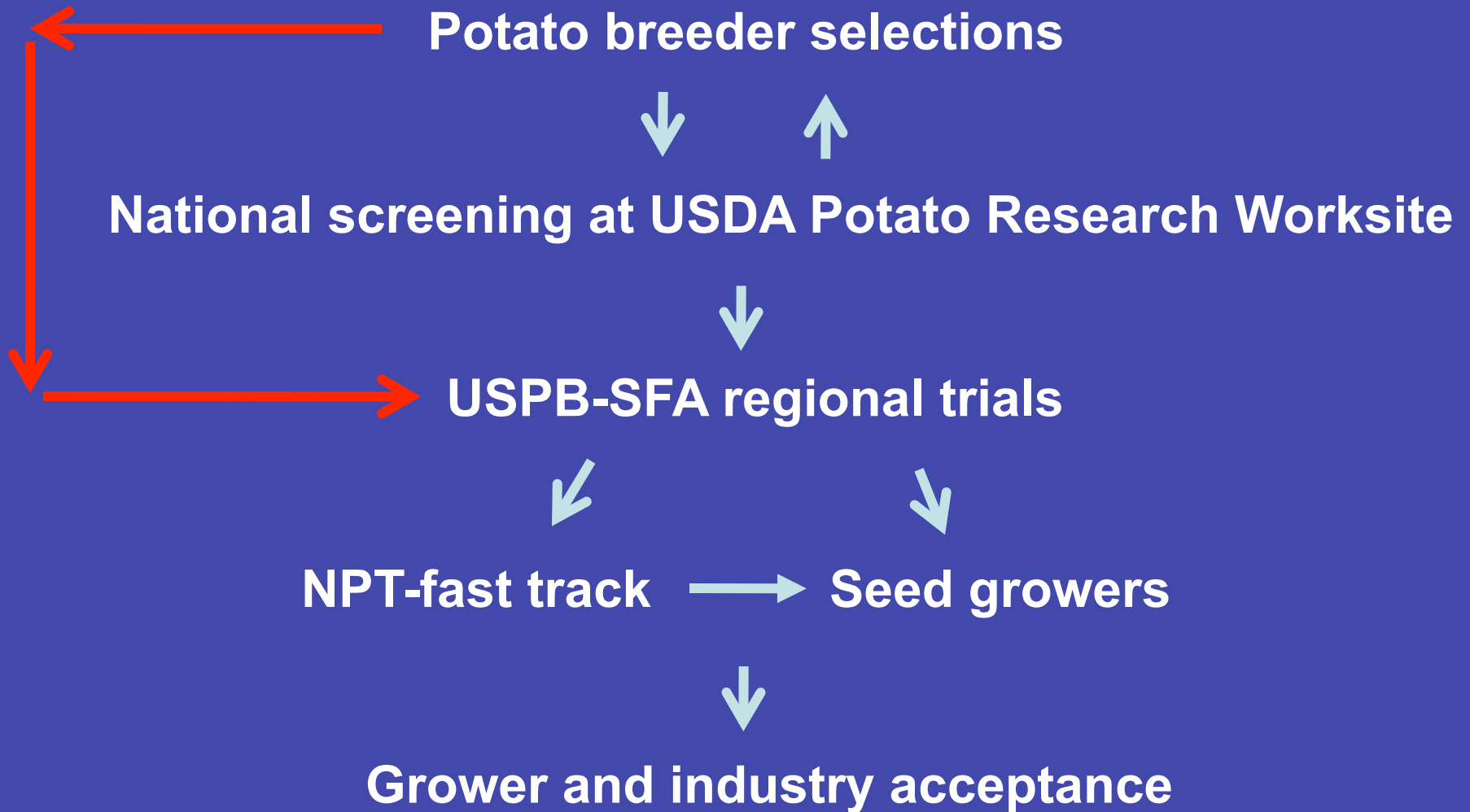
ND 8305-1 (3 years in study)

W2310-3 (3 years in study)

ND8331CB-2 (2 years in study)

AO 1143-3C (1st year in study)

Progression for new variety development



Cooperators:

University of MN

Sanjay Gupta
Joe Sowokinos

USDA/ARS

Jeffrey Suttle
Martin Glynn
Dennis Olson
Todd Schutz
Becky Sayre
Lolly Moran

Potato Breeders

Walter DeJong/Cornell Univ.
Dave Douches/MSU
Garland Grounds/UofME
Kathy Haynes/USDA-ARS
David Holm/CSU
Creighton Miller/TX A&M
Rich Novy/USDA-ARS
Jeffrey Endelman/UofWI
Alex Pavlista/UofNE
Christian Thill/UofMN
Susie Thompson/NDSU
Sagar Sathualli/OSU

EAT
MORE!
SPUDS!