NDSU Potato Breeding Program – 2015
Susie Thompson

In 2015, the North Dakota State University Potato Breeding Project is conducting field research and producing certified seed potatoes at locations across North Dakota and western Minnesota. Research trials are grown at eight sites, and seed production takes place at two. Field trials and seed production efforts are summarized here:

Non-irrigated sites include Crystal, Hoople and Grand Forks, ND. The fresh market trials are planted on the farm of Dave and Andy Moquist (O.C. Schultz), just north and east of Crystal. Trials include the North Central Regional Potato Variety Trial (NCRPVT) focusing on fresh market types. The NDSU entries include ND6961B-21PY, ND7818-1Y, ND7834-2P, ND7882b-7Russ, ND7982-1R, and ND113300-3RSY. The Fresh Trial includes 30 entries, 17 advanced selections and 13 cultivar checks, including some KWS cultivars. The Preliminary Fresh Market Trial has 80 entries, 67 selections (primarily red skinned and white fleshed) compared to 13 industry standards. The trials at Hoople, ND, focus on chip processing and are hosted by Lloyd, Steve and Jamie Oberg. Trials include the Chip Trial (14 promising selections compared to 9 chip industry standards), the Preliminary Chip Processing Trial (82 entries), in addition to the National Chip Processing Trials (NCPT), which include 102 unreplicated selections and 61 replicated entries from US potato breeding programs. The NCPT has goals of rapidly identifying replacements for Snowden with long-term chip processing potential, and Atlantic, primarily to address its susceptibility to internal heat necrosis, while providing high yield potential and high specific gravity, and that can withstand production environments in the south. Two defoliation trials focusing on Colorado Potato Beetle (CPB) resistance breeding efforts are planted at the NPPGA Research Farm south of Grand Forks. Forty-three seedling families and more than 200 genotypes with CPB resistance breeding will be evaluated for defoliation levels. A second year of the trial addressing vine kill options using dessicant rate and timing to achieve optimum skin set for Dakota Ruby (ND8555-8R) is being conducted by Dr. Jose Rodriguez (last year’s was abandoned due to drown out of many plots). Additionally, Steffen Falde, masters student, has a field trial looking at the potential to use remote sensing in evaluating PVY infection of potato fields. This project is funded through the North Dakota Department of Agriculture’s Specialty Crops Block Grant Program.

Irrigated trials are grown at Inkster, Larimore, Oakes, and Williston, ND, and at Park Rapids, MN. The Larimore site is hosted by Carl, Michael and Casey Hoverson at Hoverson Farms and includes the Processing Trial (24 selections, cultivars and industry standards), the preliminary processing trial (68 entries), maintenance of out-of-state selections, and out-of-state seedlings. The National French Fry Processing trial (NFPT), supported by the USPB, is conducted at this location, with the goal of identifying russet selections with French Fry processing potential with low acrylamide levels. Additionally in 2015, the irrigated NCRPVT fresh market trial (30 entries including the NDSU lines listed above) and the irrigated Chip Processing Trial (17 advancing selections and seven industry checks) are planted at this site. Trials at Inkster, at the Forest River Colony, include a replicated screening trial for Verticillium wilt resistance, conducted in collaboration with Dr. Neil Gudmestad’s program. Twenty-one clones across market types are being evaluated. Additionally, in collaboration with Dr. Harlene Hatterman-Valenti and Collin Auwarter, we also have a metribuzin sensitivity screening trial, evaluating 16 cultivars and selections. Information from these two trials is important for developing cultivar management information for new and potential cultivar releases. The processing trial at Oakes is conducted at the Oakes Research Extension Center. There are 18 entries including nine...
advancing NDSU dual-purpose russet selections and nine industry standards. An irrigated processing trial is grown in cooperation with Dr. Jerry Bergman and Tyler Tjelde at the Nesson Valley Irrigation Research Site, east of Williston. There are 18 entries including, nine advancing NDSU dual-purpose russet selections and nine industry standards. In 2015, a processing trial with 18 entries and a scab evaluation trial with 95 entries are planted at Park Rapids on the RDO Farm.

In 2015 seed production is occurring at Langdon at the Langdon Research Extension Center. The seedling nursery is coordinated with the help of Dr. Randy Mehloff and his staff. The materials, representing 167 families, are entered for certification with the North Dakota State Seed Department (NDSSD). We anticipate selection at this nursery after Labor Day, in early to mid September. Seed maintenance and increase lots are planted at Baker, MN, on the James F. Thompson Farm. The lots are entered for certification with the Minnesota Department of Agriculture. Seed produced is used for maintenance, for trials, and is shared with research collaborators at NDSU and with research and potato industry collaborators in North Dakota, Minnesota, and across North America. Additionally, selections identified as having resistance to late blight via the detached leaf assay are fast-tracked for agronomic evaluation.