

S P R I N G 2 0 1 6

# the Potato News

Empire State Potato Growers Inc.



## Empire State Potato Growers Board Update

At recent Annual Meeting the following slate of directors and officers was elected & confirmed:

### **OFFICERS**

GARY MAHANY, President, 8790 Oak Hill Road, Arkport, NY 14807, 607.295.7243

KARL HOFMANN, Vice President, 6020 Concord Rd, Springville, NY 14141, 716.592.2248

LARRY BOWMAN, Secretary-Treasurer, 11327 Gowanda State Rd, North Collins, NY 14111, 716.583.3588

### **OTHER DIRECTORS**

ANDREW PRYPUTNIEWICZ, 2293 Rt. 12, Waterville, NY 13480, 315.841.8426

JOHN WILLIAMS, 5123 Russell Rd, Marion, NY 14505, 315.926.4291

RALPH CHILD, 156 Child Road, Malone, NY 12953, 315.483.1239

FRANK SIMMONS, 3487 Simmons Rd, Vernon Center, NY 13477, 315.829.2295

CHRIS HANSEN, 4189 Rt. 78, Bliss, NY 14024, 585.322.7274

THOMAS FUNFGELD, PO Box 284, Calverton, NY 11933, 516.909.3655

## In this Issue:

This issue of the Potato News is  
PACKED with tons of information  
and updates on association business.

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## US Potato Board Update

Chris Hansen serves as New York representative to the US Potato Board. He serves on the Administrative Committee, Technology Committee, and Chip Committee

### USPB Goals:

- Establish New Markets for U.S. Potatoes
- Increase New Channels for and Usage of Potatoes
- Improve Perceptions of Nutrition and Health Benefits of Potatoes
- Optimize Coordination of National and Regional Research Efforts
- Expand the Awareness, Understanding, Engagement and Involvement of Board Members and Industry

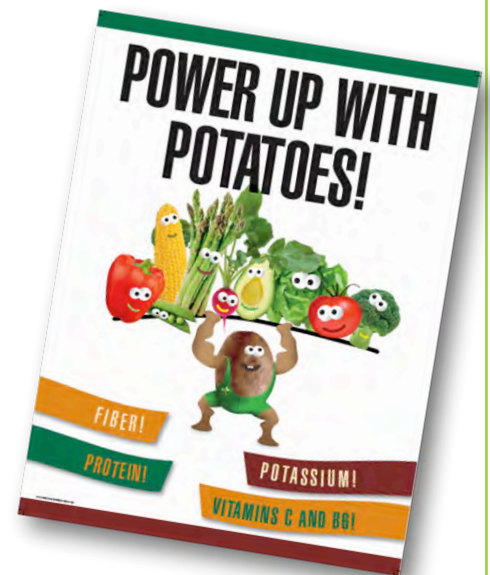


### USPB Salad Bar Challenge *Why Salad Bars? By the Numbers:*

- 01/08/2015- USPB revealed plan to strength demand for US potatoes
- 60 million school children in US
- 1995-2015 Those born during this time are known as the salad generation

### School Food Service Program *By the Numbers:*

- 93% of the nation's 60 million school kids do not eat enough vegetables
- 8% DV of fiber that one medium potato provides
- 18% DV of potassium one medium potato provides
- 45% DV of Vitamin C



### Spud Nation – *Why Food Trucks? By the Numbers:*

- By 2017, \$2.7 billion market
- +4,500 food trucks currently operating across US
- 2011-2013 there was a 197% increase in food trucks
- 50% of the US population is reached by food truck business
- 71% of Americans say they are comfortable with the ideas of buying meals from Food Trucks



### Spud Nation Industry Impact *By the Numbers:*

- #1 We are the first.
- 2,500 US growers own the Spud Nation Food Trucks
- \$12,000 monthly cost of static billboards
- \$160,000 Cost to build first Spud Nation Food Truck

## National Potato Council Update



EST. 1948

Ralph Child, Malone, serves on the Board of Directors and many committees; Gary Mahany and Chris Hansen are involved as Committee Members and all three growers have been involved in legislative

visits on NY growers' behalf.

Currently NPC continues to provide unified voice for US potato industry on national legislative, regulatory, environmental and trade issues to promote the increased profitability for growers and greater consumption of potatoes. Highly successful in representing diverse interests, play a significant role influencing policy that directly affects growers' ability to compete domestically/ globally.

Some of the most recent successes of the National Potato Council include continued federal funding for potato research; getting fresh white potatoes put back in USDA's Women, Infant and Children Nutritional Support Program (WIC); and keeping potatoes on the plate for the School Meal Program. Issues growers will be talking about in February at the Fly-In include: Potato Sustainability Initiative, Food Safety Modernization Act Implementation, & Federal Nutrition Policy, NIFA potato research funding, Truck Weight Reform, GMO Labeling, WOTUS, Tax Extenders, COOL Repeal and more. There are other committee priorities including Trade, Grower & Public Relations, Environmental Affairs, Water & Endangered Species.

## NPC Washington DC Fly-In, Feb. 22-25, 2016

This meeting of the National Potato Council brings growers from all over the nation together to visit with legislative offices and federal agencies. NY growers and your executive director meet with most all of your legislators and talk about issues that affect you and your business. In the future, any growers who would like to attend or have concerns they'd like addressed, please contact Melanie Wickham at 585.526.5356 or [mwickham@nypotatoes.org](mailto:mwickham@nypotatoes.org).

**If you haven't yet, please consider a contribution to the National Potato Council to support it's vital legislative work using the MEMBERSHIP & CONTRIBUTION FORM on the back page of this newsletter.**





# Potato Research Programs Administered by Empire State Potato Growers

## Potato Variety Development Fund

As the Cornell Breeding Program funds continue to erode, growers, processors and industry have stepped up and committed funds to accelerate promising varieties of potatoes. Started by the chip industry, this fund has been expanded to include both Chip & Fresh market variety acceleration. Funds are proportionately allocated to research projects based on contributions from each industry.

**Grower support is crucial to the continuing success of the breeding program. If you haven't yet, please consider a contribution to this research fund using the MEMBERSHIP & CONTRIBUTION FORM on the back page of this newsletter.**



## Projects Funded:

- \$30,000 – CHIPPING Potato Breeding & Evaluation Project, Walter DeJong, Cornell University
- \$10,000 – FRESH MARKET Potato Breeding & Evaluation Project, Walter DeJong, Cornell University

## Research & Development Fund

This program is funded completely by growers, industry and matching funds from the Empire State Potato Growers, Inc. Submissions are reviewed by the Research & Development Committee and awarded based on viability and importance to the NY Industry. Total Awarded in 2015: \$35,616.

**If you haven't yet, please consider a contribution to this research fund using the MEMBERSHIP & CONTRIBUTION FORM on the back page of this newsletter.**

## Projects Funded:

- \$16,626 *Conduct Grower-Extension Yield Trials of Advanced Potato Breeding Clones & New Varieties*, Professor Walter De Jong, School of Integrative Plant Sciences at Cornell University, and Stephanie Mehlenbacher & Carol McNeil, Cornell Cooperative Extension.
- \$3,990 *Enhancing foundation potato seed production for NYS by establishing an hydroponic/ Aeroponic production system at the Uihlein Farm of Cornell University, Lake Placid, NY*, Keith Perry, Cornell University. (2nd year of 2 year)
- \$6,000 *Resistance of promising Cornell potato clones to early blight & late blight*, Professor William Fry, Cornell University (Hillary Mayton, Steve McKay, Section of Plant Pathology & Plant Microbe Biology)
- \$5,000 *Phenotypic characterization of new genotypes of Phytophthora infestans*, Professor William Fry, Cornell University (Kevin Myers, Giovanna Danies, Elizabeth Bevels, Yuanhan Wu) Section of Plant Pathology & Plant-Microbe Biology.
- \$4,000 *Long Island Potato Trials Evaluating Yield & Quality*, Sandra Menasha, Vegetable/ Potato Specialist CCE of Suffolk County.

## Chip Progress Report 2015

### NYS Chip Growers and Processors Project Potato Breeding (\$30,000)

#### Walter De Jong, School of Integrative Plant Sciences, Cornell University

The breeding program planted 12,400 seedlings from chipping crosses this year, as detailed below. (The number planted for each cross is approximate – we sow seed with the goal of planting in multiples of 200, but sometimes end up with more than 200 seedlings, and sometimes a little less). We saved 10808 of the seedlings planted, where the only clones discarded exhibited serious tuber defects, or very low/no yield. We save most clones in this generation, because there is a poor correlation between most aspects of potato performance in pots compared to performance in the field.

#### Details for chipping crosses sown in 2015.

Cross	Female	Male	# planted	# saved
R1	Andover	NY152	600	545
R2	Andover	F31-3	400	353
R3	Andover	NY154	600	618
R5	Andover	J112-2	600	369
R7	NY140	NY152	600	549
R9	NY140	J112-2	600	574
R10	NY157	NY152	400	255
R11	K28-7	F31-3	600	679
R13	ND7519-1	F31-3	400	334
R16	NY141	NY152	400	476
R17	NY141	NY154	200	105
R18	NY141	J15-7	200	104
R19	NY141	J112-2	200	99
R100	Lamoka	E48-2	600	536
R101	Snowden	E48-2	600	501
R102	NY154	E48-2	600	537
R104	Ivory Crisp	E48-2	1000	836
R105	NY140	E48-2	1600	1346
R106	NY145	E48-2	200	143
R107	NY148	E48-2	1000	1024
R108	E114-5	E48-2	1000	825
		<b>Totals</b>	<b>12400</b>	<b>10808</b>

*A few comments: crosses with Andover and NY141 were used to try to bring in earlier maturity. E48-2 has the whitest potato chips of any potato we've ever seen. It is also resistant to PVY. Many E48-2 offspring also chip nicely (and half are expected to be resistant to PVY).*

We also planted 10794 four-hill plots of chipping clones in 2015. These plots represent the tubers from seedlings grown in 2014. 1437 of the four hill plots were saved after harvest, based on visual assessment of tuber appearance and yield. All 1437 will be chipped this winter, and the clones with good chip color will be replanted as 20-hill plots in 2016.

*Percentage-wise, we saved  $1344/10794 = 12.4\%$ . By comparison, a typical long russet breeding program starts with 100,000 single hills, and saves 0.5 to 1.0%. You can tell, just by looking, if a russet potato is sufficiently pretty. To tell if something chips, you need to fry it, so our selection pressure (in the field) is by necessity considerably less.*

## Chip Progress Report 2015 (cont.)

## Details of four-hill chipping plots in 2015.

Cross	Female	Male	# plots	# saved
Q1	Waneta	Superior	203	39
Q2	Andover	Waneta	161	17
Q3	Andover	NY141	180	33
Q4	Andover	NY148	202	25
Q5	Andover	E48-2	257	22
Q6	Andover	NY153	165	13
Q7	Andover	J100-6	341	33
Q8	Eva	Waneta	185	25
Q9	Eva	NY153	190	40
Q10	NY140	F31-3	163	24
Q11	NY140	J100-5	445	48
Q12	NY140	J100-6	357	38
Q17	F16-1	F31-3	157	5
Q18	F16-1	NY153	168	22
Q20	F31-3	Waneta	185	31
Q21	F31-3	NY140	100	23
Q22	F31-3	NY141	326	68
Q23	F31-3	NY148	282	36
Q25	F31-3	J100-6	154	21
Q26	F31-3	NY157	154	7
Q28	NY152	E48-2	301	24
Q29	NY152	F31-3	197	20
Q30	NY152	J100-5	237	26
Q31	NY152	J100-6	338	56
Q32	J100-6	NY141	127	17
Q33	J100-6	NY148	110	4
Q34	J100-6	NY153	224	38
Q35	J100-6	J110-12	178	9
Q36	J105-10	J100-5	392	51
Q37	J110-12	E48-2	243	19
Q38	J110-12	F31-3	407	79
Q39	J110-12	J100-6	126	17
Q100	Atlantic	NY141	115	10
Q101	Atlantic	E48-2	645	114
Q102	Ivory Crisp	Marcy	253	40
Q103	Ivory Crisp	E48-2	350	38
Q104	E105-16	E48-2	147	49
Q105	E106-4	NY141	423	67
Q106	E106-4	E48-2	478	96
		<b>Totals</b>	<b>10794</b>	<b>1344</b>

## Fresh Market Progress Report 2015

### NYS Fresh Market Project Potato Breeding

#### Walter De Jong, School of Integrative Plant Sciences, Cornell University

The breeding program planted 6000 seedlings from freshmarket crosses this year, as detailed below. (The number planted for each cross is approximate – we sow seed with the goal of planting in multiples of 200, but sometimes end up with more than 200 seedlings, and sometimes a little less). We saved 4299 of the seedlings planted, where the only clones discarded exhibited serious tuber defects, or very low/no yield. We save most clones in at this stage, because there is poor correlation between potato performance in pots compared to performance in the field.

With our white-fleshed crosses we're working to develop an attractive, early-maturing replacement for Superior. With our yellow-fleshed crosses, we're aiming for a replacement for Yukon Gold.

**Details for fresh market crosses sown in 2015. Cross names ending with a Y have at least one yellow-fleshed parent.**

Cross	Female	Male	# planted	# saved
R14	Genesee	NY150	100	68
R15	IDB	F31-3	500	388
R20Y	L29-3	Peter Wilcox	300	401
R200	Amandine	NY115	400	394
R201	Apolline	Genesee	200	187
R202	Apolline	NY115	200	169
R203	Blue Belle	Genesee	400	289
R204	Blue Belle	NY115	400	319
R205	Early Ohio	NY115	200	85
R206	Juliette	Genesee	400	86
R207	Juliette	NY115	400	278
R208	E43-10	MSN105-1	400	189
R209Y	NY149	Valisa	200	255
R210Y	NY149	Yema de Huevo	23	16
R211	NY141	E43-10	200	79
R212	NY141	NY127	200	117
R213Y	Daisy Gold	F11-1	600	394
R214Y	B13-1	C24-1	100	80
R215Y	C24-1	D1-1	200	148
R216Y	C24-1	POR01PG4-6	200	177
R217Y	C24-1	Purple 5	200	93
R218Y	NY142	POR01PG4-6	200	87
		<b>Totals</b>	<b>6023</b>	<b>4299</b>

*We also planted 6198 four-hill plots of fresh market clones in 2015. These plots represent seedlings first grown in 2014. 383 of these four hill plots were saved after harvest, based on visual assessment of tuber appearance and yield. All will be replanted as 20-hill plots in 2016.*

## Fresh Market Progress Report 2015 (cont.)

**Details of four-hill fresh market plots in 2015. Cross names ending with a Y have at least one yellow-fleshed parent.**

Cross	Female	Male	# planted	# saved
Q13	NY143	Genesee	312	8
Q14	NY143	F31-3	108	13
Q15	NY143	J100-5	154	22
Q19	F31-3	Genesee	226	28
Q24	F31-3	G70-3	120	3
Q27	G70-3	Genesee	208	19
Q107	D40-263	MSL211-3	232	21
Q108	D40-266	Katahdin	210	10
Q109	D40-266	MSL211-3	208	20
Q110	D40-266	F16-1	172	4
Q111	D40-50	MSL211-3	242	8
Q112	E43-10	MSL211-3	156	37
Q113Y	E43-10	F55-1	187	18
Q114	E50-9	Katahdin	217	5
Q115	E50-9	F16-1	247	13
Q116Y	E50-9	F55-1	257	12
Q117Y	Eramosa	F55-1	205	9
Q118Y	F55-1	F16-1	333	13
Q119Y	F55-1	F48-4	329	21
Q120	NY141	Eva	119	3
Q121	NY141	Katahdin	242	12
Q122	NY141	MSL211-3	305	25
Q123	NY141	F55-1	186	8
Q124Y	Prince Hairy	Yema de Huevo	270	0
Q125Y	Blue Belle	Genesee	199	10
Q126Y	Blue Belle	NY115	286	25
Q127Y	Juliette	Genesee	199	5
Q128Y	Juliette	NY115	269	11
		<b>Totals</b>	<b>6198</b>	<b>383</b>

*As you can see by scanning down this table, some crosses yield a higher percentage of attractive offspring than others. It is currently impossible to predict, in advance, which crosses will yield the best offspring. We tend to sow more seeds, in future years, of crosses that we have learned, by experience, perform relatively well.*



**\$16,626 Conduct Grower-Extension Yield Trials of Advanced Potato Breeding Clones & New Varieties, Professor Walter De Jong, School of Integrative Plant Sciences at Cornell University, and Stephanie Mehlenbacher & Carol McNeil, Cornell Cooperative Extension**

1. **On-farm muck soil trial (Williams Farms, Marion NY).** Four white-skinned varieties, five colored-skinned varieties, and eleven breeding selections were planted in a replicated yield trial. The trial was planted as late as we've ever started a trial – June 24 – because of heavy rains, and harvested October 2nd. Detailed information about each clone tested can be found in the 2015 Show&Tell report (available as a .pdf file from Walter ([wsd2@cornell.edu](mailto:wsd2@cornell.edu))). Clones that yielded surprisingly well in this shortened season included Keuka Gold and a clone from Michigan State University, Michigan Purple. Photos of three-tuber samples of all clones in the trial are also available from Walter. Carol organized a twilight meeting at Williams Farms on September 2nd, to discuss the clones in the trial and other potato production topics.
2. **On-farm chip trial (Mahany Farms, near Arkport NY).** Four chipping varieties and nine breeding selections were planted in a replicated yield trial. Detailed information about each clone tested can be found in the 2015 Show&Tell report (available as a .pdf file from Walter ([wsd2@cornell.edu](mailto:wsd2@cornell.edu))). Samples of each clone were saved for chipping by Wise, Herr's, Utz and Middleswarth. Every clone tested did reasonably well. The worst yielding was a breeding selection, K27-3, at 70% of Atlantic. Second worst was Manistee, a variety from Michigan State University, at 79% of Atlantic. Utz has previously told Walter that the chip quality of Manistee is

very good, so its yield was a little disappointing. Stephanie organized a twilight meeting at Mahany Farms on August 20th to discuss the clones being evaluated.

3. **On-farm chip trial (McCormick Farms, near Castile NY).** Five chipping varieties and seven breeding selections were planted in a replicated yield trial. Detailed information about each clone tested can be found in the 2015 Show&Tell report (available as a .pdf file from Walter ([wsd2@cornell.edu](mailto:wsd2@cornell.edu))). Samples of each clone were saved for chipping by Wise, Herr's, Utz and Middleswarth. Every clone tested did reasonably well. The worst yielding was Manistee, again at 79% of Atlantic. Specific gravities were high for all entries.
  - Chip color is likely to be the character that best differentiates the clones in the two on-farm chip trials this year, since yield and gravities were generally good.



***\$3,990 Enhancing foundation potato seed production for NYS by establishing an hydroponic/ Aeroponic production system at the Uihlein Farm of Cornell University, Lake Placid, NY, Keith Perry, Cornell University. (2nd year of 2 year)***

The Uihlein Farm of Cornell University received ESPG funding in 2014 & 2015 to support work on developing an enhanced minituber production system. Most of the Farm's minitubers are presently produced in plastic pots in a glasshouse with 12 benches, each with a surface area of approximately 6.5 x 30 feet. On an equivalent amount of bench space, for some varieties, we expected to produce twice the number of minitubers using an aeroponics/hydroponics system.

- During the 2014 & 2015 seasons, we fabricated eight half-bench-size chambers to occupy four glasshouse benches. We produced two minituber crops per year during the traditional cropping cycle of ~11 weeks each. In general, some varieties produced double the yields per surface area of bench space when grown hydroponically, while others performed poorly with decrease yield. Varieties that do not produce well in the aeroponics system will continue to be grown in pots. Varieties showing promise are gradually being shifted over to the aeroponics production. Although we were able to double the production for some varieties in 2014, the nutrient solutions were suboptimal. This was recognized in the first crop of 2015, and plant growth was noticeably improved. Growth in the second crop of 2015 was excellent, but the production had to be terminated to avoid late season aphids.
- To reap the benefits of aeroponic production, we need to grow plants for an extended season. Our greenhouse cropping scheme for 2016 has been reorganized to allow transplanted potato plantlets in the chambers to grow >20 weeks. For some of our bigger varieties, this will allow us to increase production overall or to produce the same quantities but of earlier generation material.
- In summary, the doubling of minituber production was achieved for some varieties, but not for others. We expect to see considerable yield increases for some varieties yet still in 2016.

***\$4,000 Long Island Potato Trials Evaluating Yield & Quality, Sandra Menasha, Vegetable/ Potato Specialist CCE of Suffolk County.***

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- In summary, the doubling of minituber production was achieved for some varieties, but not for others. We expect to see considerable yield increases for some varieties yet still in 2016.

**\$5,000 Phenotypic characterization of new genotypes of *Phytophthora infestans*, Professor William Fry, Cornell University (Kevin Myers, Giovanna Danies, Elizabeth Bevels, Yuanhan Wu) Section of Plant Pathology & Plant-Microbe Biology**

During 2015, our lab received 158 samples from 18 states during the year for lineage assessment. As in the previous several years, the most common lineage was US-23, and accounted for 101 of the 158 samples. This lineage is pathogenic to potato and tomato and largely sensitive to mefenoxam. US-23 appears sensitive to all other late blight fungicides. In New York (52 submissions from 22 counties), only US-23 was detected in growers fields. US-8 (A2, mefenoxam insensitive, and mainly pathogenic to potatoes) was reported from California, Colorado, Nebraska and Washington. US-11 (A1, highly resistant to mefenoxam and pathogenic to both potatoes and tomatoes) was found in Oregon and California. Two new genotypes (not yet recovered sufficiently often to warrant a US-xx designation) were recovered from Texas. Interestingly, a genotype seen on Long Island in 2014 (2014-a) was not seen in 2015, and a genotype seen in western NY in 2014 (2014-b) was also not recovered in 2015.

The genotypic analysis was typically completed within 24-48 hr of receipt of a sample, but the phenotypic analysis requires much more time and effort. The phenotypic characteristics that we assessed were i) mefenoxam (Ridomil) sensitivity; ii) mating type; and iii) host preference (pathogenicity to potato or tomato). The isolates that we evaluated included the following:

- Two new genotypes from Texas (2015-a; 2015-b)
- Two genotypes recovered in 2014 from New York. Genotype 2014-a was recovered once from Long Island from tomato; 2014-b was recovered six times – five times (four from tomato and one from potato) from Allegany County and once (tomato) from Steuben County).
- A group of isolates that most probably represent a progeny and collected from western and central NY in 2010 and 2011 (GDT-1 through GDT-20)
- A group of isolates from central Mexico was included for comparison purposes (and funded by a USDA grant).

**Mefenoxam sensitivity:** US-23. We tested the mefenoxam sensitivity of a subsample (41 isolates, including 11 from New York) of US-23 recovered in 2015. Of these 40 were sensitive, and one was categorized as intermediate in sensitivity to mefenoxam. This one sample was from Erie County, PA. (However, another US-23 from Erie County PA was sensitive.) Thus, all US-23 isolates collected in NY in 2015 and tested for mefenoxam sensitivity were found to be sensitive. The two new genotypes (2015-a, and 2015-b) from Texas turned out to be generally sensitive to mefenoxam.

The New York isolates from 2014 had different sensitivities. 2014-a was very resistant to mefenoxam.

Isolate 2015-b was borderline intermediate – it was slightly more resistant than isolates in the “sensitive” category. (For reassurance, it is important to note that neither of these genotypes was detected in 2015.) The group of isolates from 2010-2011 were (with one exception) sensitive to mefenoxam. The single non-sensitive strain was intermediate in its response. (None of these isolates has been detected since 2011.) The group of isolates from Mexico were highly diverse for mefenoxam resistance. There were more than 30 isolates in this group and they ranged from being highly sensitive to highly resistant. Mexico remains potentially a source of mefenoxam-resistant strains for the USA.

**Mating type:** The two Texas genotypes are growing very slowly, and attempts to ascertain mating type have so far been unsuccessful. Of the two “new” New York isolates detected in 2014, 2014-a was A1, and 2014-b was A2.

The group of isolates from 2010-2011 in New York contained about equal numbers of A1 and A2 mating types – a ratio expected in a progeny. The group of isolates from Mexico contained about equal numbers of A1 and A2 mating types – a situation expected from a randomly mating sexual population (which is characteristic of the Mexican population).

**Host Preference:** The host preference of the two genotypes from Texas is still in process. These genotypes are growing very slowly in culture. Assessment of 2014-a is still in process, but it is expected to be pathogenic on tomato because it was detected in the field on tomato. We assessed several individuals of 2014-b for host preference, and this genotype appeared equally pathogenic on potato as tomato. This is consistent with the fact that it was found in the field on both potatoes and tomatoes. In comparison to US-23, none of the isolates of 2014-b seemed nearly as aggressive as US-23. No individual of 2014-b produced lesions as large as those produced by US-23, and they also did not produce nearly as many sporangia from the lesions as were produced by US-23.

A subset of the isolates from upstate NY in 2010-2011 and from Mexico were assayed for pathogenicity on potatoes and tomatoes. Numbers of sporangia produced on either potato leaflets or tomato leaflets were used to assess host preference. The isolates from NY in 2010-2011 (the GDT isolates in Figure 1), were diverse for their host preference. Some isolates were more pathogenic to tomatoes than to potatoes; some isolates were equally pathogenic on both hosts, and other isolates were more pathogenic to potatoes than to tomatoes. The isolates from central Mexico were mainly pathogenic to potatoes.



## **\$6,000 Resistance of promising Cornell potato clones to early blight & late blight** **Professor William Fry, Cornell University (Hillary Mayton, Steve McKay, Section of Plant Pathology & Plant Microbe Biology)**

**Abstract:** Seventeen potato breeding lines and four named cultivars were evaluated for resistance to early blight of potato caused by *Alternaria solani*, and for resistance to late blight caused by *Phytophthora infestans*.

- Early blight resistance: Of the four named cultivars used as controls, Atlantic was most resistant and Superior was most susceptible with Chieftain and Pike being somewhat more susceptible than Atlantic. Of the breeding lines, L17-1 was highly resistant to early blight with almost no disease as the end of the season. L28-7 and L27-3 were somewhat more resistant than Atlantic. A few breeding lines were more susceptible than Superior, with L12-2 being significantly more susceptible.
- Late blight resistance: Of the four named cultivars used as controls, Pike was somewhat more resistant to late blight than were Chieftain, Atlantic and Superior. Breeding lines NY150 and L9-6 were noticeably more resistant than all of the other clones/cultivars. Lines L8-12 and K28-14 appeared somewhat more susceptible than the other clones/cultivars.

**Method:** The trial was conducted at the Cornell University Homer C. Thompson Research Farm located in Freeville, NY. Planting occurred on 17 Jun into a Howard gravelly loam soil. Plots were a single row with five plants per row with a 9 in. spacing. Nitrogen, phosphorous and potassium fertilizer was applied (13-13-13) at rate of 500 lb/A for the early blight trial and at 1150 lb/A for the late blight trial in-furrow one day prior to planting. In addition, Lorox (2 lb/A) + Dual II Magnum (1.5 pt/A) was applied at planting for weed control. Each trial consisted of four replications established in a randomized complete block design. Average maximum temperatures for Jun, Jul, Aug and 1-11 Sep were 73.6, 78.0, 77.9 and 84.3° F, average minimum temperatures were 53.6, 56.5, 56.2 and 61.1° F, respectively. Total rainfall precipitation (in.) for Jun, Jul, Aug and 1-11 Sep was 6.6, 4.9, 1.4 and 0.2, respectively. Plants emerged about two weeks after planting.

- *For the early blight trial.* A total of five applications (10 Jul, 23 Jul, 14 Aug, 28 Aug and 4 Sep) of Ridomil SL was applied with a tractor mounted sprayer at a rate of 3.4 fl oz /A @ 20gpa to control late blight. For the late blight trial, Early blight occurred naturally at this location and no supplemental inoculum was applied. Plots were irrigated 4–6 days per week in the evening for 0.5–1 hr (~0.5 in./hr) with an overhead irrigation sprinkler system. Disease rating began on 24 Jul and ended 11 Sep. Percent disease (0-100) was assessed visually 1-2 times per week until the first week of Sep. Disease severity values were used to calculate the area under the disease progress curve (AUDPC) for each cultivar/line.
- *For the late blight trial.* Two applications of Endura were applied at a rate of 2.5 oz/A on 10 and 23 Jul to control early blight development in test plots. On 12 Aug each plot was inoculated with 0.10 pt of a sporangial suspension containing ~ 12,500 sporangia of *P. infestans* (US-24 genotype) using a hand-held sprayer. A second application of inoculum (20,000 sporangia in 0.10 pt) was applied to all plots on 17 Aug to ensure epidemic development. Plots were irrigated 4–6 days per week in the evening for 0.5–1 hr (~0.5 in./hr) with an overhead irrigation sprinkler system. Disease rating began on 19 Aug and ended 10 Sep. Percent disease (0-100) was assessed visually 2-3 times per week until the first week of Sep. Disease severity values were used to calculate the area under the disease progress curve (AUDPC) for each cultivar/line.
- *Early blight results.* Early blight lesions began to appear at the end of July. Early blight developed rapidly and disease pressure remained high. Highly susceptible lines had greater than 50% disease severity by the third week of August. Line L17-1 had very little early blight. Some breeding lines and the cultivars Atlantic and Chieftain had modest early blight. Other breeding lines and the cultivar Superior had high levels of early blight and appear quite susceptible.
- *Late blight results.* Late blight lesions began to appear 3-5 days after inoculation. Late blight developed rapidly and disease pressure remained high throughout the duration of the trial. All cultivar/lines were susceptible to the US-24 isolate used in the trial. However, disease was slow to develop on NY150 and L9-6 (Table 2) indicating that these breeding lines may have some resistance to late blight. Of the named cultivars, only Pike showed even a slight level of resistance.

**Conclusions.** The range of reaction to early blight in the breeding lines was quite large. In particular the resistance in L17-1 seems very impressive.

The range of reaction to late blight (US-24), was much less, but the levels of resistance in NY150 and L9-6 were still quite impressive. Walter de Jong indicated that the parents of NY150 are Jacqueline Lee and NY121 – lines with noticeable late blight resistance. There are likely R genes in Jacqueline Lee, but the reaction we observed was not typical of “classical” R gene resistance. There may be other genes in addition to any R genes present. The resistance in L9-6 was likely from some of its grandparents, which include NY121 and Allegany. The phenotype of resistance in NY121 and Allegany seems inconsistent with R gene resistance, so it’s possible that this resistance is not due to R genes.



## Call for Research Proposal Deadlines March 15th

The Empire State Potato Growers administers 3 Research Project Funds as outlined below. Please note the deadline for submitting proposals for each funding line is March 15<sup>th</sup>. Also, we would appreciate start dates to be on or before June 30<sup>th</sup>.

### RESEARCH & DEVELOPMENT FUND:

Gary Mahany, chairman of the grower funded Research & Development Advisory Committee, is requesting researchers submit research and development proposals for consideration by the Research & Development Committee. The primary goal of any submission should be that it must have a direct, positive impact on the NYS potato industry. The projects are funded with voluntary GROWER and industry contributions. The Empire State Potato Growers, Inc. matches all funds contributed. Please send submissions electronically to [gmahany@verizon.net](mailto:gmahany@verizon.net) AND COPY to Melanie Wickham [mwickham@nypotatoes.org](mailto:mwickham@nypotatoes.org).

### POTATO VARIETY DEVELOPMENT FUND(S) Chip & Fresh:

Chris Hansen, chairman of the grower/ processor funded Potato Variety & Development Fund, is requesting researchers submit chip potato breeding proposals for consideration by the PVDF Chip Committee. The Eastern potato chipping industry created a mechanism to meet the urgent need to enhance the development of new potato varieties that are best adapted for its growing, storage and utilization enterprises. Please send the proposal to Hansen electronically at [chrishansen@mccormickfarms.net](mailto:chrishansen@mccormickfarms.net) AND COPY to Melanie Wickham [mwickham@nypotatoes.org](mailto:mwickham@nypotatoes.org).

John Williams, chairman of the grower/ processor funded Potato Variety & Development Fund, is requesting researchers submit fresh potato breeding proposals for consideration by the PVDF Fresh Committee. The NY fresh industry is modeling this research initiative after the success of the chip component, to meet the urgent need to enhance the development of new potato varieties that are best adapted for fresh market. Please send the proposal to Williams electronically at [williamsfarmslc@rochester.rr.com](mailto:williamsfarmslc@rochester.rr.com) AND COPY to Melanie Wickham [mwickham@nypotatoes.org](mailto:mwickham@nypotatoes.org).

## Jacob Rathbun named Empire State Potato Growers Scholarship Winner



Jacob Rathbun of Naples, NY, was awarded the 2015 Empire State Potato Growers Association Scholarship winner at last years Empire Farm Days Leadership Luncheon. The Empire State Potato Growers Association annually selects an undergraduate student residing in and attending college in NY to receive a \$500 scholarship/academic year for up to four consecutive years of agricultural education.

Jacob graduated from Naples High School last June and began his pursuit of a degree in viticulture at Finger Lakes Community College last fall. He plans to transfer to Cornell University to complete his Bachelors degree in viticulture and enology. His career goal is to start his own grape farm and winery and grain production enterprise.

Jacob was raised on the family farm in Naples, NY, where he has helped fit ground, plant, hill and harvest 350 acres of potatoes. This spring Jacob and his father Charles Rathbun planted 50 acres of their first crop of barley to sell to the craft brewing industry. Jacob has a hobby planting of grapes on the farm. This summer he will visit vineyards and wineries in Italy.

“The Empire State Potato Growers Association is pleased to recognize Jacob Rathbun for his interest in pursuing an agricultural education with the goal of establishing a new farm business in the Finger Lakes region of New York State,” said Empire State Potato Growers Association Scholarship Committee Chairman Andrew Pryputniewicz.

## Golden Nematode Research Management Program in New York

Golden nematode (GN) was first discovered in New York in 1941 and has been successfully confined within New York as the result of a coordinated multi-institutional team approach that includes contributions from USDA'S Agricultural Research Service (ARS) (Dr. Xiaohong Wang), Cornell University, USDA-Animal Plant Health Inspection Service (APHIS) and NYS Department of Agriculture and Markets (NYSDAM) and NY growers. Quarantine and regulatory activities have played an integral part of limiting the spread of GN, but it is the research component (nematode biology, control options, and development and distribution of resistant potato varieties) that has provided the basis for the effective management of infested areas.

The nematode research program directed by Dr. Wang is the only research program in North America that has hands-on experience and expertise in the biology, resistance breeding, and management of the potato cyst nematode *Globodera rostochiensis* (a.k.a. golden nematode).

Breeding nematode resistant potato varieties is the cornerstone of the NY research team. Access to resistant varieties allows continued production and international marketing of US potatoes. The ARS nematode research program collaborates with the potato breeding program at Cornell University, specifically Dr. Walter DeJong, Associate Professor School of Integrative Plant Science, Section of Plant Breeding and Genetics and his team, as well as many other breeding programs in the country, including the University of Maine, University of Wisconsin, and the ARS breeding programs in Aberdeen, Idaho and Maryland, and has contributed to the release of more than 40 GN resistant potato varieties, all of which were evaluated in the PCN Quarantine Facility, which is the only facility in the U.S. approved by USDA-APHIS for work on both GN and *G. pallida* pests.

New York growers have the additional benefit of the Uihlein Farm, Lake Placid, NY headed up by Dr. Keith L. Perry, Associate Professor Director, New York State Foundation Seed Potato Program, Henry and Mildred Uihlein Professor of Plant Pathology Department of Plant Pathology and Plant-Microbe Biology Cornell University. As stated on its website, "The mission of the Uihlein Farm of Cornell University is to serve the potato growers of New York State and the US potato industry as a whole by

supporting the development of potato varieties resistant to a pest of national importance, the potato cyst nematode (the Golden Nematode or GN in New York State)."

This longstanding collaborative effort of developing and releasing nematode resistant potato varieties relies heavily on Dr. DeJong's breeding program and on farm trials, Dr. Wong's nematode resistance evaluations in the GN Lab at Cornell University and the production of disease-free seed on Cornell University's Uihlein Farm.

The GN Lab Facility is also the only one in the country allowed to receive and test soil and nematode cyst samples provided by APHIS and NYSDAM. Nematode viability and virulence are determined in this Facility, by Dr. Wang and her team, which provides an essential support to the needs of GN quarantine and regulatory programs.

With all the important work that has been and is carried on in this facility, it is necessary to point out that the current building was constructed as a temporary laboratory in the early 1940s and is struggling to meet current federal quarantine standards.

Cornell University, NYSDAM, the Empire State Potato Growers association, and other state potato associations understand that investing in this quarantine facility to ensure the effectiveness of the quarantine is vital to the NY and U.S. potato industries.

New York growers and their partners in the GN program are working to ensure state and national collaborators are informed and invested in this +70-year success story continues to protect and improve the potato industry in the US.

The Empire State Potato Growers Inc. is working closely with Cornell University's College of Agriculture and Life Sciences to secure funding to retrofit new lab space to continue, without interruption, the Golden Nematode Quarantine Program. Visits to NYS Legislative offices as well as US Congressional offices have been vital in educating legislators about this important program and obtaining support for these to continue.

The Uihlein Farm is vital component of the NY Potato program. It continues to come under financial pressure and the Empire State Potato Growers Inc is pursuing avenues to ensure the Uihlein Farm is fiscally strong and continues providing disease-free seed and research for the potato industry.



# 2015 Empire Farm Days Highlights

## Capital Improvements

Constructed an Empire Farm Days Office Building: Broke ground for Empire Farm Days Office on June 2 and moved in on July 13<sup>th</sup>. Dedicated building in honor of Rodman & Ellen Lott in a ceremony that included the Lott family and the Empire State Potato Growers Inc Board of Directors and EFD committee members just prior to the show.

## Weather

Even though June was incredibly wet it we managed keep the site mowed and it looked great for exhibitor's to begin move-in the first week in August. The EFD site crew continued to make improvements in drainage with tiling, signage and stone. We had minimal rain during set up which makes for a smooth experience for exhibitors. During show week we got just enough rain to settle the dust and bring farmers out to the show.

## Attendance

We estimated visitor numbers were up about 20% over previous years.

## Equipment Displays & Field Demos

Empire Farm Days continues to be the best place for farmers to meet face to face with manufacturers, distributors and dealers to discuss new technologies, improved strategies and innovative equipment, products, services.



## Seminars & Demos

The Soil Health Seminar was an expansion of the Cover Crop Demo started 2 years earlier. This cooperative initiative between exhibitors and USDA gave producers information on the newest advances in soil health and practical applications for their operations. Equine Round Pens, Livestock Handling, Beef Quality Assurance Training, In-water Safety, Farm Safety, Grain Bin Safety & Training of First Responders are just a few of the other live demonstrations ongoing during the show.



**Ag Leadership Luncheon, Sponsored by Farm Credit East** had great attendance numbers. We honored FCE and ESPG scholarship winners as well as NYSDAM Agricultural Environmental Management Winner. American Agriculturist continues to support this award as well as the ESPG.

## Other Activities

4-H Foundation runs a very popular Kiddie Tractor Pull as a fundraiser and way to spread the word about 4-H.



# EMPIRE STATE POTATO GROWERS, INC.

## GROWER MEMBERSHIP & CONTRIBUTION PAYMENT FORM

Now all it takes is this form and ONE check. **We've made it easier than ever to pay your membership dues and contribute to the National Potato Council and Research Funds administered by the Empire State Potato Growers.** This newsletter reviews the important work done by the NPC and Research Summaries from last year's projects. You can see the vital work these funds are able to accomplish. If you haven't yet contributed please consider this your chance to be a vital part of improving your industry through legislative impact and research.

Company/ Farm: \_\_\_\_\_ Contact: \_\_\_\_\_  
Street/ Box: \_\_\_\_\_ City, State, Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ CELL: \_\_\_\_\_  
Fax: \_\_\_\_\_ Email address: \_\_\_\_\_

### INFORMATION FOR POTATO GROWER DIRECTORY:

To be listed in a potato grower directory, please check or fill in below as you'd like it to appear in the directory.

☐ Seed Potato Grower Varieties: \_\_\_\_\_

☐ Tablestock/ Fresh Potato Grower Varieties: \_\_\_\_\_

Specialty Potato Varieties/ Types: \_\_\_\_\_

☐ Chipping Potato Grower Varieties: \_\_\_\_\_

Consumers can find my potatoes at: \_\_\_\_\_

Other Information To Be Included: \_\_\_\_\_

**1. NYS GROWER MEMBERSHIP** (3 or more Acres) \$20 per membership \$ \_\_\_\_\_

### 2. NATIONAL POTATO COUNCIL QUOTA PAYMENT

Lump Sum Payment I feel is appropriate **OR** # acres \_\_\_\_\_ x \$0.50 per acres = \$ \_\_\_\_\_

### 3. RESEARCH & DEVELOPMENT FUND PAYMENT

Lump Sum Payment I feel is appropriate **OR** # acres \_\_\_\_\_ x \$2.00 per acre = \$ \_\_\_\_\_

### 4. POTATO VARIETY DEVELOPMENT RESEARCH FUND

Lump Sum Payment I feel is appropriate **OR** # acres \_\_\_\_\_ x \$2.50 per acre = \$ \_\_\_\_\_

Please allocate my PVDF monies to (chip or fresh): \_\_\_\_\_

**TOTAL** (Membership, NPC, R & D, PVDF-make sure you denote amounts above) \$ \_\_\_\_\_

Address All Checks and Correspondence To:

Empire State Potato Growers, Inc., Melanie Wickham, Executive Director  
PO Box 566, Stanley, NY 14561 Phone: 877/697-7837 Fax: 585/295.9663

**DUE IN ESPG OFFICE BY April 1 - Please Return This Entire Bill with Your Payment**