

Distribution of Potato Royalty Funds (CSU Potato Research and CSU AES Funds):										CSU Potato Breeding Program:		
Year	Project Funded	Principal Investigator	Dept	Account	Amount Awarded	Commitment				(David Holm)	Date	Received
2003	Potato Disease	Zink, R.	3043	015347/153476	3,000.00	Yr 1/5					Dec-03	51,942.45
2003	Potato Biochemistry	Vivanco, J.	1173	015333/153336	24,498.00	Yr 4/5					Nov-04	38,937.41
	Funds Allocated				27,498.00						Feb-05	5,082.65
2003	AES Dir Office Balance		3001	015390/153906	15,000.00	SLV Potato Processing Project					Nov-06	62,282.87
2003	Total Potato Royalty Funds Received				42,498.00						Feb-07	5,750.46
2004	Total Potato Royalty Funds Received											
2004	Potato Disease	Zink, R.	3043	015347/153476	31,857.89	Yr 2/5						
2004	Potato Biochemistry	Vivanco, J.	1173	015333/153336	25,000.00	Yr 5/5						
2004	Funds Allocated				28,000.00							
2004	AES Dir Office Balance		3001	015390/153906	18,858.27							
2003	SLV Potato Processing Project Support				(15,000.00)							
2004	AES Dir Office Balance				3,858.27							
2004	Total Potato Royalty Funds Received				4,158.54							
2004	AES Dir Office Balance			2/24/2005	8,016.81							
2005	Potato Royalty Funds Received			12/6/2005	33,039.13							
2005	Potato Royalty Funds Received			12/29/2005	1,534.99							
2005	Potato Biochemistry	Vivanco, J.	1173	015333/153336	(14,105.00)	Final Amount						
2005	AES Dir Office Balance		3001	015390/153906	28,485.93							
	Add Back: SLVRC Balance Unused				10,042.04							
2006	AES Dir Office Balance				38,527.97							
2007	Potato Disease			153476	(6,000.00)	Yr						
2007	SLVRC Infrastructural Support				32,527.97							
2007	Potato Processing Facility Support		3043		(32,527.00)							
2007	Potato Royalty Funds Received				50,958.72							
2007	Potato Royalty Funds Received				4,704.92							
2007	AES Dir Office Balance		3001		55,664.61							

The Colorado Potato Breeding and Selection Program- Photo Essay



Potato flowers are complete since they contain both female and male parts.



Most new potato cultivars originate from the cross pollination of parent plants. This photo illustrates removal of the anthers (male part) in preparation for cross pollination.



Pollen is extracted from the anthers for cross pollination.



Pollen is transferred to the stigma (female part) of the selected female parent.



A small tomato-like berry or seed ball develops after pollination, if successful fertilization takes place.



Each seed ball may contain less than 100 seeds to a few 100 small seeds. Each seed is genetically different and represents a potential new potato cultivar.



The seeds are germinated in the greenhouse to produce seedling plants.



Several thousand seedlings are grown in the greenhouse each year. This increases the probability of finding improved cultivars since about 200,000 seedlings are grown for each cultivar named and released.



The seedling plants are grown to maturity to produce tubers in the greenhouse. Each tuber can differ in appearance, cooking qualities, and several other important characteristics. These tubers all came from one cross (same parents) displaying the great amount of genetic variation in potatoes.



Seedling tubers produced in the greenhouse are planted in the field the following year as single hills. The tubers are planted three-feet apart to allow for easy separation and identification at harvest.



When the single hills are harvested, selection is done to identify potential new cultivars. "Wild" types (like pictured above) are discarded because of long stolons and late maturity.



These tubers were also discarded because of a serious grade defect. Selection in the single hills is primarily based on tuber appearance.



The following year, selections from the single hills are increased for further evaluation. Each single hill is now called a clone and will carry a unique designation until discarded or named.

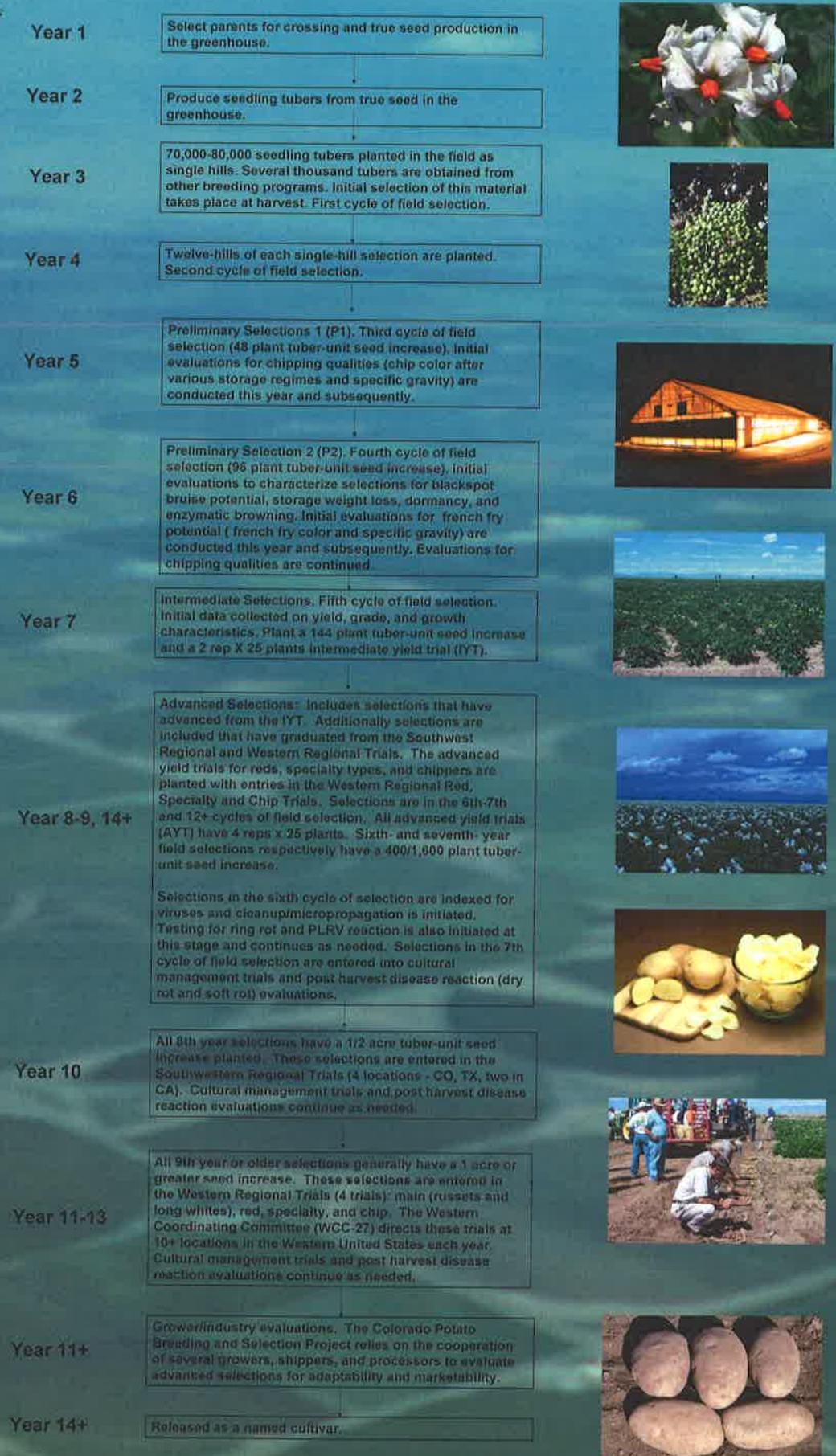


It takes 10-12 years of evaluation before naming a new cultivar. In the end, a new cultivar should be superior to existing cultivars in some way such as increased yield, resistance to pests and stresses or a higher percentage of US No. 1 tubers.



The long-term process of developing a new potato cultivar fosters collaborations among growers, shippers, processors, researchers, and extension personnel.

The Development of a New Potato Cultivar



CPAC Research Committee Project Funding 2005 - 2006

Dr. Richard T. Zink	
✓ Dr. Robert D. Davidson	\$20,000.00
✓ Merlin A. Dillon	\$ 9,000.00
✓ David G. Holm	\$21,000.00
Research Assoc.	\$37,000.00
✓ Dr. Cecil Stushnoff	\$30,000.00
Dr. Richard T. Zink	
Russell E. Ingham	\$20,000.00
✓ Samuel Essah	<u>\$25,000.00</u>

TOTAL: \$ 162,000.00

SP1 - Done

05-06 CPAC Funding

Request Funded

Researcher	Research Proposals	Request	Funded
David Holm	Breeding and Assisant MOU Funding	60500	58000
Cecil Stushnoff	Value Added Health Benefits	30688	15000 (+15,000 = 30,000.-)
Samuel Essah	Cultivar Management	30000	25000
Prithiviraj/Vivanco	Screening for Nematode Resistance	19200	0
Rick Zink	Disease Management	22500	20000
Merle Dillion	Bio-fumigation	9900	9000
Scott Nissen	2-4-D in Red Potatoes	5300	0
Russ Ingham	Columbia Root Knot Nematodes	24220	20000
Agro Engineering	Aphid Supression	31560	17670
		233868	164670 179,670.-

- Example of letter -

2006 Project Proposal for the CPAC Research Committee - Area II; San Luis Valley, CO

Investigator(s)	Project Title	\$ Amount	Rank
Holm, David & P. Naranjo	Potato Breeding and Selection for Colorado	60,500	50,000
Stushnoff, Cecil, D. Holm & H. Thompson	Improving Value-Added Health Attributes of Colorado Potatoes	23,225	-
Essah, Samuel Y.C.	Development of Cultivar Specific Management Profiles for New and Existing Potato Cultivars	30,000	25,000
Davidson, Robert & A. Houser	Potato Disease Management	25,000	25,000
Dillon, Merlin & R. Ingham	Using Biocontrol Crops to Enhance Potato Production	9,000	5,000
Bond, Craig & J.K. Bond	Colorado Consumer Preferences for Specialty Potato Varieties	19,736	moved
Sastry, Jayanty	Post Harvest Evaluations of Potatoes (no formal project submission)	15,000	10,000 (Hold onto this)
Ingham, Russ, et al	Management of Nematodes on Potato in the San Luis Valley, CO	26,300	15,000
Agro-Engineering; Thompson, Kirk, et al	<i>Phytophthora erythroseptica</i>	38,850	12,000
Agro-Engineering; Jeannine Willet Radtke	Aphid Suppression and Monitoring Program		18,000
Other			
Other			
Other			
	Sub-Total	247,611	160,000
	Grand Total		
	Available		

more workshops - field visits } Examine research }
 Esp. work w/ Erwinia } *

18,000 line item to CPAC
 Approve budget as stated - Approved
 Approve - Agro - M-2nd

2005 - \$33,000 to CSU / 20,500 Agro
 31,000 to SLREC -
 164,000 - old research acct

2006 Project Proposal for the CPAC Research Committee - Area II; San Luis Valley, CO

Investigator(s)	Project Title	\$ Amount	Rank
Holm, David & P. Naranjo	Potato Breeding and Selection for Colorado	60,500	35,000
Snushnoff, Cecil, D. Holm & H. Thompson	Improving Value-Added Health Attributes of Colorado Potatoes	23,225	Low
Essah, Samuel Y.C.	Development of Cultivar Specific Management Profiles for New and Existing Potato Cultivars	30,900	25,000
Davidson, Robert & A. Houser	Potato Disease Management	25,000	25,000
Dillon, Merlin & R. Ingham	Using Biocontrol Crops to Enhance Potato Production	9,000	5000
Bond, Craig & J.K. Bond	Colorado Consumer Preferences for Specialty Potato Varieties	19,736	(To marketing)
Sastry, Jayanty	Post Harvest Evaluations of Potatoes (no formal project submission)	15,000	(Hold off 10,000)
Ingham, Russ, et al	Management of Nematodes on Potato in the San Luis Valley, CO	26,300	15,000
Agro-Engineering, Thompson, Kirk, et al	<i>Phytophthora erythroseptica</i>	38,850	15,000
Agro-Engineering, Jeannine Willet Radtke	Aphid Suppression and Monitoring Program	18,000	
Other			
Other			
Other			
	Sub-Total	247,611	
	Grand Total		
	Available	(150,000)	For project

50,500
 25,000
 Temp Labor 50,000

12,000

180,000 Total

Samuel - visit more growers
 Dave - early Russets - NIK replacement



AGRO ENGINEERING

"COMPREHENSIVE AGRICULTURAL AND WATER RESOURCE CONSULTING"

0210 ROAD 2 SOUTH ALAMOSA, CO 81101

PHONE (719) 852-4957 FAX 852-5146

TO: Colorado Potato Administrative Committee - Research Subcommittee

DATE: March 6, 2006

SUBJECT: Contract for the Green Peach Aphid
Integrated Pest Management Program 2006

Agro Engineering, Inc. proposes to conduct the Green Peach Aphid Integrated Pest Management program which it has conducted since 1986. The program includes both suppression and monitoring of the Green Peach Aphid along with several other important insect pests of potatoes.

Suppression

Suppression procedures involving overwintering hosts of the Green Peach Aphid (GPA) will be conducted as in 2005 by Agro Engineering, Inc. (Agro) The 2005 Mapping program resulted in the detection of 43 new sites, with 97 peach or plum trees plus 4 groves of trees. The total number of sites treated each year was over 200 from 2001 to 2004. Trees from a number of those sites were removed, and with the prunus quarantine in place, we saw an overall decrease in prunus host trees. In 2005, our starting list of host tree sites was over 200, but inspections found no to few new shoots emerging following tree removal on a number of sites, and they were deleted from the list. Total number of sites for 2006 should be about 219. It should be a priority to pay for removal of as many prunus trees as possible. CPAC could again coordinate with the CCPGA to see if they would have funds available for that. Treatment area includes Monte Vista, Del Norte, Center, and the surrounding area as well as some northwest Alamosa county locations. Inspections will be done on removal sites until it is clear that no shoots will survive. Treatment of overwintering hosts will be done through the use of dormant oil applications, which are of low hazard to people and the environment. Treatment operations will be completed on or before May 10, 2006, unless extenuating circumstances arise which may affect performance or safety to residents or operators.

A public relations campaign will be conducted, including submitting a news article to local papers which describes the program. Letters and permission slips will be sent to homeowners and personal contact will be made before and after spray treatment when possible. Agro is licensed as a commercial applicator in the State of Colorado. Records will be maintained in accordance with State of Colorado and Federal laws and regulations.

Cost Proposal for Suppression Program

Plum & Peach Trees - spray / inspect / prune shoots

1) Materials	\$ 500.00
Sprayer maintenance	\$ 200.00
2) Mileage	\$2,000.00
3) Labor for Dormant Oil Treatment (Must be done by Commercial Applicators)	\$ 12,360.00
4) Licensing and Insurance	\$ 2,150.00
5) Public Relations	\$ 300.00
6) Record keeping and Final Report	\$ 800.00
 Suppression Total	 \$ 18,310.00

Agro Engineering, Inc. will be paid by the SLV Research Center Committee for the GPA Suppression Program. The full sum of \$ 18,310 will be paid on September 30, 2006.

Proposal for Additional mapping of Prunus GPA Host Trees in the SLV

Host tree mapping was done in 2005. This activity should be conducted every two or three years to ensure that newly planted trees are discovered. Since so many new tree locations were detected in 2005, mapping is less necessary for 2006 than treatment and removal.

Suggested schedule for mapping: 2007, 2009, 2011

Proposal for Eradication

Agro proposes to identify host trees that may be removed as part of the suppression program. We would arrange with one or more local contractors to remove trees and will follow up to be sure work is done properly. Eradication billing from the contractor would be forwarded to CPAC after the work is approved.

Eradication costs not to exceed \$ 3,000.00.

Monitoring

Two proposals are included for the Monitoring phase of the Integrated Pest Management Program for your consideration. The first will include setting out a valley wide system of 34 yellow pan traps in the same locations as during the 2001 - 2004 trapping programs, and monitoring the insects in the traps on a weekly basis. This would allow insect movement to be tracked in areas representative of the SLV, and those trap counts can be compared with past years. The full season cost proposal is for the trapping schedule that has been used since 2002, the first year that the June trapping was eliminated. Traps will be set out on June 23 and collected each week through September 15, 2005, when monitoring will cease.

The second program would consist of 15 traps, with the same locations as in 2005. This would provide good information about the central SLV, but those counts do not correlate with historical data. The second proposal is for the reduced season and reduced trap program similar to what CCPGA funded in 2005. The traps will be set out on June 23 and collected each week through August 11th, when monitoring would cease. Population peaks of GPA and psyllids will be missed with the timing of this trapping. A shift of two or three weeks later might cover those peaks, but could result in missing the miscellaneous population peak, which is thought to be the major cause of mosaic spread.

Insects will be captured weekly and brought to Agro Engineering for identification. Agro proposes to continue to count green peach aphids, potato aphids, Russian wheat aphids, miscellaneous aphids, leafhoppers, and psyllids. Trap counts will be faxed each week to the CSU Research Center and to the CPAC office for posting and colored maps will be mailed to both sites. Insect counts will also be available on the Agro Engineering web site.

<u>Cost Proposal for Monitoring Program</u>	June 23-Sept 15 34 traps & 13 weeks Program	June 23-Aug11 15 traps & 8 weeks Program
1) Materials	\$750.00	\$350.00
2) Mileage	\$1,735.00	\$515.00
3) Labor for Pan Trap Collection, Insect Identification, Information processing, and dissemination	\$11,675.00	\$5,650.00
5) Final Report	<u>\$600.00</u>	<u>\$600.00</u>
<u>Total Monitoring</u>	\$14,760.00	\$7,115.00

Billing Schedule: Billing will be submitted on September 30, 2006



AGRO ENGINEERING

"COMPREHENSIVE AGRICULTURAL AND WATER RESOURCE CONSULTING"

0210 ROAD 2 SOUTH ALAMOSA, CO 81101

PHONE (719) 852-4957 FAX 852-5146

TO: Colorado Potato Administrative Committee - Research Subcommittee

DATE: March 2, 2005

SUBJECT: Contract for the Green Peach Aphid
Integrated Pest Management Program 2005

Agro Engineering, Inc. proposes to conduct the Green Peach Aphid Integrated Pest Management program which it has conducted since 1986. The program includes both suppression and monitoring of the Green Peach Aphid along with several other important insect pests of potatoes.

Suppression

Suppression procedures involving overwintering hosts of the Green Peach Aphid (GPA) will be conducted as in 2004 by Agro Engineering, Inc. (Agro) Hundreds of additional plum trees were added with the 2000 and 2001 mapping programs and no mapping has been done since that time. Apricot trees were taken out of the spray program in 2001 because they were not a very good GPA host. The total number of sites treated each year has been over 200 since 2001. Trees from a number of those sites have been removed, and with the prunus quarantine in place, we are just beginning see an overall decrease in prunus host trees. We should again work with the CCPGA to remove as many prunus trees as possible. Treatment area includes Monte Vista, Del Norte, Center, and the surrounding area as well as some northwest Alamosa county locations. Inspections will be done on removal sites until it is clear that no shoots will survive. Treatment of overwintering hosts will be done through the use of dormant oil applications, which are of low hazard to people and the environment. Treatment operations will be completed on or before May 16, 2005, unless extenuating circumstances arise which may affect performance or safety to residents or operators.

A public relations campaign will be conducted, including sending a news article to local papers which describes the program. Letters and permission slips will be sent to homeowners and personal contact will be made before and after spray treatment when possible. Records will be maintained in accordance with the State of Colorado and Federal laws and regulations.

Cost Proposal for Suppression Program

Plum & Peach Trees - spray / inspect / prune shoots

1) Materials	\$ 500.00
Sprayer maintenance	\$ 200.00
2) Mileage	\$1,720.00
3) Labor for Dormant Oil Treatment	\$ 12,000.00
(Supervisor - \$50.00/hr x 4.5 weeks x 40 hrs	
(Technician - \$25.00/hr x 4 weeks x 30 hrs	
5) Licensing and Insurance	\$ 2,150.00
6) Public Relations	\$ 300.00
7) Record keeping and Final Report	\$ 800.00
 Suppression Total	 \$ 17,670.00

Proposal for Additional mapping of Prunus GPA Host Trees in the SLV

Agro Engineering, Inc. proposes to map additional prunus trees, at time of bloom, to look for unknown host trees that are serving as a reservoir of Green Peach Aphids. The area to be mapped in 2005 would be started in the areas with the highest GPA counts from the 2004 mapping and extend as far outward from those points as time and or funding allows. Since no mapping has been done for four years and the number of sites on the treatment list is beginning to show a decline, this would be a good time to look for additional plum trees that could be treated or removed.

Cost Proposal for GPA Host Tree Mapping

- 1) Labor for mapping (\$ 50.00/hr)
- 2) Vehicle mileage (\$.41/mile)

Total for GPA mapping not to exceed \$ 3000.00 .

Agro Engineering, Inc. will be paid by the SLV Research Center Committee for the GPA Host Tree Mapping. The full sum of \$..... will be paid on September 30, 2005.

Monitoring

The Monitoring phase of the Integrated Pest Management Program will include setting out a valley wide system of 34 yellow pan traps, and monitoring the insects in the traps on a weekly basis. Agro Engineering proposes to keep all pan traps in those same locations as they have been in since 2001, so that insect movements to the north continue to be tracked and the remainder of the trap counts can be compared with past years.

Insects will be captured weekly and brought to Agro Engineering for identification. Agro proposes to continue to count total aphid numbers from the pan traps, as has been done since 1996, to determine timing of miscellaneous winged aphid population peaks that may be responsible for mosaic spread.

The cost proposal is for the reduced season trapping schedule that has been used since 2002. Traps will be set out on June 22 and collected each week through September 14, 2005, when monitoring will cease. Trap counts will be faxed each week to the CSU Research Center and to the CPAC office for posting and colored maps will be mailed to both sites. Insect counts will also be available on the Agro Engineering web site.

Cost Proposal for Monitoring Program

	<u>Short season Program</u>
1) Materials	\$750.00
2) Mileage	\$1,735.00
3) Labor for Pan Trap Collection (\$30/hr x 13 hrs/wk x 13 weeks)	\$5,070.00
4) Labor for Insect Identification (\$60/hr x 8 hrs/wk x 12 weeks)	\$5,760.00
5) Final Report	\$575.00
<u>Total Monitoring</u>	\$13,890.00
<u>Total Suppression</u>	\$17,670.00
<u>Total Suppression and Monitoring</u>	\$ 31,560.00

Billing Schedule: Billing will be submitted on September 30, 2005