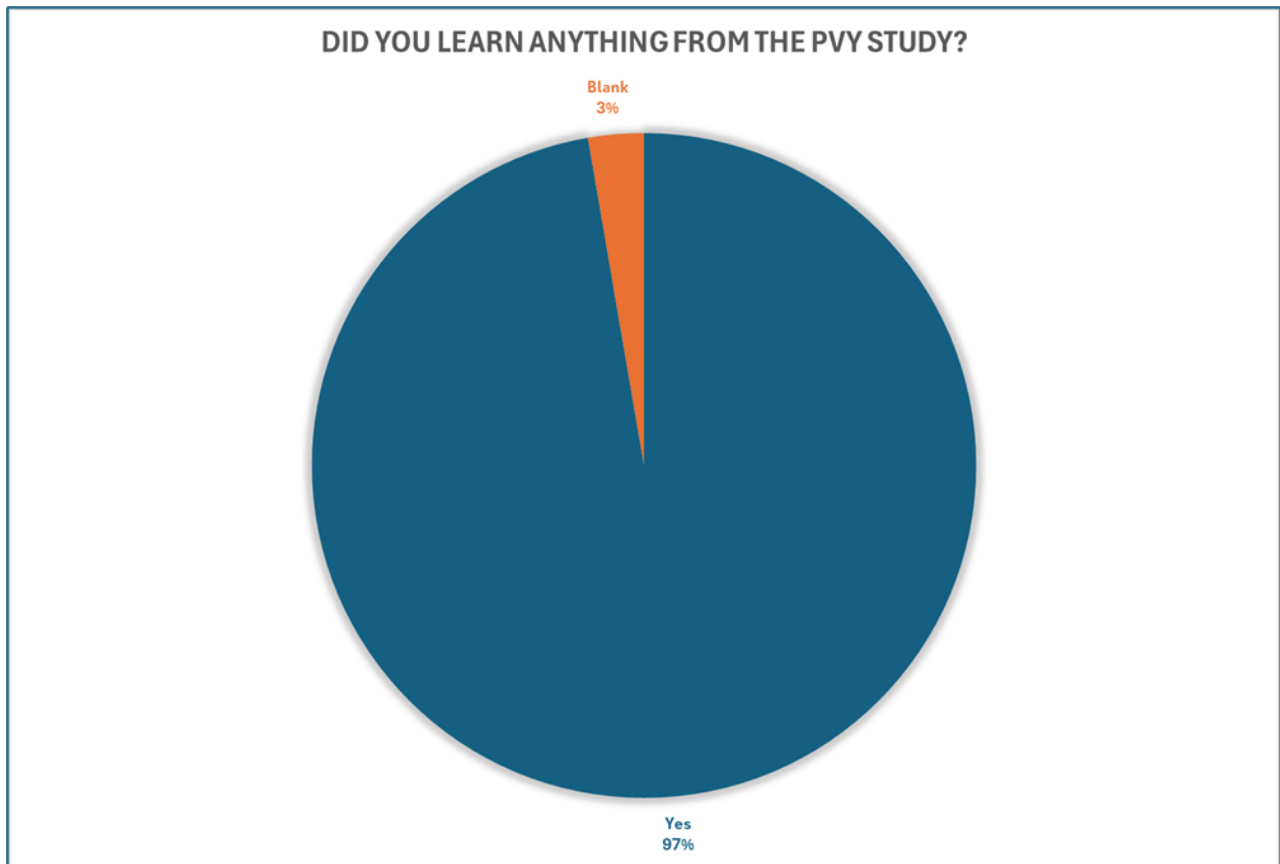
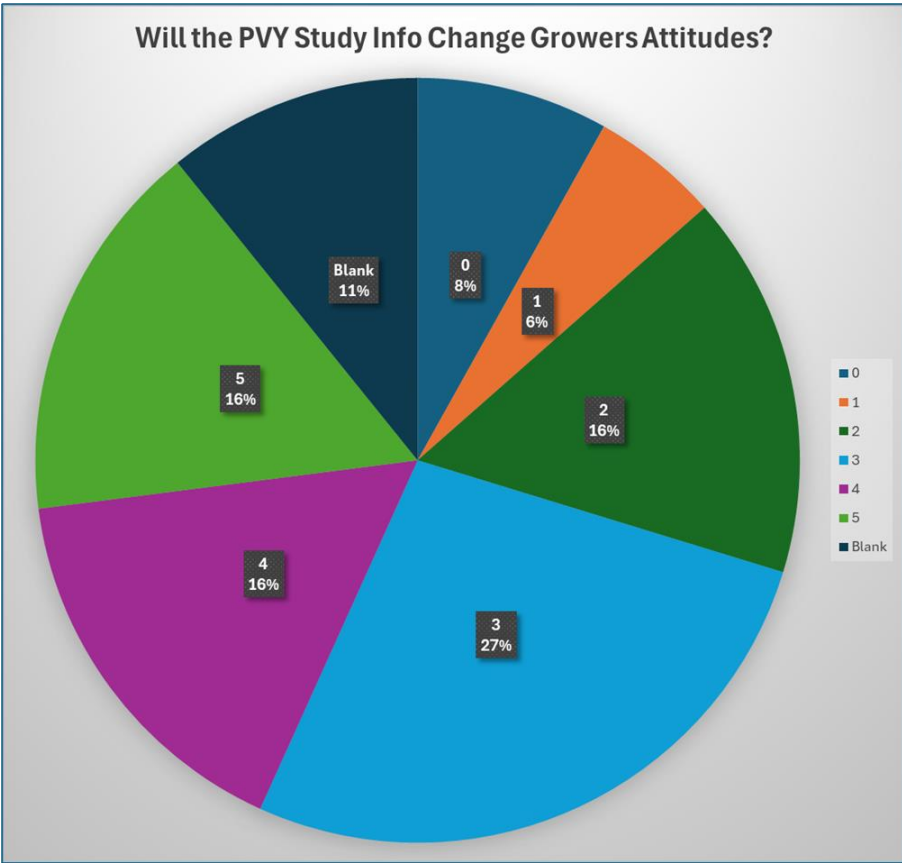
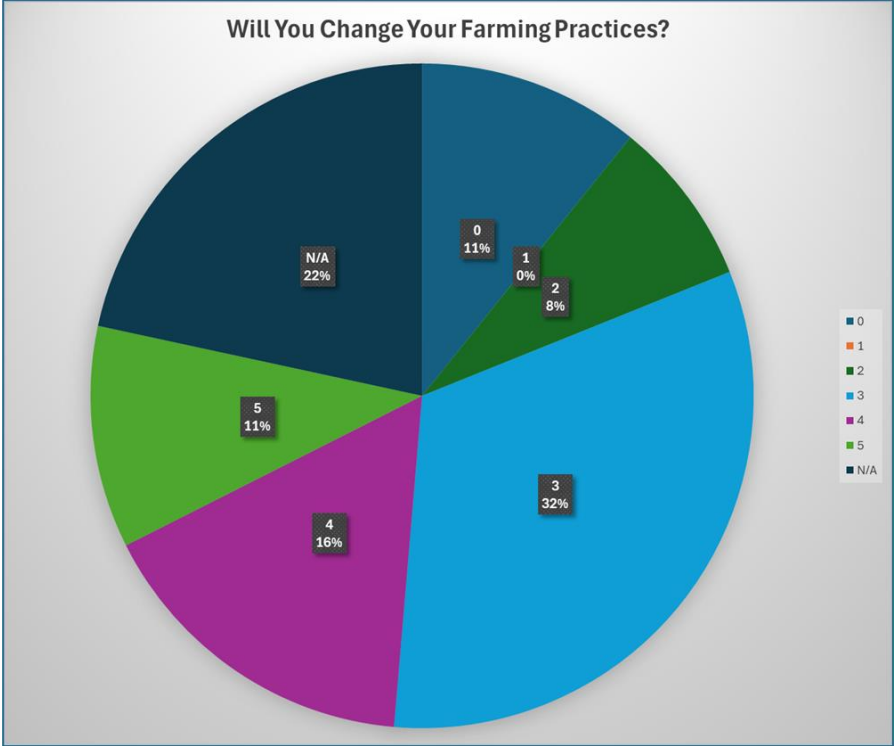


Summary of the Colorado Western SARE Mini-Grant: Testing of Commercial Potatoes for Presence of Potato Virus Y (October 1, 2022 – September 30, 2023)

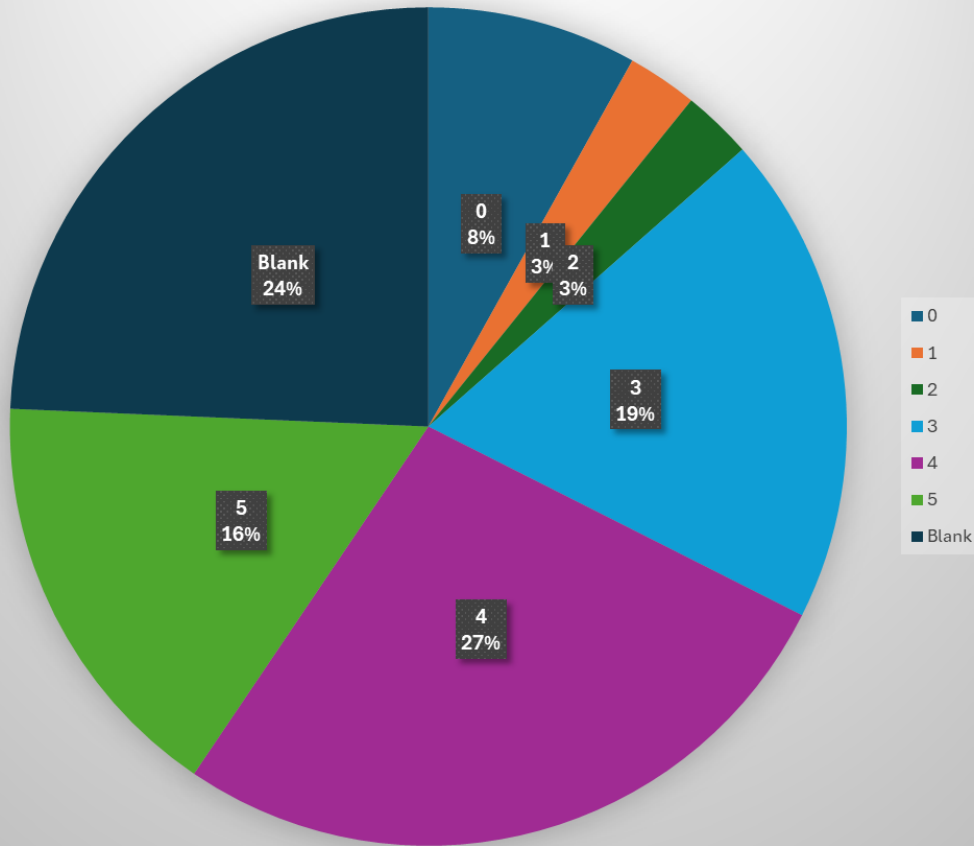
The purpose of this project was to show farmers how much Potato Virus Y (PVY) they are currently planting in their potato fields. The goal is to encourage potato farmers to engage in farming practices that will reduce the overall number of PVY infected plants being planted on their farms. Potato samples were collected in the fall of 2022 and tested for PVY. A follow-up visual foliar inspection and random leaf test was conducted during the 2023 growing season for any of these seed lots that were planted. There were 20 seed lots submitted for testing from 11 farmers. PVY levels in these seed lots ranged from 0.0% up to 89.4% PVY, with an overall average of 25.0% PVY. This information was presented at the 42nd Annual Southern Rocky Mountain Agricultural Conference in Monte Vista, CO (February 6th, 2024). A survey was distributed among the attendees of the conference with 37 people responding to the survey. Overall, the response from those in attendance was positive with 97% saying that they learned something from the study and 59% saying they would change their farming practices based on the study.

Survey Results:





Will These Changes in Attitude Help the Overall PVY Situation in SLV?



Commercial PVY Survey Summary (Fall 2022, Summer 2023)

The Colorado Potato Administrative Committee (Area II) and the Colorado Potato Certification Service (PCS) worked together on a project in the fall of 2022 continuing through the summer of 2023 to get a better idea of the amount of PVY currently in the SLV potato industry. This survey was funded by a Western SARE mini grant and CPAC Area II. PCS tested potato samples (200 tubers each) from 20 different seed lots from commercial operations in the fall of 2022 to help determine the PVY levels in the potatoes that were going to be planted in the 2023 field season. Many of the tested seed lots were planted in one or more fields in the summer of 2023. A random visual inspection and lab test was performed on the foliage from these fields. The below table is a summary of the results from this survey. Samples and fields with the same color background came from the same grower/operation.

Sample #	Variety	Direct Tuber PCR Test ^a			Summer 2023 Data					
		Date Submitted	Date Tested	%PVY ^b	# Fields Planted (Summer, 2023)	Date Read/Picked	Visual ^c		Lab ^d	
						%Mosaic	Avg %Mosaic	%PVY	Avg %PVY	
1	Reveille Russet	10/20/2022	10/28/2022	6.9%	1	13-Jul-23	22.3%	22.3%	24.2%	24.2%
2	Reveille Russet	10/25/2022	10/28/2022	29.4%	Not Planted					
3	Russet Norkotah 278	10/25/2022	11/1/2022	52.2%	1	25-Jul-23	27.9%	23.2%	24.2%	35.6%
					2	25-Jul-23	21.2%		37.5%	
					3	25-Jul-23	20.4%		45.1%	
4	Reveille Russet	10/25/2022	10/31/2022	21.5%	1	19-Jul-23	89.4%	84.7%	45.1%	63.4%
					2	19-Jul-23	75.8%		45.1%	
					3	19-Jul-23	88.9%		100.0%	
5	Russet Norkotah 3	10/25/2022	11/1/2022	40.4%	1	19-Jul-23	4.1%	4.1%	0.0%	0.0%
					2	6-Jul-23	12.1%		24.2%	
					3	6-Jul-23	13.3%		14.8%	
					4	6-Jul-23	15.2%		16.7%	
					5	6-Jul-23	9.5%		27.1%	
6	Russet Norkotah 296	10/25/2022	10/31/2022	20.6%	1	6-Jul-23	11.1%	12.2%	21.6%	20.9%
					2	7-Jul-23	14.3%		17.8%	
					3	7-Jul-23	15.1%		20.1%	
					4	7-Jul-23	18.0%		17.8%	
					5	7-Jul-23	18.5%		21.4%	
7	Reveille Russet	11/2/2022	11/3/2022	20.1%	1	14-Jul-23	54.9%	54.9%	21.4%	21.4%
					2	14-Jul-23	21.5%		20.1%	
					3	14-Jul-23	19.0%		43.3%	
					4	14-Jul-23	11.4%		35.6%	
8	Russet Norkotah 8	11/2/2022	11/3/2022	27.5%	1	14-Jul-23	11.4%	17.3%	21.4%	33.0%
					2	14-Jul-23	19.0%		43.3%	
					3	14-Jul-23	11.4%		35.6%	
9	Russet Norkotah 296	11/2/2022	11/2/2022	45.1%	1	14-Jul-23	11.4%	17.3%	21.4%	33.0%
					2	14-Jul-23	19.0%		43.3%	
					3	14-Jul-23	11.4%		35.6%	
10	Russet Norkotah 3		11/1/2022	33.2%	Not Planted					
11	Russet Norkotah 90	11/4/2022	11/8 & 11/11/22	37.3%	1	25-Jul-23	18.1%	18.1%	51.9%	51.9%
12	Reveille Russet		11/8 & 11/11/22	29.1%	2	25-Jul-23	16.7%	16.7%	40.4%	40.4%
13	Chieftan	11/4/2022	11/8/2022	5.0%	1	26-Jul-23	2.1%	2.1%	2.1%	2.1%
14	Soraya		11/9/2022	0.0%	1	26-Jul-23	0.0%	0.0%	0.5%	0.5%
15	Reveille Russet	11/7/2022	11/9 & 11/10/22	2.1% (*2.2%)	1	13-Jul-23	3.1%	2.9%	3.2%	3.7%
					2	13-Jul-23	3.3%		1.5%	
					3	13-Jul-23	2.5%		6.2%	
16	Russet Norkotah 296	11/7/2022	11/10/2022	11.3%	Not Planted					
17	Reveille Russet	11/10/2022	11/14/2022	52.4%	Not Planted					
18	Russet Norkotah 296	11/10/2022	11/14/2022	20.1%	Duplicate of Sample #6					
19	Russet Norkotah 3	11/10/2022	11/14 & 11/15/22	24.2%	NA					
20	Centennial Russet	11/10/2022	11/15/2022	21.4%	NA					

Average %PVY of All Seed in Survey Intended for Plantback:	26.2%	22.7%	26.1%
Average %PVY of Reveille Seed Intended for Plantback:	26.6%	35.0%	36.8%
Average %PVY of Russet Norkotah Seed Intended for Plantback:	31.8%	22.3%	22.2%

^aThe direct tuber test method used is a modified procedure based on the immuno-capture protocol used by Montana Seed Certification. Tuber tissue is tested directly for the presence of PVY.

^bTubers were tested in composites of 5, so there were a total of 40 tests performed per sample. This compositing was done to reduce the overall cost of testing. As the number of PVY positive tests increase, the likelihood of a single test containing more than one tuber with PVY goes up. The formula used to calculate %PVY takes this into account. The %PVY calculation is only an estimate of what is actually in the seed lot.

^cThe visual results are based on a random 1,000 plant count. The %PVY was calculated by dividing the total plant count by the number of plants expressing mosaic symptoms.

^dThe lab results are based on a random 200 leaves picked from the field. The leaves were tested in composites of 5 using ELISA and the %PVY was calculated based on the # PVY positive wells detected in the sample. As the number of PVY positive tests increase, the likelihood of a single test containing more than one tuber with PVY goes up. The formula used to calculate %PVY takes this into account. The %PVY calculation is only an estimate of what is actually in the seed lot.

* PHT result from a sister sample that was evaluated in Hawaii, Dec. 2022.

