Silver Scurf Economic Assessment Survey

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The University of Idaho College of Agriculture

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Silver Scurf Economic Assessment Survey

PURPOSE AND OBJECTIVES

The purpose of this survey was to document the incidence of Silver Scurf in Idaho's fresh market potatoes and to quantify the economic impacts.

The survey had the following objectives:

1. To document the presence and severity of Silver Scurf.
2. To document the increasing incidence of Silver Scurf
3. To compare the problem of Silver Scurf relative to other quality problems.
4. To determine the type and level of impacts Silver Scurf had on the fresh pack industry and the dollar loss associated with these impacts.

Information from this survey was used in a research proposal to the National Potato Council. The purpose of the NPC project is to develop and evaluate management practices for the control of Silver Scurf.

PROCEDURES

A survey was mailed to all fresh pack potato sheds in Idaho the last week in June. The sheds were asked to complete and return the survey to the University of Idaho by mid July. A total of 66 sheds were contacted. Appendix A contains a copy of the survey.

SURVEY RESULTS

A total of 31 sheds responded to the questionnaire from a total of 66 (Table 1). One questionnaire was returned because the address was incorrect. These 32 sheds account for 48 percent of the sheds contacted. However, the 26 million cwt reported as shipped in 1991/92 by these 32 sheds accounts for nearly 80 percent of the state's total shipments. (Question #9.) Eighty percent is a conservative number as one or more sheds did not provide shipment data.

Sheds were classified according to location. (See Table 1.) The four areas were the Upper Valley (UV), eastern Idaho from Idaho Falls north, the Lower Valley (LV), eastern Idaho south of Idaho Falls, the Magic Valley region (MV) of south central Idaho, and the Treasure Valley (TV) of western Idaho. Only one survey was received from the Treasure Valley. It was not included in the regional analysis as they ship only field run potatoes and only for a few weeks each year. This shed reported no problem with Silver Scurf.

Table 1. Survey Respondents By Location

Upper Valley (UV)	15
Lower Valley(LV)	5
Magic Valley (MV)	10
Treasure Valley (TV)	1
TOTAL	31

Question #1

All sheds responding to the survey indicated an increasing incidence of Silver Scurf over the past two seasons with two thirds indicating a "substantial" increase. The problem was most pronounced in the Magic Valley region where every shed indicated a substantial increase. (See Table 2.) Variability in Silver Scurf appears greatest in the Upper Valley. Several respondents from this region commented that while the area where they purchase potatoes had very little evidence of silver scurf, adjacent areas had considerable evidence.

Table 2. Incidence of Silver Scurf in Recent Years.

	Increased	Slightly	Moderately	Substantially
State	100%	7.4%	25.9%	66.7%
UV	100%	14.3%	35.7%	50.0%
LV	100%	0.0%	50.0%	50.0%
MV	100%	0.0%	0.0%	100%

Question #1.

Question #3

Regarding the increasing presence of Silver Scurf, potatoes with evidence of Silver Scurf increased from an average of 19.8 percent during the 1991/92 shipping season to 37.1 percent for the 1992/93 shipping season on a statewide basis. This represents an 87 percent increase. The regional variation was consistent with Question #1 with increasing incidence going from the Upper Valley to the Magic Valley. (See Table 3.)

Table 3. Potatoes Showing Evidence of Silver Scurf.

	1991/92	1992/93
State	19.8%	37.1%
UV	10.5%	23.9%
LV	17.0%	40.0%
MV	35.0%	55.5%

Question #3.

Table 4. Percent of Potatoes Rejected Because of Silver Scurf.

	1991/92	1992/93
State	3.2%	9.9%
UV	.5%	3.7%
LV	.4%	15.0%
MV	8.6%	16.5%

Question #4-a.

Question #4

With regard to potatoes that were rejected at a dockside or field inspection because of Silver Scurf, responses summarized in Table 4 show a 225 percent increase statewide. Rejections increased from 3.2 percent in 1991/92 to 9.9 percent in 1992/93 on a statewide basis. Sheds responding to the questionnaire estimated rejections in 1992/93 at over 2 million cwt, up from .5 million cwt the previous year. (See Table 5.) The disposition of these potatoes is shown in Table 6. The majority of the rejected potatoes were sold to processors, 46 percent. Another 35 percent were sold as processing grade to dehydration plants, 4 percent as cattle feed, and for the remainder, no information was available. The average loss per cwt for potatoes sold to processors was $.75, the loss on the potatoes sold as processing grade averaged $3.40, and the average loss on potatoes sold as cattle feed was $5.20. (See Table 6.) These dollar loss values were rounded to the nearest $.05.

Table 5. Quantity of Potatoes Rejected Because of Silver Scurf.

		1991/92	1992/93
State	Average per Shed	18,815 cwt	76,852 cwt
	Total	508,000 cwt	2,075,000 cwt
		1991/92	1992/93
UV	Average per Shed	2,867 cwt	32,333 cwt
	Total	43,000 cwt	485,000 cwt
		1991/92	1992/93
LV	Average per Shed	0 cwt	85,000 cwt
	Total	0 cwt	425,000 cwt
		1991/92	1992/93
MV	Average per Shed	46,500 cwt	116,500 cwt
	Total	465,000 cwt	1,165,000 cwt

Question #4-b.

Table 6. How Rejected Potatoes were Marketed and Loss per cwt.

		Average $ Loss/cwt
Sold to processor (fry plant)	46.1 %	$ .75
Sold as process grade	34.6 %	$3.40
Sold as cattle feed	3.9 %	$5.20
Don't know	15.4 %	------

Question #4-c.

Question #5

Another economic loss occurs when potatoes are rejected during the shipping point inspection. Sheds responding to the survey indicated that 1.2 million cwt failed inspection. The majority of these potatoes were blended and repacked. Others were sold as #2's, or sold to a processor, fryer or dehydrator. The average cost of sorting reported to repack was $2.30 per cwt. The cost ranged from a low of $1 per cwt to a high of $5 per cwt.

Question #6

The last point in the movement of potatoes where a quality problem, such as Silver Scurf, can have a direct economic impact occurs when potatoes are rejected or require an adjustment at the receiving point. Respondents indicated a total of 92 lots required an adjustment with an average adjustment of just over $6,000 and total loss of over $.5 million. (See Table #7.) The average number of adjustments and value of adjustment was calculated using the 31 sheds responding. However, only 8 sheds reported receiving point adjustments caused by Silver Scurf. The loss to these sheds was considerable higher than the average loss would imply.

Table 7. Receiving Point Adjustments Related to Silver Scurf.

	Total	Average
Lots Requiring Adjustment	92	3
Value of Adjustment	$554,120	$6,023

Question #6.

Question #7

The sheds were also asked to estimate the total cost of Silver Scurf related impacts on their business. The sheds responding indicated a loss in excess of $2.5 million. This averaged $83,400 per shed. (See Table 8.) The average loss was calculated using all 31 sheds. However, only 28 of the responding sheds indicated a loss stemming from Silver Scurf.

Table 8. Shippers Estimate of Loss Related to Silver Scurf.

	Total	Average per Shed
1991/92 Shipping Season	$598,000	$19,230
1992/93 Shipping Season	$2,585,000	$83,400

Question #7.

Question #8

It should be emphasized that much of the information contained in this report is subjective. When asked if they had records to substantiate the impacts cited in the survey, only 37 percent of the sheds have these records. It should also be noted that the individuals contacted are still the best source of information in spite of limited records.

Question #2

Silver Scurf is not the only quality problem that the fresh pack industry faces. Question #2 asked the respondent to rate a number of quality factors from high to low with a lower number indicating a more severe problem. These values have meaning only in the context of comparing one problem to another within a year, between years or comparing these problems between years.

The factors perceived as causing the least problem for the industry, excessive tare, insect/nematode damage, and scab, ranked as #6, #7 and #8, respectively, maintained their relative positions from 1991/92 to 1992/93. Bruise, ranked #1 both years, was clearly the most serious problem. The other four factors did change in ranking from one year to the next. Hollow heart made the biggest change in ranking, going from #5 to #2. Silver Scurf went from #4 to #3. Green/sunburn decreased from #2 to #4 and soft rot decreased from #2 to #5. (See Table 9.)

Table 9. Statewide Ranking of Quality Factors Affecting Potatoes in 1991 and 1992.

-------1991/92-------		-------1992/93-------		
Rating	**Rank**	**Rating**	**Rank**	
1.4	1	2.2	1	Bruise
5.3	6	5.6	6	Excessive Tare (dirt, rock, foreign material)
5.2	5	3.0	2	Hollow Heart/Internal Discoloration
5.4	7	6.5	7	Insect Damage/Nematode Damage
2.6	2	3.7	4	Green/Sunburn
5.1	4	3.6	3	Silver Scurf
6.4	8	7.0	8	Scab
4.3	3	4.4	5	Soft Rot

Economic Impact

The economic impact of Silver Scurf on the Idaho potato industry occurs because of losses at a number of locations in the marketing chain from grower to the consumer. The first and obvious impact occurs at the grower level when potatoes are rejected for use in the fresh market at a dockside inspection. Growers will also incur a loss from higher cullage when potatoes are run on a consignment basis. Growers will also incur a loss if they determine before a dockside inspection that the incidence of Silver Scurf would make them unusable in the fresh market and the potatoes are moved to a processor without a formal rejection.

The next level of impact occurs at the shipper level when potatoes are rejected at a shipping point or platform inspection. The magnitude of the impact will vary depending on the final disposition of the potatoes. At a minimum, the shipper will face additional costs if the potatoes are repackaged or resorted.

The third level of impact occurs when an adjustment is made to a shipment at the receiving end. The magnitude of the impact will vary, depending on the magnitude of the adjustment.

With the limited amount of information available, it is not possible to place a precise dollar impact on Idaho's potato industry resulting from Silver Scurf. The impacts are not always straight forward and often become entangled with other quality problems. Another problem in evaluating the impact deals with the changing severity of the problem as the storage season progresses. In addition, it became obvious when reviewing the questionnaires that the questions were not interpreted the same, and that all the right questions were not asked. A last factor that influenced the calculation of the loss was the strong fry market that existed which provided an alternative market for many of the potatoes infected with Silver Scurf and with only a slight to moderate loss in value.

When viewed in total, the loss estimated from the survey data is $7.2 million. (See Table 10.) This can be viewed as a conservative figure as it does not make any allowance for the sheds not responding which represent approximately 20 percent of the shipments. Also, the 1992/93 shipping season was not complete when the survey was conducted and several sheds indicated that receiving point adjustments were still being made on a number of lots.

Given the lack of precise data and the incomplete response, it is best to view the loss in terms of a range in values. Therefore, the total loss to Idaho's potato industry from Silver Scurf for the 1992/93 season ranges between $7.2 million to $8.6 million. The higher value assumes the same level of impact on the 20 percent of shipments not covered by the survey data.

Table 10. Silver Scurf Economic Impact Calculation For 1992/93.

Rejected: Dockside/Field Inspection[1]		
Sold to Fry Plant	2,075,000 x .46 x $0.75 =	715,875
Sold as Process Grade	2,075,000 x .35 x $3.40 =	2,469,250
Don't Know	2,075,000 x .15 x $3.10 =	964,875
Cattle Feed	2,075,000 x .04 x $5.20 =	431,600
		4,581,600
Estimated Economic Impact on Shippers		
(Less Receiving Point Adjustments [2]	$2,585,000 - 554,120 =	2,030,880
Receiving Point Adjustments[3]		554,120
	Total Economic Impact (80% of shipments)	$7,166,660
	Total Economic Input (100% of shipments) $7,166,600 x 1.2 =	$8,599,920

1 Quantity rejected 2,075,000 cwt, taken from Table 5. Percentages and average dollar loss taken from Table 6. Dollar loss on "Don't Know" is the average of fry plant, process grade and cattle feed dollar loss per cwt.

2 Estimated economic impact on shippers taken from Table 8 and adjusted for receiving point adjustments using date from Table 7.

3. Value of shipping point adjustments taken from Table 7.

Future Needs

This type of questionnaire should be repeated in the future. The current questionnaire needs to be modified in several areas to get a more complete picture of the extent of Silver Scurf impacts. Having this type of information available will allow the University of Idaho to monitor the effectiveness of any Silver Scurf management programs. In addition, the type of information found in Question #2 can be useful to document the type of quality problems the industry faces. This type of baseline information is often lacking. The impact of all quality factors on the Idaho potato industry should be better documented and quantified.

Appendix A

University of Idaho 1993 Silver Scurf Economic Assessment Survey

1. How has the level of Silver Scurf infected potatoes that you've seen in your shed changed in recent years? Please specify the nature and the magnitude of the change.

2. Please rank the following factors that affected the quality of potatoes for fresh shipment from your shed during the 1991/92 and the 1992/93 shipping seasons. Start with #1 being the leading cause and #8 being the least severe.

3. Estimate the percent of the potatoes your company received during each of the last two seasons that showed some evidence of Silver Scurf.

4. Estimate the percent of the potatoes that your company received that showed evidence of Silver Scurf high enough to cause rejection of the potatoes at a dockside or field inspection.

   b. If you can, please estimate the quantity of potatoes rejected:

   c. What happened to the potatoes you rejected for fresh shipment? Please indicate where the potatoes were marketed and the dollar loss per cwt for each of these alternatives.

5. Please specify the quantity of potatoes rejected during a shipping point or platform inspection that related to Silver Scurf.

   b. What happened to these potatoes?

   c. If they were repackaged, please estimate the cost per cwt and/or the total cost of the extra sorting to your company.

6. Please specify the number of lots shipped by your shed that required an adjustment at the receiving point because of Silver Scurf, and the value per adjustment.

7. If you can, estimate the total cost of Silver Scurf related impacts on your company for the past two season.

8. Do you have any records that could be used to document the impact of Silver Scurf?

9. What is the approximate quantity of potatoes shipped by your company each of the past two seasons?

10. Please make any comments or observations you feel are pertinent to this survey or to the problem of Silver Scurf.

    Comments:

    _____

Appendix B

Comments from 1993 Silver Scurf Survey

Upper Valley

- Black shoulder and internal discoloration seem to be worsening also. Much of the soft rot and breakdown were caused by open lenticiles.
- We have no dock side inspects. We had about 150,000 cwt. out of 700,000 cwt. that we had to sort heavier than usual for silver scurf.
- I really haven't had to deal with severe silver scurf. My personal opinion is silver scurf is the pet peeve of receivers this year to get loads open. I hope the problem doesn't get worse next year. A different set of conditions during the growing season and harvest could easily change the amount of silver scurf in storage and how it progresses in storage. If however the problem persists growers need to be advised how to better control it. Research is needed.
- Silver scurf has not been a problem in our warehouse as yet.
- This area (Egin Bench) as of yet hasn't been infested with silver scurf.
- In the past we have seen very little silver scurf in the potatoes that we ran. This year there was significantly more especially beginning around March.
- Progressed during storage - noticed in February and March - got worse thereafter. We had no losses on adjustments after shipping. There was however a greater amount of cullage in the lots with silver scurf.
- We have not operated the shed the past 3 years except an occasional month or two. I have never seen silver scurf in previous years and have not seen it in our own potatoes in recent years.

Lower Valley

- Very, very serious problem throughout the state, we can't see any way to control it yet.
- Silver scurf has become a very serious problem late in the shipping season. Immediate attention needs to be given to this problem. The grade needs to be tightened on silver scurf.
- Silver scurf has been a sorting factor the last 3 months (April, May, June). It has been scored against a US. No. 1 and has affected packouts and total value of sales. We rejected very few lots outright after purchasing them. If we thought there was going to be a problem, we didn't make any offers to purchase. Silver scurf was very serious this year, but we also saw soft rot, bruise, stem end and hollow heart in larger than normal amounts. The combination was difficult to overcome. Idaho's market image has suffered as a result.

Magic Valley

- It is getting worse and worse. Control unknown.

- We did not experience too many problems in our packing operation because we were selective in our purchase. The only cost was in not being able to pack good grades of potatoes because they were scurfy. We experienced many other problems than scurf : black heart, hollow heart, black spot pythium, pink eye, fusarium. All of the defects we feel are related to changes in cultural practice. We have our own test plots to test our theory on scurf. September harvest may give us an answer. We feel that a change in cultural practice could be the root of the problem. We have 11 different lots of potatoes in our long term storage June-July-August so far no scurf is visible. We store at low temperatures.

- It is our largest concern with potatoes after the first of February. All lots have some scurf in them after the first of the year.

- Silver scurf is causing severe economic losses for growers as well as after packing losses for shippers. It has been our experience that if silver scurf is not observed when the potatoes are packed it can still show in transit. We are to the point where we reject lots of potatoes if any degree of scurf is evident at all. Over 50% of storages sampled were rejected for scurf. Silver scurf is a very serious problem and is on the increase.

- For us silver scurf hasn't been as much of a problem this year, as it was last year. But we took some precautions this year by lowering cellar temps. to 39 degrees and lowering humidity to 85%. We also monitored cellars every week after June 1st and cellars displaying silver scurf were run in a timely order.

- I found it difficult to place dollar amounts or cwts lost due to this problem because in most cases it would be a combination of problems. I feel we as shippers were very fortunate to have a good fryer market this year or losses would have been very very substantial. The problem is getting out of hand. Need to control scurf at the seed level. It's effects show up more in the lighter or sandy soils, and so with lighter colored skins the problem is more evident. We also noticed the problem showed up more in dry potatoes than wet ones.

- Difficult to attribute the rejections to silver scurf entirely but it certainly was a major factor.

- It is hard to say what the cost is in 1992-1993 crop because of the french fry price is high and you can sell potatoes for a better price than running fresh. But if it would have been a $2.00 year the cost would have been a much higher loss.