MANAGEMENT OF SILVER SCURF

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Silver Scurf, caused by the fungus *Helminthosporium solani*, damages potato tubers by reducing the quality of smooth skin cultivars and tubers produced for fresh markets. Transmission of the fungus mainly occurs from seed tubers to progeny tubers. Infection can also occur in storages when spores from infected tubers are disseminated to healthy tubers by air currents. Tubers may also become infected from soil borne spores, but this is not considered a critical form of transmission.

The importance of disease level on seed tubers was demonstrated in an experiment conducted two years at Othello, WA. The level of silver scurf was determined on seed tubers of a large number of seed lots and then on the progeny tubers from each seed lot. There was a positive correlation between the amount of scurf on the seed and on the progeny tubers both years (Figures 2 & 3). As the severity of seed tuber infections increased, the amount of scurf on the progeny tubers also increased, indicating a need for clean seed. However, disease levels of seed tubers did not account for the entire amount of disease increase on progeny tubers, indicating soil factors are also important.

In another experiment the level of silver scurf was determined on successive generations of seed tubers to determine when the disease may be building up during the seed tuber increase process. Disease levels were determined for nuclear, generation 1, generation 2, and generation 3 seed tubers of 5 lots of cultivar Russet Norkotah and 3 lots of Russet Burbank. Cropping histories and storage conditions were noted for each lot. In all lots of seed tubers, the amount of silver scurf increased with each successive generation of seed regardless of cultivar (Figure. 1). Factors that reduced silver scurf were fewer seed generations in the field, long rotations between potato crops, and storing lots separately.

Sporulation of infected tubers in storage can be reduced by particular salt and fungicide treatments applied to tubers as they go into storage. Salt treatments, sodium bi-carbonate and potassium sorbate, significantly reduced silver scurf sporulation 2 weeks after the treatments were applied (Figure 4). Sodium bi-carbonate did not reduce sporulation in another study when spore counts were taken 10 weeks after the tubers were treated. However, fungicides Quadris, Maxim, and Mancozeb applied as a dust were able to significantly reduce sporulation after the 10-week period (Figure 5). The two salts may be effective by reducing the amount of spores produced while the storage is cooling to an optimum long-term storage temperature. Once the cooler temperatures have been reached within the storage, the temperature itself will reduce the amount of lesion growth and sporulation. Fungicide treatments are effective in reducing sporulation but could only be used on tubers that would be used for seed the following year and not on tubers that are intended for consumption.

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Fungicide seed treatments are effective in reducing silver scurf by reducing the amount of scurf passed from the seed to the progeny tubers. Ten different seed treatments were replicated at four different locations in the Columbia Basin in 1998. The same seed source of Russet Burbank was used for all four locations. Silver scurf was significantly less on tubers from seed tubers treated with Maxim + PCNB, Quadris, Maxim, New Tops MZ, and Tops MZ (Table 1). Silver scurf differed among the four locations indicating that location is important and that soil conditions and perhaps soil borne inoculum is important in silver scurf development (Table 2).

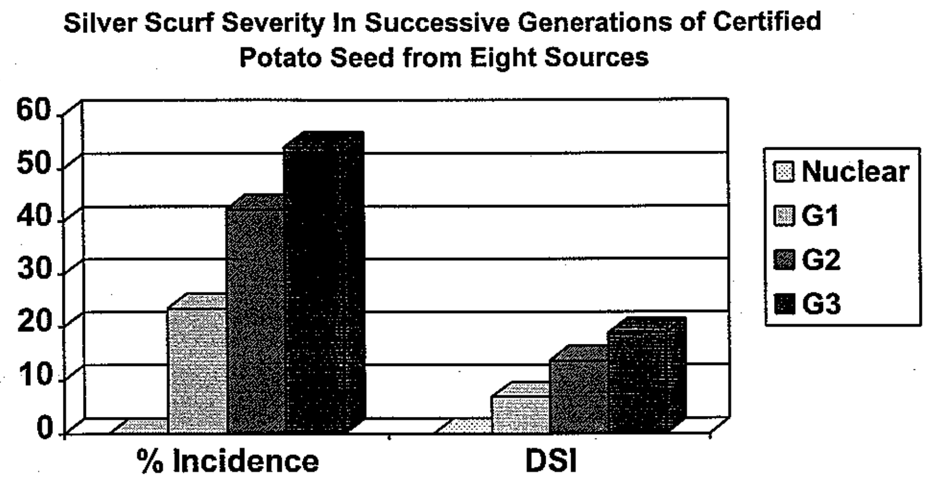

Figure 1

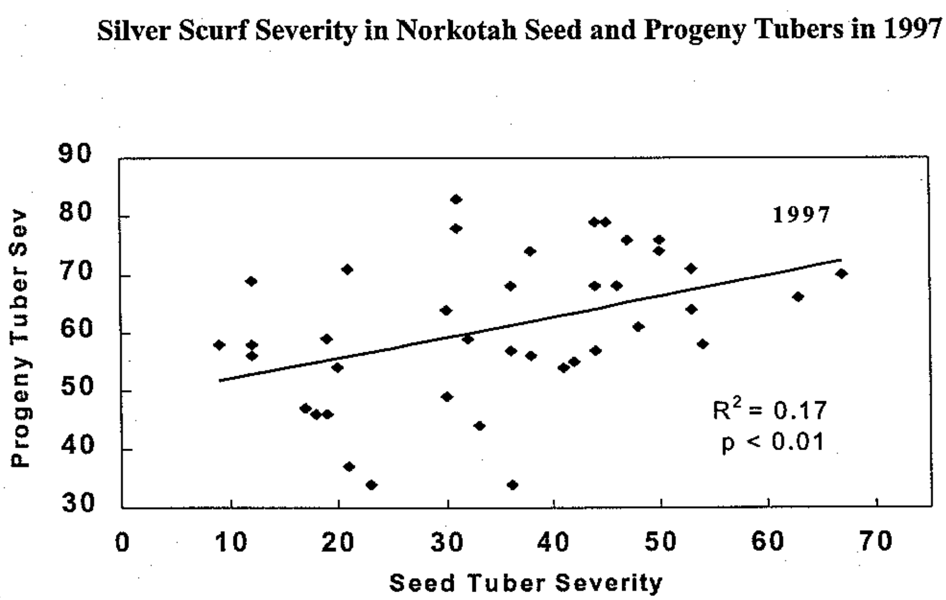

Figure 2

Silver Scurf Severity in Norkotah Seed and Progeny Tubers in 1998

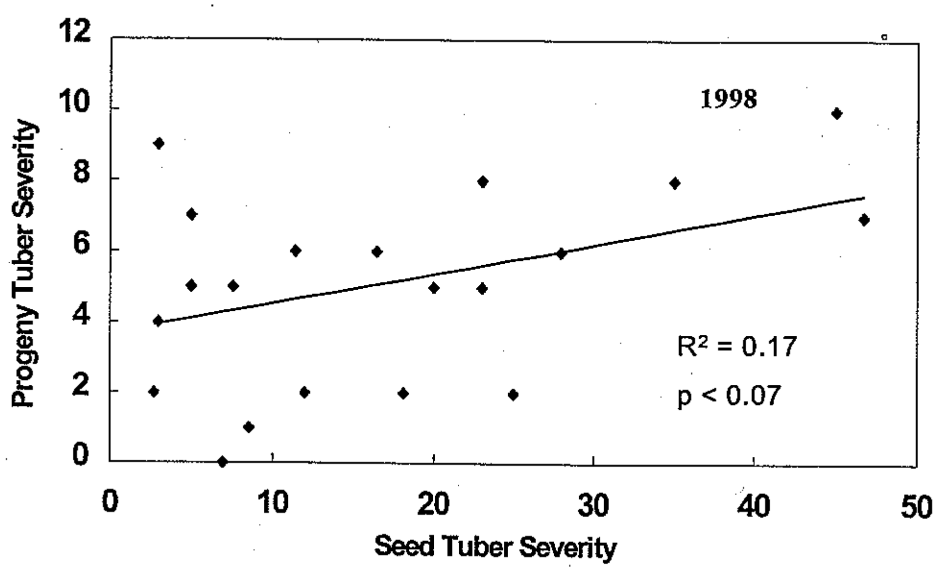

Figure 3

Salt Treatment on Tubers Going Into Storage

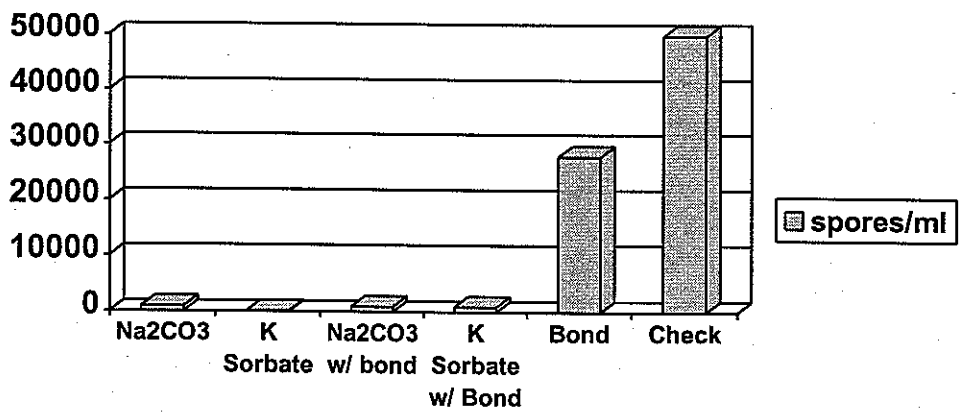

Figure 4

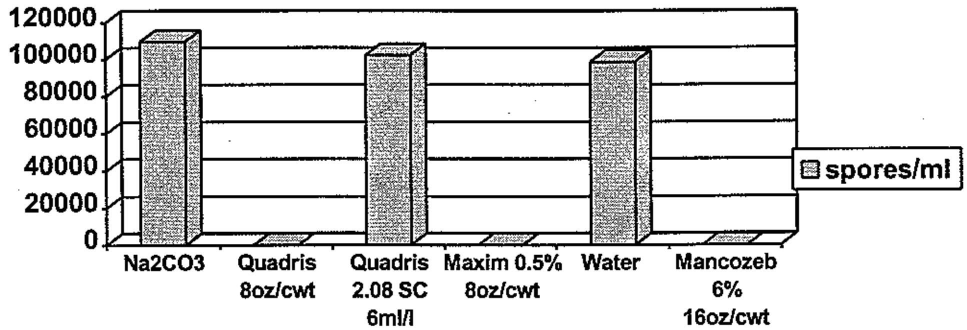

Figure 5

Table 1

Silver Scurf Incidence and Severity on Tubers Produced From Treated Seed Pieces		
	Incidence	**Severity**
Maxim + PCNB	10.3 a	0.9 a
Quadris (1/2 lbs/cwt)	10.8 a	3.2 b
Maxim (1/2 lbs/cwt)	12.5 a	3.2 b
New Tops MZ (12 oz/cwt)	12.9 a	3.2 b
Tops MZ (1 lbs/cwt)	14.8 a	4.2 b
Sorbic Acid (1 lbs/cwt)	23.5 b	6.8 c
Untreated Control	28.7 bc	8.3 c
Sodium Carbonate (1lbs/cwt)	30.6 c	8.5 c
Dithane 8% (1 lbs/cwt)	31.0 c	8.5 c
Tops 5 (1/2 lbs/cwt)	32.3 c	8.4 c

Table 2

Silver Scurf Incidence and Severity on Tubers Produced From Treated Seed Pieces		
	Incidence	**Severity**
Klamath Falls	12.3 a	3.2 a
Central Oregon	32.4 c	8.8 c
Hermiston	12.2 a	3.2 a
WSU	26.1 b	5.7 b