Understanding Blemish Problems to Improve Marketing of Fresh Potatoes

NDSU EXTENSION SERVICE | UNIVERSITY OF MINNESOTA EXTENSION

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Reason for the Research

Background: A challenge fresh market potato producers have is to produce tubers free from blemishes, because consumers "buy with their eyes" as they naturally gravitate to tubers free from blemishes. Smooth-skinned tubers are especially vulnerable to blemishes. This project conducted a survey to determine the major blemish problems, determined the effects of various chemistries on blemishes, and evaluated the effects of blemishes on newer cultivars. The most prevalent blemishes were skin netting and external bruising. Some fungicides reduced black dot/silver scurf blemishes. Those that were most consistent were Emesto Silver, Quadris, Nubark Mancozeb + Moncot 70 DF and Maxim 4 FS.

Purpose of the Project: To determine what blemish problems are most common and evaluate the effects of fungicides on tuber blemishes.

What Was Done

Experiments:

1. Survey of blemishes
   - 17 samples of smooth-skinned potatoes from ND (non-irrigated)
   - 11 samples of smooth-skinned potatoes from MN (irrigated)
   - Evaluated for blemishes
2. Fungicide trial
   - Seed treatments and in-furrow treatments
   - Graded yield & blemish evaluation

Figure 1. Skinning and bruising were commonly found.

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Results

Blemish survey

- External bruise/skinning was common. Growers could improve quality by taking more care when handling potatoes (Fig. 2).
- Skin netting, lenticel spot, common scab, and black dot were common, but varied by location. These blemishes may vary by year and environment.

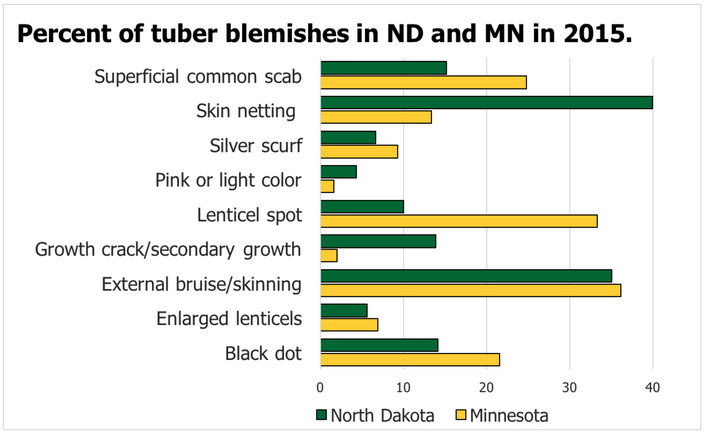

Figure 2. Most common tuber blemishes as found in survey in 2015 from tubers collected from Minnesota and North Dakota.

Fungicide study

- The most consistent fungicides at reducing silver scurf and black dot blemish were Emesto Silver, Quadris, Nubark Mancozeb + Moncot 70 DF and Maxim 4 FS (Table 1).
- There were no differences in yield in each study.

Table 1. Effect of fungicide treatments on black dot/silver scurf blemish of Red Norland and Yukon Gold potato seed in Becker, MN and Grand Forks, ND in 2015 and 2016.

Treatment		Rate	Schedule	Blemish % (silver scurf & black dot)				
				Becker, MN (2015)		Grand Forks, ND (2015)		Becker, MN (2016)
				Red Norland	Yukon Gold	Red Norland	Yukon Gold	Red Norland
1	Non-treated	-	-	68.5	48.8	22.0	5.2	43.5
2	Moncut 70 DF	1.1 lb / a	In-furrow	67.8	61.9	28.5	3.8	43.7
3	Moncut 70 DF +	1.1 lb / a +	In-furrow	66.2	46.4	18.3	3.9	25.8
	Serenade	6.0 qt / a	In-furrow					
4	Quadris	11.6 fl oz / a	In-furrow	50.0	43.9	13.8	3.4	20.4
5	Vertisan	23 fl oz / a	In-furrow	65.3	51.5	21.1	3.8	32.0
6	Priaxor	8.1 fl oz / a	In-furrow	67.3	55.2	18.9	4.7	32.8
7	Nubark Mancozeb	1.0 lb / cwt	Seed	41.3	41.5	11.1	4.3	36.7
	Moncut 70 DF	1.1 lb / a	In-furrow					
8	Emesto Silver	0.31 fl oz / cwt	Seed	37.4	41.2	9.5	3.7	30.9
9	Omega 500F	3.0 pt / a	In-furrow	69.0	62.5	24.7	3.8	52.8
10	Luna Tranquility	11.2 fl oz / a	In-furrow	66.8	65.3	18.1	5.1	37.7
11	Regalia	8.8 fl oz / 1000 row ft	In-furrow	66.6	55.2	25.2	5.3	47.2
12	Maxim 4FS	0.08 fl oz / cwt	Seed	33.4	35.4	6.7	5.2	30.6
13	Vibrance	0.08 fl oz / cwt	Seed	-	-	-	-	31.6
14	Nubark Mancozeb	1.0 lb / cwt	Seed	-	-	-	-	33.6
15	Emesto Silver	0.31 fl oz / cwt	Seed	-	-	-	-	32.0
	Luna Tranquility	11.2 fl oz / a	In-furrow					
	LSD p>0.05			**7.90**	**6.70**	**5.80**	**1.15**	**5.83**

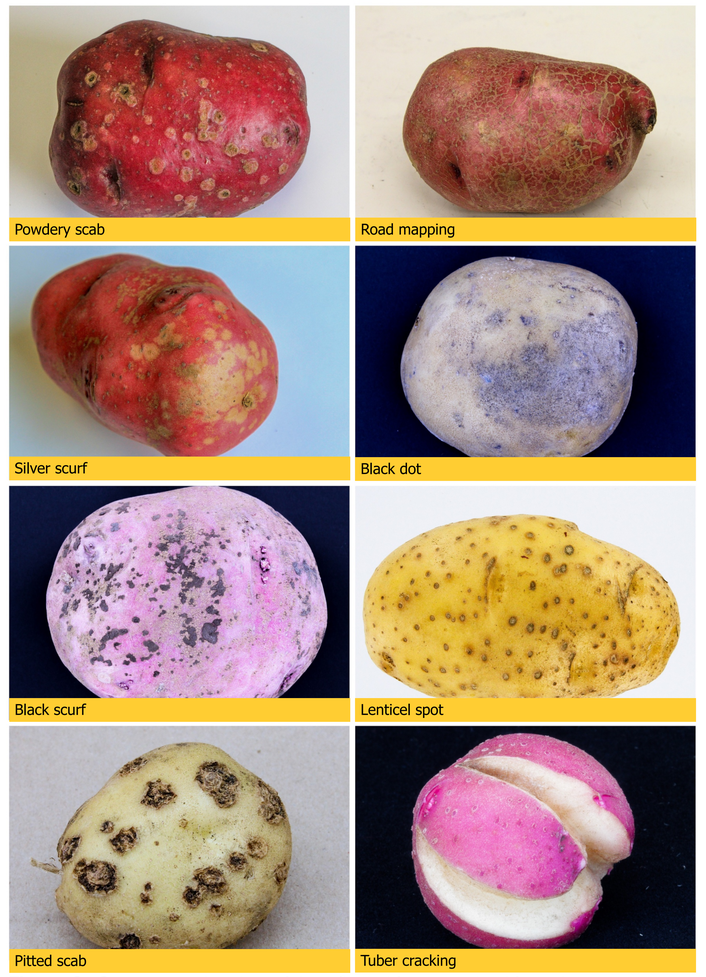

Figure 3. Common tuber blemishes found in smooth-skinned potatoes.

Take Home Message

Improved handling of potatoes and fungicide treatments can reduce blemishes of fresh market tubers.