

## POTATO PLANT STANDS IN WASHINGTON - HOW GOOD ARE THEY

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Each year potato fields in Washington have stands that vary from quite acceptable to very poor. These variable stands are quite obvious even to the casual observer from full emergence until the time the rows are completely closed over. In a way it's too bad the poor stands that are there don't remain observable throughout the full season. The fact that all potato fields tend to "fill in" and look good during the later part of the season has made us a victim of what I like to call It Doesn't Look Too Bad Now syndrome. What I am referring to is the oft heard statement, "Well, the stand didn't look good early, but it doesn't look too bad now." This statement is quite prevalent any time after late June and early July for Russet fields, and for Norgold fields it is heard in early and mid-June.

Data that was obtained with the cooperation of the Washington Potato Fieldman's Association in 1970 and reported in the 1971 Potato Conference proceedings indicated that the fields surveyed that year had an 87 percent average stand or a 13 percent reduction in stand. The percent stand ranged from as low as 69 percent up to 100 percent - a perfect stand. Nine percent of the 13 percent reduction in stand was a result of planter skips - that is, no seed piece was placed where it should have been. Another 2 percent of the reduction in stand was a result of wrong seed placement, in other words, seed bunched together. Only 2 percent of the 13 percent reduction in stand was caused by seed pieces that didn't perform either because they decayed or they had no plant develop from them. What this boils down to is that the reason for stand reduction in Washington is a PLANTING PROBLEM, not a seed problem.

As a follow-up of this survey, some rather specific planter performance analyses were undertaken with the help of Area Extension Agents and potato fieldmen. Once again it was found that planter performance was the primary reason for poor plant stands.

Some figures about the worst and best operations will show what was found. The center triangle shows where all the seed would have been found if the seed pieces were all within 3 inches either side of the desired seed piece spacing.

Figure 1 shows what happened in the worst operation surveyed. The intended spacing was 9.5 inches and the actual spacing averaged 10.4 inches between seed pieces. The actual seed spacing wasn't too bad, however, only 35 percent of all the seed pieces were within 6 inches of the 9.5 inch desired placement (3 inches either side of desired). Thirty-seven percent of the seed pieces were closer together than the 6 inches and another 28 percent were in excess of 12 inches apart, thus, the average spacing of 10.4 inches. Only 35 percent were within the 6 to 12 inch spacing.

The best operation observed during this study is shown in Figure 2. The average spacing achieved was 9.6 inches when 9.2 inches was what was reported as the desired spacing. In this best operation 18 percent of the seed pieces were closer than 6 inches and another 19 percent were further apart than 12 inches, and 62 percent were between 6 and 12 inches apart. This data again confirms that the reason for poor plant stands in Washington is planter oriented.

Now lest anyone read into what I have said that seed piece decay doesn't occur or isn't a problem in potato fields in Washington, let me say that I acknowledge that when seed pieces decay the result is definitely a problem. The extent of the problem depends not only on the stand loss from lack of plants, but also yield loss from weak plants that often result from decaying seed pieces. But the main reason for stand depletion in Washington, based on at least

three years rather careful observation, leads to the conclusion that lack of seed piece placement is the major cause of poor stands.

This past season, 1978, another approach was used in an attempt to further analyze the situation. In over thirty fields throughout the Washington potato growing area, the cause of missing plants was determined by digging up the area where the missing plants should have been, and looking for decayed or nonproductive seed pieces. Both Norgold Russet and Russet Burbank fields were observed.

The results are summarized in Table 1.

Table 1. Percent of Missing Plants due to absence of seed pieces.

Russet Burbank	96
Norgold Russet	86

The data reconfirms what has been shown from the earlier efforts. A closer look at the data in Table 2 on the two varieties also shows a confirmation of the earlier information.

Table 2. Summary of Potato Stand by Potato Variety from 1978 Missing Plant Survey.

	Russet Burbank	Norgold Russet
Av. Spacing	11.6"	13.6"
Range of Spacing	8.1" - 16.3"	11.2" - 18.2"
Percent Stand		
@ 10 inches	86	74
@ 12 inches	--	88

In addition to the identification of the cause of missing plants, photos were taken of the stand situation at the time of the determination and followed every ten days until the fields "didn't look too bad" to document the appearance or disappearance of the "observable" poor stand. In all cases even the poorest (Table 3) fields improved in appearance.

Table 3. Data on Potato Fields included in 1978 Missing Plant Survey. Poorest fields observed for each variety.

	Russet Burbank	Norgold Russet
Spacing	16.3"	17.3"
Percent skips due to missing seed	100	70
Percent Stand		
@ 10 inches	61	58
@ 12 inches	--	69

What all of this indicates is that planter performance, whether from the standpoint of design or operation, is the major factor in poor stands here in Washington.

Figure 1. Seed spacing resulting from best planting operation observed. Triangle depicts where seed would be found if all seed was within 6" of intended spacing.

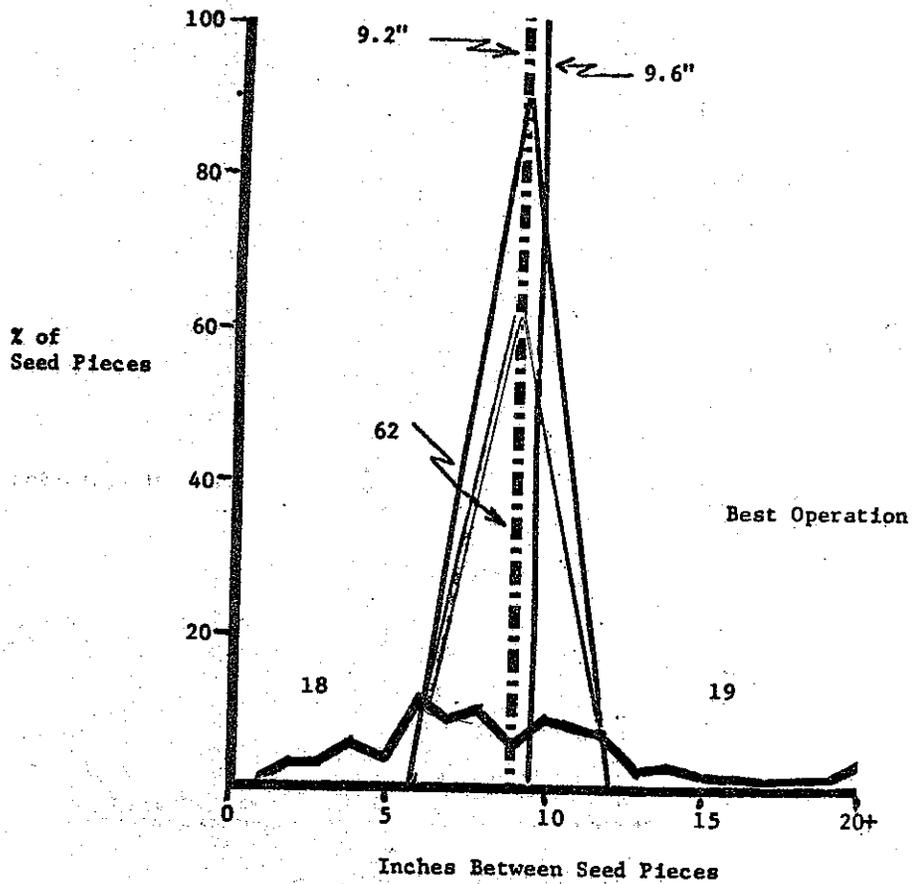


Figure 2. Seed spacing resulting from poorest operation observed. Triangle depicts where seed would be found if all seed was within 6" of intended spacing.

