

TUBER TIP: PLANT AT CORRECT DEPTH

William H. Bohl

Potato tuber quality is composed of several factors. One negative quality component is green tubers resulting from tubers protruding from the hill in the field being exposed to light. It seems logical to think that planting seed pieces deeper should help to minimize tubers growing out of the top of a hill, thus reducing field tuber greening. Research at the University of Idaho Aberdeen R & E Center does not support this.

EXPERIMENTAL PROCEDURE

‘Russet Burbank’ and ‘Frontier Russet’ were hand-planted using a post hole digger to individually plant single-cut seed pieces cut side down at 3, 6, and 9 inches as measured from the top of a preformed hill to the top of the seed piece in 1995 through 1997. ‘Shepody’ was added in 1996 and 1997. Individual plants were excavated after vine kill to measure the depth from the top of the hill to the top of all tubers, which essentially constituted harvest. Tubers were graded and weighed to determine total and U.S. No. 1 yields. There were five plants of each variety, and five replications.

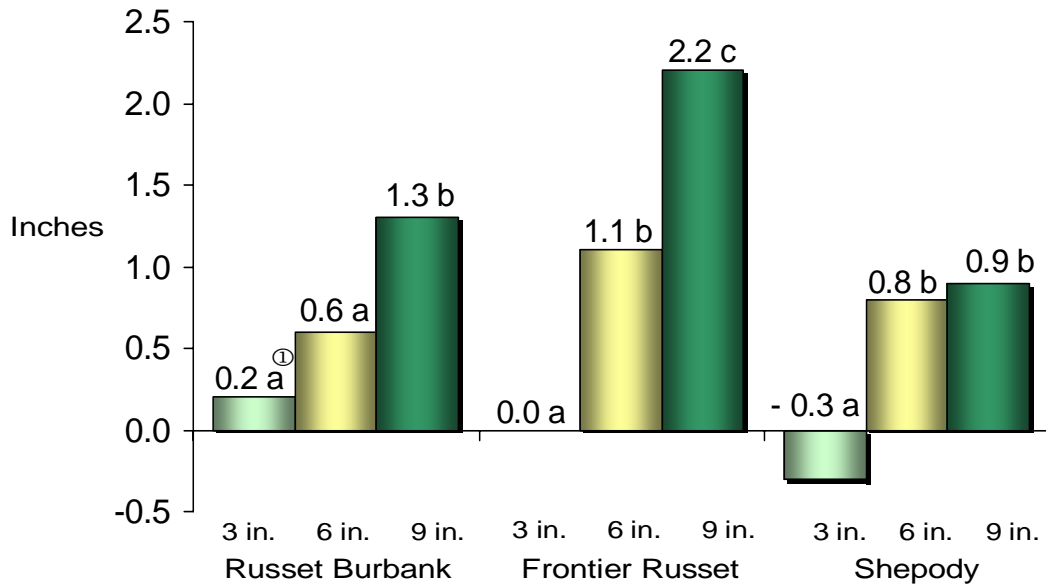
RESULTS AND DISCUSSION

Planting Russet Burbank at 3 inches compared to 9 inches resulted in the top of the uppermost tuber in the hill to be at 1.3 inches below the soil surface compared with 0.2 inches at the 3-inch planting depth (Figure 1). Seed piece planting depth had an even greater effect on the tuber depth of Frontier Russet increasing the depth of the uppermost tuber from just even with the soil surface to an average depth of 2.2 inches at the 9-inch planting depth. Shallow planting (3 inches) of Shepody had a very detrimental impact on tuber depth resulting in the average uppermost tuber depth to be 0.3 inches above the soil surface, but there was no significant difference between tuber depths comparing the 6-inch with the 9-inch planting depth for Shepody.

Planting at 9 inches significantly decreased total yield of Russet Burbank and Frontier Russet compared with the other two depths (Figure 2). Russet Burbank total yield was 453 and 434 cwt. per acre at the 3- and 6-inch planting depths, respectively, but only yielded 359 cwt. per acre at the 9-inch depth. Total yield of Frontier Russet was 474, 451 and 391 cwt. per acre when planted at 3, 6 and 9 inches, respectively. Shepody total yield was not affected by planting depth (Figure 2).

Planting Frontier Russet at 9 inches had a further effect by reducing U.S. No. 1 yield to 293 cwt. per acre compared with 346 and 357 cwt. per acre at the 3- or 6-inch planting depths, respectively. Although not statistically significant, there was a trend for the U.S. No. 1 yield of Russet Burbank to be lower at the 9-inch planting depth. The U.S. No. 1

yield of Shepody was significantly decreased from 372 cwt. per acre at the 6-inch depth to 234 cwt. per acre at 3 inches.



① Numbers followed by the same letter within a variety are not significantly different at $P \leq 0.05$.

Figure 1. Depth to uppermost tuber in the hill at harvest of Russet Burbank, Frontier Russet, and Shepody potatoes as affected by seed piece planting depths of 3, 6, and 9 inches as measured from the top of the seed piece to the top of the hill. Tuber depth was measured from the top of the hill to the top of the tuber.

Planting seed pieces at 9 inches compared with 3 inches significantly decreased the amount of green tubers developing in the field in Russet Burbank and Frontier Russet, but not for Shepody. However, there was no significant difference in green tuber yield for Russet Burbank and Frontier Russet when comparing the 6-inch planting depth with the 9-inch depth (Figure 3). When Frontier Russet and Shepody were planted at 3 inches compared with 6 inches, there was a significant increase in green tuber yield, and this was especially evident for Shepody.

Subsequent hilling studies were conducted with Russet Burbank to determine if a hilling operation would help minimize field tuber greening. It was found that, within the ability of commercially available potato production equipment to move soil to the top of a hill, field tuber greening could not be reduced by a hilling operation when performed just as the potato plants were beginning to emerge. From these two studies, the best recommendation for minimizing field tuber greening is to precisely plant seed pieces at a depth of 6 inches.

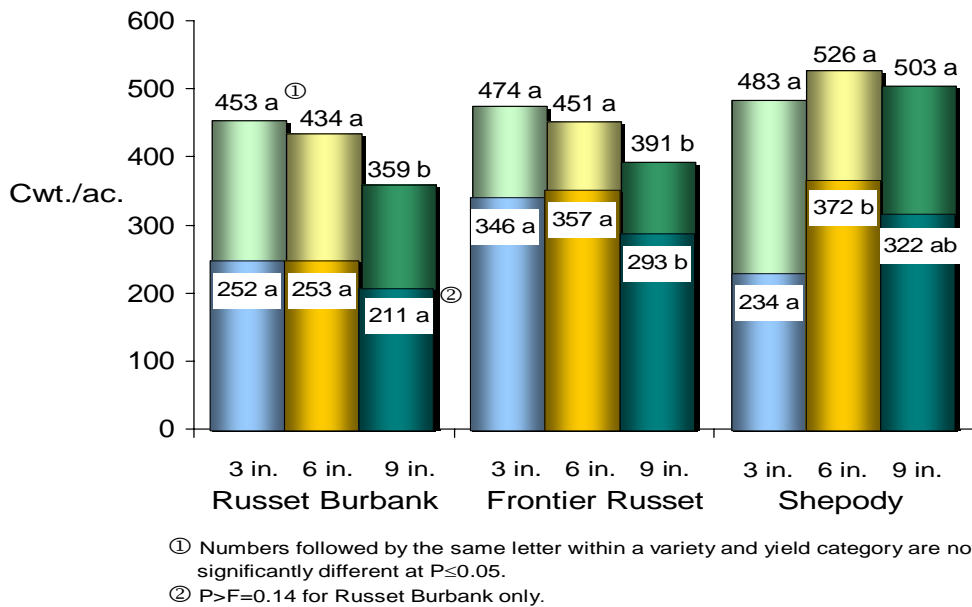


Figure 2. Total and U.S. No. 1 yields of Russet Burbank, Frontier Russet, and Shepody potatoes as affected by seed piece planting depths of 3, 6, and 9 inches as measured from the top of the seed piece to the top of the hill. Total yields are represented by the entire bar height and U.S. No. 1 yields by the shorter bars.

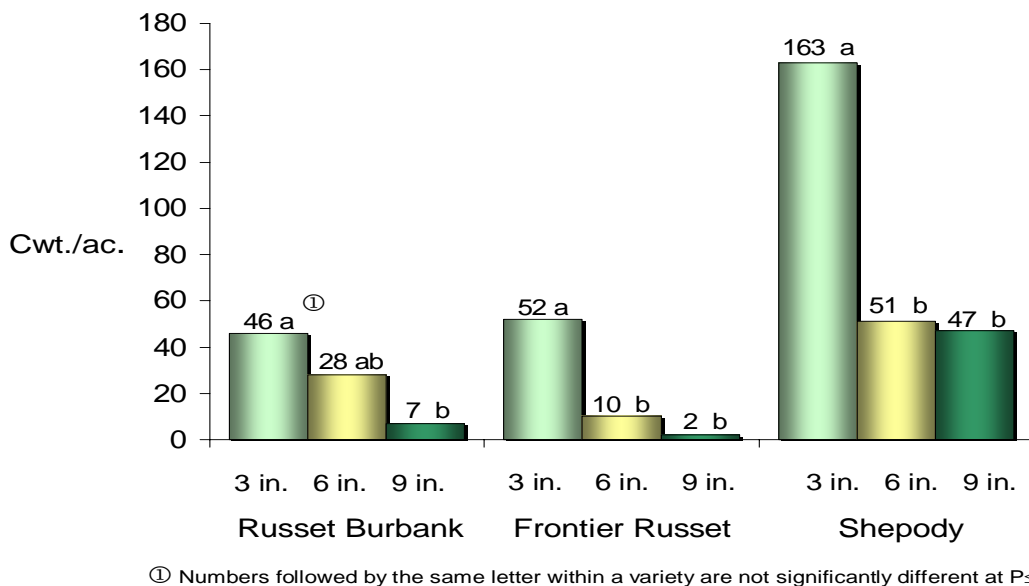


Figure 3. Field green tuber yields of Russet Burbank, Frontier Russet, and Shepody potatoes as affected by seed piece planting depths of 3, 6, and 9 inches as measured from the top of the seed piece to the top of the hill. Green yields measured in 1996 and 1997 only.