

## THE EFFECT OF SEED PIECE SIZE ON POTATO YIELDS

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Most workers who have studied the effect of seed piece size on yield and grade of potatoes have recommended a seed piece which weighs from one and one-half to two ounces. It has never been possible to cut seed pieces to a given weight because the seed tubers vary widely in size. With the advent of mechanical seed cutting and the occurrence of many small "slivers," it was decided to evaluate the influence of these small "slivers" on yield to see if they should be left in as seed or screened out. Sometimes more than one seed piece sticks on a picker on the planter. This is more likely to occur with small seed than with large seed.

The advantages claimed for the larger seed pieces are; larger yields, higher percentage of No. 1 grade potatoes, more certain recovery from frost damage when potatoes are planted early in the spring, and less sensitivity to drying should a delay in planting occur.

A preliminary report of our findings was published in the 1962 Proceedings of the Potato and Vegetable Conference. The test was conducted on the first year land which had been fertilized with about 300 pounds of N and 200 pounds of  $P_2O_5$ . The results were in line with most studies except that the increase in yield resulting from using the 40 gram plus seed size was over 100 cwt. per acre more than that resulting from the 35 gram seed piece size.

As a follow-up on this finding, another experiment was conducted in 1962. The same seed sizes were used as in 1961 and one additional larger size was used. Each seed size was replicated twelve times. The experiment was fertilized with 146 pounds per acre of nitrogen and 196 pounds per acre of  $P_2O_5$ . Unfortunately, the area chosen for the experiment turned out to be very variable in fertility and in parts was deficient in potash. In this experiment the smallest sized seed pieces produced the largest average yields which is in direct contrast to the findings of 1961 as well as to those found by other workers.

A third experiment was conducted in 1963. The same seed sizes were used as those tried in 1962. The same number of replications were also used. It was suspected that the results found in 1962 were caused by a lack of adequate fertilization. The smallest seed pieces produced predominantly single stem hills, whereas those from the larger seed pieces were multiple-stem hills. It seems reasonable that multiple-stem hills would require more nutrients than single-stem hills.

In this experiment the plots were uniformly fertilized by banding at planting time with 244 pounds per acre of nitrogen, 244 pounds per acre of  $P_2O_5$  and 244 pounds per acre of  $K_2O$ . The plots were planted on May

14. By June 14 the plants from the large seed pieces were much larger and the hills were made up of multiple-stem plants. The small seed pieces produced hills with predominantly single-stem plants as in 1962. The differences in yield are probably not as great as they might have been if higher rates of fertilizer had been used, because the plants in the plots with the largest seed pieces died first and those with the smallest seed pieces remained green the longest. The average yields for the six seed sizes are shown in Table 1.

Table 1. The Effect of Seed Size on Yield and Grade of Russet Burbank Potatoes in 1963

	Size of Seed Piece in Grams					
	5	13	23	33	43	53
Total Yield Cwt.	500	546	577	577	584	592
No. 1 Grade Cwt.	306	338	377	407	402	402
Percent No. 1's	61	62	66	71	69	68

From the results to date, there does not appear to be one best seed size. There is only a best seed size for a given set of growing conditions. These studies are being continued.