

feet in length and 40 inches apart. Each treatment was replicated 5 to 8 times during the different years. The plots were fertilized with a ton of 5-7-5 fertilizer per acre in tests made from 1943 to 1946 and with 2,200 to 2,400 pounds per acre of a 5-7-5, 5-7-6 or 6-8-8 fertilizer during the other years. The fertilizer was applied in bands approximately 6.5 inches apart in the row immediately before planting. The seed were planted by hand in a furrow between the fertilizer bands and covered with 3 to 4 inches of soil.

The potatoes were planted in January, cultivated and dusted or sprayed in accordance with current recommended practices for commercial production, irrigated when necessary and dug in April or May each year. The weights of U. S. 1A and 1B tubers,³ graded for size only, were recorded each of the 8 years. The number of tubers produced per plot also was recorded 3 years.

Freezes in February and March 1943 killed the tops and stems of potato plants to 2 inches below the soil surface. New sprouts grew from uninjured parts of the stems and seed pieces and the new plants produced average yields. Excessive rainfall in March and April 1944 killed the plants two to three weeks before the end of the growing season and reduced yields. Yields of potatoes were normal or above in the other years.

RESULTS OF TESTS WITH CUT SEED FROM 1943 TO 1946

Yields.—Total yields of U. S. 1A and 1B size potatoes obtained from 1943 to 1946 with 3 sizes of cut seed at 5 spacing distances in the row are shown in Table 1. The yield generally increased each year with size of the cut seed planted and as seed of a given size were spaced closer together in the row to 8 inches. The rate of increase resulting from the use of larger seed and closer spacing was highest in 1945 and 1946 when growing conditions were very favorable and lowest in 1944 when excessive rainfall killed the plants before the end of the growing season. In 1943 and 1944 the 1-ounce seed piece

³ Current USDA grade standard for sizes of potatoes, June 1, 1942, are as follows: In U. S. 1A size round type potatoes, 60% of the lot shall have a minimum diameter of $2\frac{1}{4}$ inches or larger and 40% of the lot may have a minimum diameter of $1\frac{1}{8}$ inches; there being a tolerance of 3% for undersize tubers. U. S. 1B size potatoes shall have a diameter of $1\frac{1}{2}$ to 2 inches with a tolerance of 15% for over size tubers; undersize tubers shall not exceed 3% of the lot.