

tional nitrogen as side-dressing and the use of more fertilizer of higher analyses could conceivably influence the effects of seeding rate. However, Chucka *et al* (5) obtained some response to increased amounts of fertilizer, but the effect of season and seed spacing was more important than the quantity of applied fertilizer. Similar results were reported by Smith, Hommel and Kelley (9) and Houghland and Parker (6).

Whole seed yielded as much as cut seed when both were of equal size and planted at the same spacing. Thus, it appears that certified U. S. 1B whole seed would be as satisfactory as cut seed when the cost of such seed and preparing it for planting does not exceed that of U. S. 1 seed potatoes cut into seed pieces for planting. Samples of certified U. S. 1B seed collected at Hastings averaged about 2 ounces in size, but some of the tubers were considerably larger. These larger tubers should be sorted and split for planting. Small stones have been found in sacks of U. S. 1B seed potatoes. These should be removed before the seed are placed in the planter or they will damage "pickers" in the planting operation. Consequently, the cost of U. S. 1B seed may equal or exceed that of U. S. 1 seed potatoes cut into pieces for planting. LeClerg (8) found that the stand of plants was better from whole seed than from cut seed, particularly in wet soils. The use of whole rather than cut seed in the Hastings area should be advantageous when the soil is wet at planting time or when rain follows soon thereafter.

Although some growers in the Hastings area plant 18 to 20 hundred-pound sacks of seed per acre, the average amount of seed used is 14 to 15 sacks an acre. It is cut into pieces weighing approximately $1\frac{1}{2}$ ounces each and spaced 10 to 12 inches apart in rows 40 inches apart. The use of 2-ounce seed at an 8-inch spacing in rows 40 inches apart will require 24.6 sacks of seed per acre. This is approximately 60 percent more seed than the average amount used in the area. However, in the present tests on the basis of yields and cost-price figures in Table 4, largest per acre returns, above the seed, harvesting and marketing costs, were obtained from use of the 2-ounce seed at the 8-inch spacing. It is recognized, of course, that if the seed, harvesting and marketing costs were higher and the selling price of potatoes lower than the figures used in these calculations, use of the large (2-ounce) seed at the 8-inch spacing might prove unprofitable.