

THE USE OF ROSE ENDS OF POTATO TUBERS AS PROPAGATION MATERIAL¹⁾

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Experiments on the use of cut potato tubers for sowing purposes, which had been initiated by *Payen* and *Chevalier* in 1826, as quoted by *Rose* (1), were later carried on by many workers in different countries. During World War II, *Lysenko* (4) and his co-workers, faced with conditions of acute seed shortage, developed a method of propagation which made use of the rose-ends of tubers. In these Russian experiments, the rose-ends kept well in storage, under conditions of low temperature and high humidity; and the yields obtained from them compared favourably with those produced by whole tubers.

The use of rose-ends for propagation presents obvious advantages in times of potato shortage, in that it requires less seed per dunam, leads to saving in haulage and storage, and retains most of the tuber for consumption.

In the spring of 1944, at the request of the Department of Agriculture of the Palestine Government and the Middle East Supply Centre, experiments were undertaken by the Rehovot Research Station on this method of propagation. The experiments were designed to investigate 1. the effect of the time-interval between cutting and planting on plant development and yields, 2. the behaviour of rose-ends imported from England, and 3. the effect of cold storage on the viability of rose-ends and on yields. The dates of the different experiments are given in the appropriate tables.

The experiments were conducted with the varieties *Up-to-date* and *Arran Banner*, except for the storage experiments in which *Up-to-date* alone was used.

The average weight of the tubers was 60 g. For experiments with halved tubers, cuts were made lengthwise, so that each half weighed approximately 30 g. Rose-ends, each weighing about 20 g, were cut from larger, 100—120 g potatoes. Rose-ends cut some time before planting were kept for 24 hours in moist sand, to speed up the suberization of the wounds. The rose-ends received from England were partly hemispherical and partly in the form of slices.

The experimental plantings, of randomized block or Latin square design, were made in moist soil, and first irrigation was given two days after planting.

RESULTS

Rose-ends of the variety *Up-to-date* planted in spring, immediately after cutting, sprouted and developed satisfactorily and, in most instances, produced yields equal to those from halves and whole tubers, while in the case of *Arran Banner*, propagation by rose-ends resulted in reduced yields (Tables 2 and 4, pp. 148 and 150²⁾).

1) Abridged translation from Hebrew.

2) Page numbers in parentheses refer to the Hebrew text.

In both varieties, rose-ends cut 14 and 25 days prior to planting, resulted in yields consistently inferior to those derived from ends cut just before planting and from whole tubers; and in most cases inferior to yields from tuber-halves (Tables 2 and 4).

In the autumn-planted batch, whole tubers gave significantly higher yields than any of the cut pieces (Table 9, p. 153).

Although rose-ends imported from England suffered much rot damage in transit, the plants which developed from the undamaged fragments grew vigorously, and their yields approximated those from whole tubers. Rotting and desiccation were less advanced in the hemispherical rose-ends, compared with the slices.

Rose-ends kept for a time in cold storage, although superficially unaffected, produced weak plants and inferior yields (Tables 6 and 7, pp. 151 and 152).

No effect of the treatments on the incidence of fungal or virus diseases was observed.

CONCLUSIONS

Up-to-date potato can be successfully propagated by freshly cut rose-ends, if these are planted in the spring, under favourable soil moisture conditions. The main advantage of the method is the saving of a large portion of the tuber for consumption.

No satisfactory method of preserving the rose-ends for any length of time has been found.

The variety Arran Banner cannot be successfully grown from rose-ends.