Rooting Cuttings of Saltbush (*Atriplex halimus* L.)[1]

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Highlight

Cuttings of the saltbush (*Atriplex halimus* L.) were rooted by keeping them at high humidity in cheap chambers of transparent plastic sheeting for two months. The method could be useful in propagating improved plant material.

Saltbushes of the genus *Atriplex* supply browse to livestock in semiarid and arid regions and on saline soils (Imperial Bureaux, 1947; Wilson, 1969). In Israel, the native saltbush (*Atriplex halimus* L.) has been extensively planted in the low-rainfall parts of the country to supplement dry, stem-cured forage available on native range in the latter half of summer and autumn, with succulent browse rich in proteins, vitamins and minerals (Benjamin, Orev and Eyal, 1959). Lachover and Tadmor (1965) found considerable seasonal variation and between-plant variability in salt (NaCl) content, which probably affects the acceptability of saltbush browse (Bonsma and Maré, 1942; Lachover and Tadmor, 1965). Other factors, e.g. oxalate content, and especially that of the soluble sodium salt, may also affect intake of saltbush browse by livestock.

Attempts are therefore being made in Israel to obtain improved planting material, i.e., saltbushes low in components likely to reduce livestock intake, such as salt and oxalate, and having a dense foliage and a low growth habit. There arose in this context the question of how to propagate such selected planting material quickly and cheaply to enable ranchers and farmers to plant improved saltbush types.

The genetic system of saltbush, i.e., to what extent seed is set from open pollination or selfing, is not yet well understood, and rooted cuttings therefore seemed a good way of obtaining planting material of known performance. Preliminary work in a lath-house with an automatic "fogging" spray installation used for propagating avocado cuttings indicated that (a) green cuttings (1–5 mm diameter) rooted better than woody ones (5–8 mm), (b) the cuttings, planted in vermiculite, suffered from excess moisture, and (c) light intensity in the lath-house was too low.

Materials and Methods

Tips of young branches of saltbush, 8–10 cm long, were detached and planted in a mixture of ⅓ sand, ⅓ loess soil and ⅓ dairy manure in clay flower pots standing in a transparent plastic-covered chamber measuring 80 × 80 × 80 cm (Fig. 1). All leaves were left on the cuttings. Close to 100% relative humidity was maintained in the chamber by daily watering of the pots, walls and floors. When moisture seemed excessive, the plastic was opened for a few hours per day to improve ventilation. In the first experiment the saltbush cuttings were taken at the peak of the spring growth flush from a planting of the Soil Conservation Service on a road embankment near Ramat Hasharon just northeast of Tel Aviv in the Coastal plain, and planted on April 28, 1970. The cuttings were of two kinds: green and soft, 1–3 mm diameter; and young but woody, 2–5 mm diameter. In the second experiment the cuttings were taken in the same way, but avoiding branches bearing seed, and planted on 6 November 1970.

Results and Discussion

In the first experiment, all cuttings of both kinds were fresh and green on May 19, 1970, 21 days after planting. On June 21, about 2 months after planting, the cuttings were removed from the pots with the attached ball of soil, and rooting was assessed (Fig. 2). Of the green cuttings, 30 out of 32 rooted (2 were dead, though one of these had roots), i.e., 93.7%. Of the

FIG. 1. Cuttings of saltbush (*Atriplex halimus* L.) in plastic chamber being rooted in peat pots ready for planting out in a grazing preference experiment.

[1] Contribution from the Volcani Institute of Agricultural Research, Bet Dagan, Israel. 1970 Series, No. 1828 E.

[2] The interest of Dr. Y. Samish and Dr. A. Kadman in the initial stages of the work, and skillful assistance of Mr. R. Jonathan are gratefully acknowledged.

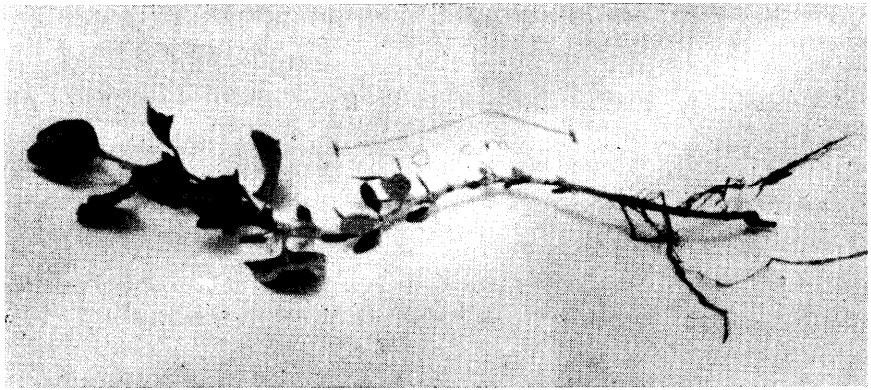

FIG. 2. Rooted cutting of the saltbush (*Atriplex halimus* L.).

woody cuttings, 18 out of 20 rooted, i.e., 90%.

In the second experiment, rooting was assessed on January 8, 1971, about 2 months after planting. Of the green cuttings, 43 out of 57 rooted (76.8%) and another 5 remained green without forming roots by January 8 (8.9%); whereas 8 (14.3%) died. Of the woody cuttings, 40 out of 52 rooted (76.9%), 5 remained green without roots (9.6%) and 7 died (13.5%).

Summing up both experiments, the kind of cutting used did not seem to affect results, whereas spring seemed to be preferable to autumn for taking cuttings.

Results show that cuttings of the saltbush up to 5 mm diameter, taken at the peak of the spring growth flush or in the autumn of a Mediterranean climate, can be rooted in cheap plastic chambers within less than 2 months. Since hundreds of such cuttings can be taken quickly and easily from a single medium-sized saltbush selected on the basis of chemical analyses and other criteria, this method provides a good and inexpensive means of propagating improved planting material.

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