Rooting Cuttings of Saltbush
(Atriplex halimus L.)

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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 Bureau, 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 1/3 sand, 1/3 loess soil and 1/3 dairy manure in clay flower pots standing in a transparent plastic-covered chamber measuring 80 x 80 x 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

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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.
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, 45 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%), whereas 8 (14.3%) died. Of the woody cuttings, 43 out of 57 rooted (76.8%) and another 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.

Sand Shinnery Oak Response to Dicamba Granules and Picloram Pellets*

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Highlight
Two lb./acre of picloram pellets were required to reduce sand shinnery oak (Quercus havardii Rydb.) stem density one season after application in the Rolling Plains of northwest Texas. Neither picloram pellets nor dicamba granules reduced the density of live sand shinnery oak stems two years after application.

Sand shinnery oak (Quercus havardii Rydb.) is susceptible to foliar sprays containing (2,4,5-trichlorophenoxy) acetic acid (2,4,5-T) and 2-(2,4,5-trichlorophenoxy) propionic acid (silvex). However, susceptibility of broad-leaved crops adjacent to rangeland and the possibility of drift often restrict use of sprays containing phenoxy acid herbicides. Soil-applied, dry herbicides are much less susceptible to drift from the target area than are sprays. Also, phenological stage of the problem species at application time is usually less critical with soil-applied herbicides. Requisites for effective woody-plant control with soil-applied herbicides include 1) ability of target species to absorb lethal amounts of chemical via the roots and 2) adequate moisture to move active amounts of herbicide into the root zone. Excessive rainfall may be detrimental by leaching highly soluble herbicides past the root zone. Little research has considered the effect of soil-applied herbicides for control of sand shinnery oak. Robison and Fisher (1968) reported that 3-(p-chlorophenyl)-1,1-dimethylurea (monuron) was fairly effective when applied as the wettable powder at 3 lb./acre. The same rate of monuron pellets was ineffective.

Materials and Methods
The study site is located in the Rolling Plains of northwest Texas. The vegetation is dominated by sand shinnery oak and little bluestem (Andropogon scoparius Michx.). Topography is undulating with lowlands of deep sand grading into sand underlain by shallow clay on the uplands. The area is generally of the Brownfield-Nobscot series typified by near neutral to loamy sands in the surface 2 ft over several feet of sandy clay loam.

In May of 1969 and 1970, 4-amino-3,5,6-trichloropicolinic acid (picloram) pellets and 3,6-dichloro-o-anisic acid (dicamba) granules at rates of 0, 0.5, 1, 1.5 or 2 lb./acre were applied with a hand spreader to 50 by 50-ft plots. At the same time, sprays containing 0.5 lb./acre of 2,4,5-T were applied for comparison. The 2,4,5-T was applied as the propylene glycol butyl ether