

Avocado Fractional Embryo Graftage

Instead of the usual method of rearing avocado seedlings in nursery rows, and budding them to the desired variety, an entirely new and novel method of propagation by grafting the scion directly into the seed before it is planted has been developed by Dr. H. P. Traub of the U. S. Dept. of Agriculture at Orlando, Florida. In describing the new method before the Krome Memorial Institute at its Orlando meeting Dr. Traub points out that the method is still under investigation and is subject to considerable refinement of method which is to be reported on later.

"In general the method of fractional embryo graftage consists of wedge grafting a scion, two to five inches in length, into the meristematic tissue of the fractional embryo either vertically from the top or at an angle of about 45 degrees, into the center of the embryo where it unites with the cotyledon. The fractional embryo may be used in at least three developmental stages, (a) dormant, (b) just sprouting, and (c) sprouted still farther. In a variation of (a) and (b) above the whole embryo may first be sprouted and then split lengthwise into approximately equal parts including the root or roots.

"Avocado seeds are of various shapes, from long narrow, pointed to approximately spherical and flattened. Taking a round seed—first a section shaped like an acute pyramid with its point in center of the fractional part of meristematic tissue is removed. In performing the operation two cuts, from one-third to one-fourth inch apart, are started at the edge of the cotyledon at the plumule end, or 45 degrees in either direction on the edge. The cuts are slanted inward at an angle of approximately 25 degrees on the flat side of the cotyledon toward the center of embryo, and also toward each other, at an angle of approximately 45 degrees on the curved side of the cotyledon. When these cuts are carried to their intersection the desired section may be removed. The scion is prepared to fit into the opening. Beginning at the base of the lower bud with even strokes of the knife, a three-sided pointed wedge is formed. The uncut curved surface is placed on the outside and the pointed edge toward the center of the opening in the fractional embryo. The pointed wedge is then inserted firmly but not too tightly with the point in the center of the fractional embryo, for care must be exercised not to crush the cells by the use of too much force. No tying is needed. Any exposed cut surfaces should then be covered with 45 to 49 degree C. melting point paraffin. Care must be used not to force the paraffin between graft and meristematic tissue of the fractional embryo. The opening on the curved side of the cotyledon is filled with paraffin, the graft being held at a slight angle with the graft uppermost.

"The grafts are planted either sideways or flat side up at an angle of 45 degrees in cypress flats five inches high. The types of propagation media of most value for this purpose have not been determined experimentally. In earlier work cypress sawdust was used and in the present experiments a mixture of half sand and half granulated sphagnum peat is being used. When sprouts appear the grafts are transplanted to 6x6x12 inch cypress plant boxes, or in the nursery row.

"The work has not been carried on long enough to establish definite percentages for the

various seasons. So far the best results have been secured during the winter months when the percentage for most varieties ranged from 75 to 95 per cent. In winter, the graft wood used apparently formed callus as rapidly as the fractional embryos which led to more effective graft union."