

REPORT OF THE COMMITTEE ON MINOR SUBTROPICAL FRUIT VARIETIES

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The interest of nurserymen and plant enthusiasts in new and better varieties raises the question as to how such new varieties originate. Large numbers of plant species have been introduced into California from other lands for their fruits or ornamental value. Many of these have failed because of their lack of adaptation to the climatic conditions where they were tried. Actually most of the subtropical fruit plants at present known have been introduced into California at some time within the last three quarters of a century. Of these some have been found well adapted to our climatic and soil conditions and hence can be grown without special care. The avocado and citrus are examples of plants of foreign origin which are well adapted to southern California. Still others, such as papaya and pineapple, can be grown here successfully only when given special attention or protection under glass or other suitable shelter.

While directed plant breeding by individuals, agencies and large companies has produced some outstanding varieties of plants during the past half century, the fact remains that the majority of the present day fruit varieties have resulted from seedling selection. A considerable number of very important fruit varieties originated as dooryard seedlings. The parent Fuerte avocado was planted as a seed in a dooryard at Atlixco probably about sixty years ago. This seedling tree, now dead, gave rise to the greater part of the present avocado industry in California. Many other important avocado varieties have originated in this manner in California. The famous Jonathan apple likewise originated as a seedling on a New York farm more than 125 years ago and is now widely disseminated throughout the world. Now anyone who grows seedlings of an avocado, apple or other fruit has within those plants a potential fruit industry if he can find a seedling which has superior commercial characteristics.

Considering the subtropical fruits now of minor importance, it is toward this method of mass seedling selection that we look for immediate and rapid results in the development of new and better varieties. While systematic breeding programs are under way to improve some of the more promising subtropical fruits, the relatively and necessarily slow progress which can be made in these directions is completely overshadowed by the potentialities which exist in the thousands of dooryard and seedling orchard specimens now mature from which selections can be made. We must look therefore to the owners of outstanding dooryard trees to call these specimens to the attention of nurserymen and horticulturists so that the superior qualities of the specimen can be perpetuated by appropriate means of propagation.

If you have a white sapote, macadamia, feijoa or any other fruit plant which is different from the usual and which is better than ordinary, make this fact known to your horticultural friends or call it to the attention of a member of the Minor Subtropical Fruit

Variety Committee. An unusually fine specimen now growing in your dooryard may be the foundation of a new fruit industry in California. Look around your neighborhood for trees the potentialities of which have been overlooked by others. The satisfaction of having a selected seedling propagated and distributed as an outstanding or better variety can well reward one for any efforts made toward this end.

THE MACADAMIA NUT

The increased interest which has developed in southern California concerning the macadamia or Queensland nut during the past five years has caused many people to consider this nut as a possible interplant or supplementary crop, or in some cases as a replant crop on a limited commercial basis. While great progress has been made in Hawaii during the past ten years in the development of the macadamia nut as a commercial industry, it seems reasonable to many people that a similar industry could easily be established here. The macadamia certainly thrives in many parts of southern California, where it has been grown for more than half a century.

One of the primary reasons for the rapid development of the macadamia industry in Hawaii has been the selection and propagation of outstanding seedling trees as varieties. These superior types will produce 60 to 80 per cent more nuts than the average seedling tree. The selection of these outstanding trees has resulted from a study over a period of 15 years of more than 10,000 seedling trees which had been growing in Hawaii. Not only have better seedling types been found, but methods of propagation of these selections have been developed to the point where commercial production of grafted trees is economically feasible.

Attempts are now being made to establish some of the best Hawaiian macadamia selections in California for trial. While these selections have proved well adapted to the Hawaiian environment, there is no assurance that they will have comparable success in California. Therefore we in California must consider the possibility of developing local varieties which are best adapted to our conditions. These new varieties can result from mass selection of seedlings which are now growing in California as dooryard and ornamental trees. The Minor Subtropical Fruit Variety Committee is at present conducting a study of macadamia specimens in southern California in an effort to locate and determine the characteristics and commercial potentialities of seedling trees which are now mature. Propagation should be made only of those trees which are outstanding in yield and fruit quality. The systematic investigation under way includes a study of the tree size, age and yield where such data are available and accurate. Fruit samples are being sought where available. Fruit size, crack-out percentage or percent kernel and oil content are being determined on all specimens.

While only a relatively small number of specimens have been studied in detail, some very interesting facts have been determined concerning the potentialities and characteristics of the macadamia in California. Among the oldest trees studied thus far are specimens which were planted about fifty years ago. One of these, now over 50 feet in height, yielded over 100 pounds of nuts last year. The largest measured tree is about 60 feet high with a trunk diameter of 17½ inches at the base.

Considerable variation is ordinarily expected among seedling trees in respect to quality and characteristics of the fruit. Most of the macadamia fruits studied thus far are relatively thick shelled. This character of shell thickness appears to be important only if it is excessive or if the fruits are destined for "home preparation. It seems likely that for commercial production moderately thick shelled nuts are not objectionable, for we have engineers who can design machines which could crack nut shells of any thickness. One of the desirable characteristics to be sought in the macadamia is high production and moderate size, with the hope that these characteristics may be associated with a moderately thin shell. Thus far macadamia seedlings have been found in California which yield as low as 15 percent kernel and still others which yield 36 percent kernel. The highest percentage of kernel reported in Australia is a tree which gives 60 percent of kernel from the shelled fruit. We are still searching for a comparable seedling in California. The oil content, which is a measure of quality for processed nuts, is relatively high in the seedlings studied. The values of oil content range from 54 to 72.8 percent, which is comparable to the Hawaiian selections. Nuts with lower oil content are well flavored and in some cases preferable for fresh consumption, although apparently they do not process well. The size of the nut obtained is quite variable between seedling trees and within the same tree, and is dependent somewhat upon the amount of crop and the nutritional condition of the tree. General observation indicates that fruit size is probably increased when adequate moisture and nutrients are available to the tree. Trees are known to have stopped bearing when normal quantities of water and nutrients have been reduced. The fruit size of California seedlings ranges from 200 to 48 nuts per pound, which, expressed roughly in shell diameter measurements, is 5/8 inches to 1-1/16 inches.

The above figures indicate the range of characteristics which have been encountered in the 70 seedling trees studied in detail thus far. It is the hope of this committee that more trees of bearing age will be called to our attention so that no specimen of potential value will be overlooked. The objective of the study is to provide potential growers with information about the best macadamia trees in California which could be used for intelligent propagation of trees for the ultimate dooryard or commercial planting. We urge your cooperation in this endeavor.

James H. Macpherson

Before concluding our report, the committee wishes to pay its respects to a beloved member who passed away during the year. J. H. (Jim) Macpherson of Encinitas was a member of the California Avocado Society for many years and an active member of the Minor Subtropical Fruit Variety Committee. Through his activities in the nursery trade and his wide correspondence in countries all over the world, he was prominently identified with the introduction of varieties and the popularization of the minor subtropical fruits. His enthusiasm for unusual plant materials and his eagerness to disseminate his knowledge concerning the plants made it both pleasurable and profitable for anyone to visit his nursery, where some of the better varieties were first introduced into California. Jim was an endless source of inspiration and helpfulness to this committee in gathering information as to the behavior and prospects of subtropical fruits in his area. He participated actively in many horticultural endeavors and

organizations. The application of his knowledge and practice of his enthusiasm has resulted in the development of many beautiful home and building landscapes in southern California. Those of us who knew and worked with Jim will miss him.

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