

AVOCADO CULTURE IN INDIA

INTRODUCTION

While in the India of pre-Independence days there was decidedly a larger number of Britishers as occupiers, now in the post-independence era we find thousands of Americans and other Westerners, engaged in various capacities and occupations in many organizations such as embassies, consulates, USIS's, military and aid missions, different wings of the UNO, Peace Corps, Ford and Rockefeller Foundations, as well as top executives of gigantic American firms, business corporations with Indian collaborations, consultants, experts, advisers to numerous developing industries of mammoth proportions, technicians and so on in our country. While most of them would have, in their home country, often tasted and enjoyed the delicious Avocado Pears, largely grown in San Diego, Ventura and other counties of the state of California in the USA, they are not probably aware that this fine fruit is grown, though on a very limited scale, in Bangalore, situated in South India and known to many as the 'Garden City' of this sub-continent. They will be also surprised to learn that this variety was first introduced in the country, nearly six decades ago by an American and bears the botanical name 'Persea Americana.'

ORIGIN

It would appear from inquiries made about the origin of this fruit in India that, an American missionary, residing in Bangalore between the years 1906 and 1914 was once on a visit to nearby Ceylon. There in the Royal Botanical Gardens he saw a few Avocado Pears. Immensely surprised to find in such a distant land a tree of his home country and delighted with his rare find, he somehow managed to procure from the Garden authorities a few seedlings and brought them with all care to Bangalore. Encouraged by the, then British Resident in the State of Mysore, to plant the seedlings in the 'Lai Bagh Gardens' (which were the Royal Gardens of Tippu Sultan, the Muslim Ruler of the Mysore state in the closing years of the 18th Century and the early years of the 19th Century) and after British occupation developed as a fine Botanical Garden by the successive British residents and the Dewans of the Mysore State. This is how Avocado Pears (Alligator Pears) took birth in India.



Pruned tree, observed in Government Research Station, Hesserghatta, Bangalore
(the spreading type)

It would seem that the acquisition of the few seedlings by the Lai Bagh Gardens at that period was essentially for enriching the Botanical Garden by adding a hitherto unknown specie of foreign origin; thus, enhancing its botanical importance rather than popularizing this variety. No extensive propagation of these with an eye on their commercial possibilities was attempted in the succeeding years until 1940, though the climatic conditions and soil requirements in the region then (as well as even now) were ideal for their large scale cultivation. Such a lack of interest during those years is manifestly due to three main factors, which must have deterred the fruit growers of the times from making any attempt to go in for Avocado culture:

- a) Local varieties such as Mangoes, Oranges, Plantains, Sweet and watermelons and many other fruits were extremely sweet to taste, immensely liked by everyone, including foreigners, and easily marketable by the growers owing to their popularity.
- b) Even the occupying Britishers, despite hailing from the West and being in greater numbers than the handful of other nationalities of foreign origin, did not evince much liking for avocados, possibly because of its apparent tastelessness. Further, their present use as salad or with creams or in many other tasty ways was not known in those days — quite possibly even ice cream was unheard of or a rarity in those days, at least in India.
- c) Americans, who were residents in our Country in those years, were merely a handful and fewer still in these parts and their minimal demands would have constituted a tiny fraction of the very large demand and consumption of the more popular local varieties. As such avocado culture did not evoke any interest in the farmers and fruit growers of that period. It is significant to mention here that even

today very few of the countrymen themselves, excepting business magnates, who visit America periodically and have tasted their delicious variety and consequently have developed a liking for it, have seen and actually tasted the avocados, primarily because of its unpalatability by itself without the addition of creams. In fact, on account of its close resemblance to butter and identical lack of any taste it is so named in these parts as 'Butter Fruit.'

No doubt between the years 1912 and 1940, a few seedlings of their choice varieties were also occasionally brought from their home country by the American missionaries who came for periodical stays in India in connection with mission work. That is how we find today stray trees of avocados in mission compounds, church yards, and in a few hill stations of the South — Kallar near Nilgris, Palni, Kodaikanal, Yercaud, etc., where Americans resided at that period. That is also apparently the reason how we find more than a dozen varieties of Avocado Pears grown in many parts of this region. There were also very small avocado orchards in the Maharaja's Palace at Bangalore and in the bungalows of a few Britishers who must have taken to this fruit after contact with American missionaries.

It is quite interesting to find that the influx of Americans in very large numbers into this country, soon after the outbreak of the Second World War, was once again the primary cause for renewed interest in the propagation of avocados on a wide scale by fruit growers from the year 1940 onwards. The Hindustan aircraft factory was started in the year 1940 in Bangalore by the renowned industrialist, Mr. Walchand Hirachand, for assembling planes needed for the war effort. Most of the parts and all equipment were necessarily obtained from America and some from Britain. As the factory was the first of its kind in the whole country — maybe in the whole of this part of Asia—and as the Indians needed pre-assembly training and the know-how in this new industry, quite a number of American technicians and experts and executives came to this station and stayed for well nigh a decade. Soon after, they were followed by thousands of American G.I.'s, who were engaged in the Far Eastern theatres of the war and were brought in for rest, recreation, regrouping or training purposes to this station, because of its temperate and salubrious climate throughout the year. Their avidity for avocados and a growing demand from them for these gave a big spurt to the fruit growers of this region for propagation of this variety in many orchards and farms.

In the meantime the Government of Mysore opened a research station for non-citrus fruits at Hesserghatta, 14 miles to the north of Bangalore. Adjoining a big lake, as they found the soil conditions and the climate perfect for the cultivation of non-citrus varieties in that place. Although greater prominence was given and more funds were earmarked for research in the culture of the widely popular varieties of the non-citrus group such as mangoes, plantains, lichis, guavas and others, about 150 avocado seedlings of different species, all obtained from the few seedlings planted by the American Father at the Lai Bagh Gardens in 1912, were introduced in the research station on a two acre plot, whereas over 45 acres were utilized for the former local varieties. The research station obviously felt that if Avocado Pears were found to thrive well in the area, the fruit growers in the state could be encouraged to take up their propagation on a bigger scale, or at least to the extent of meeting the growing demands of the Americans temporarily residing all over the country.

Notwithstanding the fact that the research station has not paid as much attention, care and scientific methods in farming toward avocado culture as the Department of Agriculture, State of California, Agricultural Extension Service, University of California, California Avocado Advisory Board, California Avocado Society, Calavo growers of California and numerous other private fruit growers of the state, as observed by us from their extensive literature, the plants have grown quite well and the fruit growers of this region have been greatly benefited from the budded seedlings obtained by them from the research station.

However, it must be mentioned that the present officer-in-charge of the station has been taking considerable interest in the existing trees and one sees rows and rows of both budded and non-budded (root- stock) seedlings, in their nursery stage and the trees in fine shape, Root rot and leaf burn, which are reportedly quite common diseases affecting avocado trees in the avocado growing areas of California, despite their up-to-date scientific propagation and preventive measures at high cost, are singularly absent in this region. This, we believe, is entirely due to the presence of loamy or sandy-loam soil of alluvial origin in many parts of the state, the prevalence of a temperate and sub-tropical climate throughout the year, natural facilities for easy drainage owing to the terrain, and the total absence of extremes of climates at any time of the year.

CULTURE

Propagation

As has been already stated, this region is fortunate in having in many places a loamy, sandy-loam soil of fertile alluvial nature. The terrain is such that drainage does not pose a problem at all and in fact neither in the government farms nor in the private orchards. One notices well laid-out drains around the trees. On account of an average of 30" rainfall in this region during the year, watering is not a necessity, though occasionally, when seasonal failures occur, a little watering is done. But no water analyzing is ever done here as is in vogue in California. Seedlings of sturdy trees are selected for root stocks. They are planted in outdoor nurseries with a top layering of sandy soil. On in exceptional cases, when the monsoons totally fail and there is a hot spell, a sun shade is provided for the nurseries. Otherwise this contingency never arises due to a mild weather round the year. In about 90 days seedlings attain a height of 8 to 12 inches and are ready for budding. Only the government station carries out budding and grafting on an experimental basis and private growers have not cared to do it themselves, unlike their counterparts in the counties of California.



Three specimens of Avocado Seedlings (Root-stock).



Three specimens of budded seedlings.

Normally from the eighth month onwards the budded seedlings are transplanted in the regular farms and orchards. The research station has planted the avocados with 24 feet spacing all around—in other words 75 trees per acre have been planted and also recommended by them—to allow for spreading of the trees when they grow up and are pruned in time. On account of the fertility and the suitability of the soil, very little manuring is done, either in the research station or by private growers. Fertilizers are not used, as they are in the first place, unobtainable, and secondly, if at all obtainable, considered very expensive and not warranted.

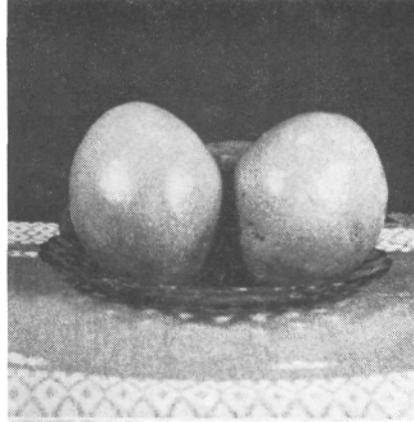
Varieties grown

More than a dozen varieties are grown in a few of the government-run farms, orchards and gardens of private growers in this region.

Among all the exhibits, only Variety No. 7 is not pictured. It is green in color, ball shaped, weighs between 10-14 ozs., fruits July-August each year, develops a pale yellowish tinge all-around when nearing maturity, probably due to rich oil contents and not akin to any known California specie.



Tree, bearing round-shaped medium-sized, green variety Avocado Pears, in their pre-maturity stage.



VARIETY NO. 1. Pale green in color, globular in shape, weighs between 8-12 ozs. each, acquires a dull yellow tinge around the rind on maturity, possibly due to high oil contents, fruits in June-July each year, not identifiable with any known American specie.

Pests and preventive measures

Measures for arresting diseases have never been found necessary due to the absence of any, like root rot, leaf burn, blight, etc., in these parts. Chemical treatment, such as fumigation and so on, is unheard of or ever attempted for the same reason.

Growing and bearing

Usually the avocado trees grow up to a height of 18 feet since no pruning is done barring the few experimental ones at the government station where their height is about six to seven feet.

Normally fruit bearing takes place in budded seedlings after four years and in non-budded seedlings (rootstocks) after seven years. Approximately 52 man hours-per-acre per year are spent by the growers until the trees become bearing and much less at a later stage.

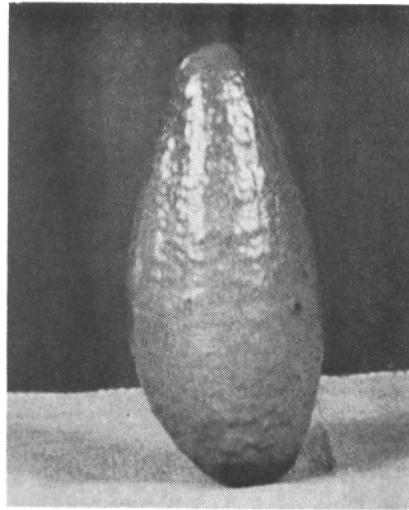
Life expectancy is estimated around 80 years, though it is by no means certain, as these are of comparatively very recent origin in the absence of past experience.

Acreage under cultivation

It is difficult to assess accurately the actual acreage under avocado culture in this state as they are in scattered places, and in very limited extents. Apart from the few government conducted farms and research stations, a handful of estate owners own orchards where about an acre, or even less, contain avocado trees. The rest are grown mainly in bungalows, backyards, etc. We estimate the total acreage to be roughly in the region of 30-40 acres at present.



Bearing tree of Variety No. 4.



VARIETY NO. 4. Green in color, elongated in shape, weighs between 8-10 ozs., full maturity on attaining standard size, retains color until the end, fruits July-August, yield not so high as the former, does not thrive so well and tends to develop corky spots over the skin, not identifiable with any known specie of your area.

Harvesting

No special tools as are in use in the USA are applied for harvesting. Approximately 30 manhours are taken per-acre per-season for this purpose. They are plucked from the trees without the aid of clippers and other tools.

Yield

On account of very favorable climatic conditions and high fertility of soil, the yield is fairly satisfactory and the return on the investment is on a high order, since working cost is very low. On an average a tree bears in a year 200 fruits, and taking the average weight of all the marketed fruits to be eight ounces each, with 75 trees per acre as in the Government Horotorium (though in the private gardens the planted trees in an acre are more), the yield-per-acre averages 7500 pounds per year. It is most significant to add that totally lacking the latest scientific methods of cultivation, systematic manuring with fertilizers, timely pruning, periodical pest and disease control measures, and every attention paid to the minutest detail at a high cost, to secure a good yield as done in avocado growing areas of the USA, both at government level and by the private growers, the yield in this region is comparatively higher than its counterpart in the USA (the yield in the state of California is reported in the statistics as 5000 pounds.).

Marketing

We regret to state that the facilities for marketing on a wide scale to reach all those parts of the country, from where mostly foreigners and principally Americans place

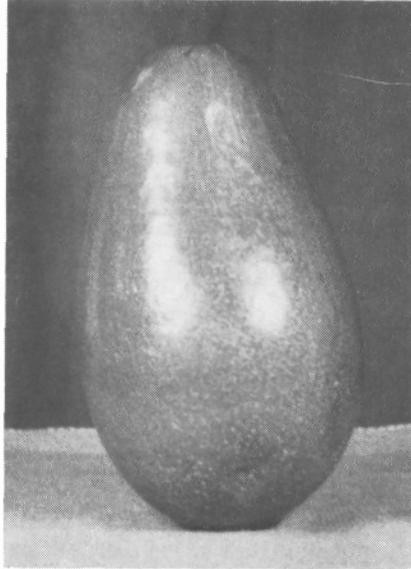
growing demands for this variety, are practically nil. In the first place, adequate facilities are not there to haul the produce from its source to places from where they can be exported to far off stations like Delhi, etc. Rail movements take longer periods exceeding five days often in transit and rough handling enroute is a common feature. Nor are the trains provided with cold storage facilities for perishables to arrest deterioration while in transit. Although avocados produced in this region normally have staying capacity after picking of about seven days before ripening starts, the humidity in the closed wagons of rails hastens this process with the result that after longer transit periods in packed state, they are found by customers fully ripened and unfit for the table. The minimum air facilities presently available (just one flight daily from this station to Delhi, Calcutta, Bombay, etc.) are prohibitively costly in the matter of freight. When the market rates at source, viz: Bangalore only ranges from 0/50 P to Re. 1/— per pound (roughly from 6 cents to 12 cents in terms of Dollar) our customer at Delhi and other places does not like to pay Rs. 2/30 p per pound on air freight (about 30 cents on a pound).

Publicity

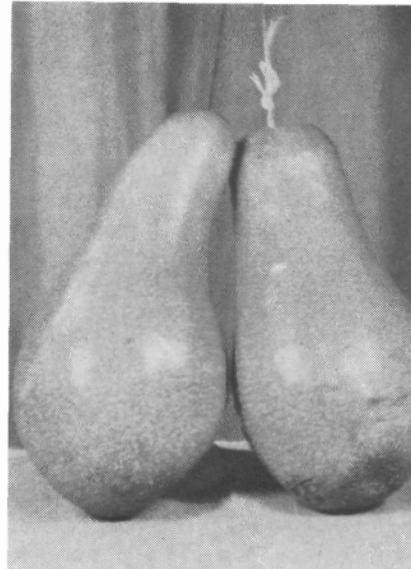
It is equally regrettable that though the Government at the Centre and the state governments stress the vital necessity to grow in the country as many substitutes for the staple foods (viz: rice, wheat and other cereals) as possible, they neither seem to know the rich caloric values of avocados as a substitute nor the vast potentialities offered by intensive propagation of this variety. Rich in nutritional contents, and cultivable with the certainty of very good yield at very low cost in this region, nature is bountiful to this species. There is no literature of any kind on this variety either by the government or by the few private growers.

Nutritional values

The avocados are found, to contain high proteins, their caloric value ranges from 1500 to 2250 calories per Kg (i.e. 2.3 pounds). Our food analysts are of the view that the protein content of an avocado is three times that of an apple, nearly equal to that of the local plantain and less than olive fruit.



VARIETY NO. 3. Green in color, egg-shaped, weighs between 14-18 ozs., (or even more when fruiting is preceded by a few good showers) acquires a darker hue when the ripening starts (after about six days from the time of picking) fruits in June-August each year, though occasionally in some seasons it extends beyond August to September, possibly akin to your Zutano, but season differs.



VARIETY NO. 2. Green in color, pear-shaped, weighs between 8-12 ozs., full maturity acquired while in tree, retains color throughout, fruiting season July-August each year, high yielding, and probably akin to Rincon of your state, although fruiting season varies.

Pruning

No private grower has taken to pruning as he does not apparently know the advantages of pruning, where as a result, the trees spread out; harvesting is made easier, and the necessity of ladders won't arise; picking is economical and also damage to fruits will be minimum. Even the research station has pruned only a few trees for experimental purposes.

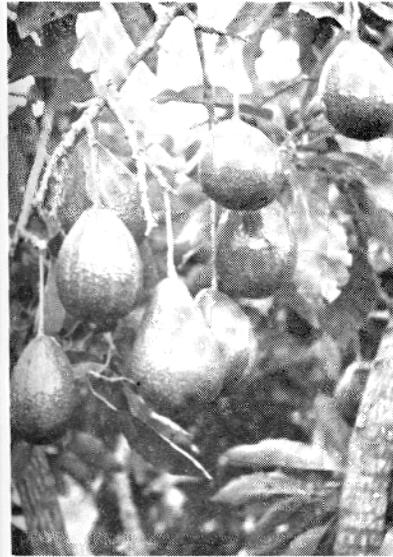
CONCLUSION

The presence in our country of a very considerable number of foreigners, prominently Americans, who relish the avocado immensely and from whom there are ever growing demands; the high nutritional values of this fruit and its vast scope as a substitute for cereals, especially now when food is an acute shortage and suitable substitutes are the crying needs of the day; the prevalence of an ideal climate round the year and the requisite fertile soil all over the state for its successful propagation and low working costs and high returns — all these factors emphasize the vital need for intensive cultivation of avocados in larger areas than now obtaining, adopting up-to-date scientific methods of culture as in force in the California regions.

Every one of our numerous patrons all over India, who have taken supplies from us during the past 15 years, have spoken very highly of the fruits exported from this region. One of our customers at Calcutta, Mrs. George B. Madden of Union Carbide India

Limited, (an American concern) writes in one of her letters, "Let me say that I have never seen such beautiful and large avocados, not even in my native California, where they grow so well." Another patron from Bombay, Mr. Kenneth Allen Sheppard of M/s Rallis India Limited, writes in one of his letters that "Avocados received were truly excellent. In fact, they were the best specimens of avocado that I have tasted anywhere in the world since I left Natal in 1947."

Mrs. Justine Sloane of American Consulate General, Calcutta, another of our clients, writes, "shipment of avocados arrived in Calcutta in perfect condition and were thoroughly enjoyed."



VARIETY NO. 6. Green in color, ovid in shape, weighs between 8-10 ozs., medium in size, not so much liked by clients as the other ones, fruits July-August, no change in color at any stage, yield average and not identifiable with any variety in California.



VARIETY NO. 6. (Fruit in tree) Green in color, oval shaped, weighs between 6-8 ozs., medium size, develops a red-yellowish tinge in that part of the fruit exposed to sun during bearing stage, fruits July-September each year, not akin to any known California variety.

Another testimonial from our Cochin (in the southern tip of our country) customer, Mrs. R. I. Kuehl, of Messrs Cochin Refineries Limited, reads, "We certainly are enjoying the lovely Avocado Pears."

Appreciative remarks such as "very good, excellent, perfect, very much liked, perfectly satisfactory" and so on are numerous and run into hundreds.

What we would like to stress here is that the quality of avocados produced in this region is exceptionally good, most satisfying to every type of customer. Above all the produce is literally nature's bounty to the grower, as he pays very little attention and care in its cultivation. But unfortunately no attempt, even on a limited scale for increased propagation of this variety, is being made by either the government authorities or the private growers. While the government frowns at their subordinates, if funds allotted for researches on fruits are not expended on their pet local varieties with comparatively

nutritional values, the private growers are often very poor, lack the means or wherewithal to procure up-to-date agricultural implements and fertilizers for avocado culture on scientific lines, as done by their counterparts in California regions. Nor are the private growers encouraged financially or at least advised by the government to take up avocado culture on extensive basis, stressing its high nutritional values and other potentialities.

Secondly, even if the private growers manage to possess the means, it is very doubtful whether they can procure the implements and fertilizers and expert advice from sources within the country. These are a few of the several handicaps that face the avocado culture in this country despite the fact that nature has endowed the region with an ideal climate and the most suitable soil, the two foremost requisites for a successful propagation of avocados.

However, though the prospects of a promising future for avocados are bleak at present, there is one encouraging sign. A few private growers and business magnates, who, in the pursuit of their business and occupations, have frequently visited the USA, tasted and have developed a liking for avocados and are aware of their rich food values, are currently making endeavors to start avocado farms, initially with limited acreages. We do hope that their efforts bear fruit and that the avocado culture in this region is promoted to a stage where it can reach the heights now obtained in your country. We also hope that the government will realize the importance and commercial possibility of this variety in the near future and give impetus to private growers for extensive propagation.

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