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K.S. Cole

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THE MANGO
IN
WESTERN AUSTRALIA

By
K. S. COLE,
B.Sc. (Agric.),

and

M. G. HAWSON,
B.Sc. (Agric.), D.T.A. (Trin.)

ALTHOUGH normally considered a tropical tree, the mango does well in the sub-tropics of Western Australia. The main commercial area in the State is Carnarvon but a few trees grow as far south as Perth.

This useful and very beautiful tree grows to a large size and yields a heavy crop of delicious fruit.

The mango is indigenous to tropical Asia where its name is usually associated with India. In that country the tree produces excellent fruit in a monsoonal climate.

It is not known when and how the first mangoes were introduced into Australia. Traders between India and the northern parts may have brought fruit or young seedlings back with them. The "Bowen" mango named after the town in Queensland probably originated in this way.

VARIETIES

There are a great many varieties of mango grown throughout the tropical countries. In Western Australia two main types or races are readily distinguished. They are the turpentine type and the Bowen mango.

The Bowen variety is known locally as the peach or strawberry mango. This is because it develops a splash of reddish pink colour where the skin is exposed to the sun during ripening. The consistency of the ripe fruit is rather like a large clingstone peach. The flesh is thick, relatively free of fibre and has a delicious flavour.

The turpentine type is smaller than the Bowen, and light greenish yellow when ready for picking. The texture of the fruit is more stringy than the Bowen and the ripe fruit does have a pronounced turpentine smell. Preference for either type appears to be divided, although the Bowen
A 10 year old tree of the Bowen variety growing on the Gascoyne Research Station, Carnarvon

variety is in greater demand on the Perth market.

The Kensington mango in Queensland is very similar to, if not identical with, the Bowen type.

PROPAGATION

Normally, budded or grafted trees are planted, although seedlings can also do well. This depends mainly on which type of mango provides the seed to be planted.

If the turpentine variety is preferred it is advisable to bud. The Bowen mango appears to breed true to type.

The Bowen variety is polyembryonic, which means that it has more than one embryo, and up to six shoots may develop from each seed. It is customary to leave the strongest shoot and cut the others back. If care is exercised, each shoot and the seed to which it is attached, may be removed and planted separately, but from local experience the number of “takes” is low.

Grafted trees should be planted wherever possible as results from cross pollinated seeds are variable, with seedling trees often producing indifferent fruit. An additional advantage of the grafted tree is that it normally bears from one to several years earlier than a seedling tree.

Seed treatment before planting determines whether seedlings will develop quickly or slowly.

Observation plots planted at the Gascoyne Research Station in early February, 1962, showed that a quicker germination and a higher percentage of seedlings would be produced from fresh and husked seed, as shown in Table 1. Other tests showed that the seed should be placed on its edge with the growing point on top and just below ground surface.
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TABLE 1

Effect of Seed Treatment on Emergence and Survival of Bowen Mango.

<table>
<thead>
<tr>
<th>TREATMENTS</th>
<th>23rd Feb.</th>
<th>2nd Mar.</th>
<th>1st April</th>
<th>4th May</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Seed dry. Husks removed. Growing point on top and just below ground surface</td>
<td>58.0</td>
<td>58.0</td>
<td>50.0</td>
<td>75.0</td>
</tr>
<tr>
<td>2. Seed dry. Husk left but slightly opened by a secateur cut. Growing point on top just below ground surface</td>
<td>60.0</td>
<td>75.0</td>
<td>75.0</td>
<td>75.0</td>
</tr>
<tr>
<td>3. Seed fresh as for 1</td>
<td>Nil</td>
<td>Nil</td>
<td>25.0</td>
<td>8.0</td>
</tr>
<tr>
<td>4. Seed fresh as for 2</td>
<td>Nil</td>
<td>8.0</td>
<td>66.0</td>
<td>83.0</td>
</tr>
</tbody>
</table>

NOTE.—Seed referred to as dry was three to four weeks old. Fresh seed was up to a week old. The seed was planted on February 6.

Seed for sowing should be taken from fruit of good size, well coloured, and with thick flesh relatively free of fibre. It should be juicy and of good flavour. Seed should be sown as soon as possible after picking or consuming the flesh of the fruit.

SOIL PREPARATION AND ESTABLISHMENT

Generally the tree does best on a deep, well drained, rich soil and bears better where there is a hot dry period each year. As the tree grows rather large and branches very well, enough space should be allowed for its growth. If the trees are planted too close together tree size and shape can be disappointing.

For the best results a hole about 2 ft. deep and 2 or 3 ft. across should be dug and partly filled with old animal manure and soil, or blood and bone fertiliser incorporated with one or two shovels of soil in the bottom of the hole. The young tree is then planted and watered in.

If more than one tree is to be grown the trees should be spaced at about 30 ft. intervals to allow for adequate growth. If seeds are planted into the final positions two or three seeds should be planted in each hole and the plants thinned later to the best seedling.

In Carnarvon, some growers use the mango as a combined wind-break and economic crop. In this case an initial spacing of 10 ft. is recommended, with the removal of every second tree after three or four years. It has been observed that fruiting is lighter on the windward side of the trees.

A spacing of 30 to 35 ft. is necessary for trees grown in blocks.

A grafted tree will start to bear in the fourth or fifth year after planting out.

Even if grown only as an ornamental, this tree is worth a place in any garden which has enough room. Once established the tree is highly drought resistant and gives a good area of heavy shade.

Each year, as the tree starts active growth, it is covered with a mass of young red leaves which provide a blaze of colour. The dark green of the mature foliage is in sharp contrast.

MANAGEMENT

Weed Control

After establishment weeds should be kept to a minimum as they draw heavily on moisture in the soil. This is more important where mangoes are grown under irrigation such as in the Carnarvon district. As the tree increases in size the heavy foliage will control weed growth.

Water Requirements

The mango does well in monsoonal areas where it receives heavy rain for from three to six months of the year followed by a period of hot dry weather. This type of climate exists in the northern half of the State and in the Perth area. However, at Carnarvon, trees must rely on irrigation water for their moisture until well established. Under these conditions it has been shown that regular weekly waterings during the flowering and fruit set period are necessary.

Fertilisers

Fertiliser requirements are not well known. Observations in Queensland suggest that trees need a balanced fertiliser with the emphasis on nitrogen for young trees, changing to a mixture higher in phosphate and potash after the trees start bearing.

The rate of fertiliser application is governed by soil type and general growth conditions. As a guide one pound of mixed fertiliser may be used per year for each year of growth. Most of the fertiliser...
should be applied at the beginning of the winter or wet season, which corresponds to April-May in the southern part of the State and November in the northern part. The remainder should be applied towards the end of the rainy months, or in November-December under Carnarvon irrigation conditions.

Pruning
When the young tree is two or three feet high the terminal bud should be removed to promote branching. If this is not done the tree will grow to a height of 12 to 15 feet as a single stem. Apart from developing into an awkward looking tree it will be subject to heavy wind buffeting and subsequent damage.

Later pruning is carried out only to remove weak or broken branches and to keep the centre of the tree open.

FLOWERING AND THE FRUIT
In the Carnarvon area flowering starts in July and extends through to October. Early fruit is ready for harvesting in January.

Flowering is not so extended further north and may cease in August.

The flowers are borne in large pannicles and are greenish white and perfumed.

When in flower the tree is often a mass of flowers for some weeks and is very attractive. Many of the flowers normally fall, leaving only a few fruit on each pannicle. Even so, most trees bear heavy crops which mature in four to five months after fruit set.

The fruit is normally oblong or ovoid with a beak-like shape near the apex. It is flattened on the sides and weighs from about 4 oz. to as much as 16 oz. or more.

The skin is tough and leathery and, depending on the variety, varies in colour from a mottled green to yellow and sometimes red. The flavour is distinctive and aromatic; many varieties have a distinct turpentine flavour which, surprisingly, is not unpleasant.

Ripe fruit is nearly always very juicy and sweet and is palatable to most people. The seed is large, fibrous, ovoid and rather flat, and is enclosed in the flesh, which clings firmly to it.

The fruit is usually eaten raw when ripe. The skin is removed and the succulent flesh consumed alone. This is somewhat messy because of the sweet, sticky juice, and many people prefer to
remove the flesh while firm and add it to fruit salads. In the kitchen the fruit is popular as an addition to chutney, jam, preserves, and so on.

MARKETING

Distance from southern markets and the perishable nature of the fruit are the main disadvantages in commercial mango growing. Because of these, handling and packing of the fruit are of major importance. Mangoes which reach the city in good condition command high prices.

Picking of the fruit and its presentation for market should be done with great care. The fruit bruises easily after picking and should be placed gently into the picking containers. Windfalls should not be sent to market.

In the packing shed fruit is graded for size, colour and variety and packed into half-bushel cases or, in the case of strawberry or peach mangoes, packed in trays. Woodwool or similar packing material is required between the fruits to prevent bruising. The variety and the number of fruit it contains should be stencilled on each case.

FARM STATISTICS, 1962-63

OVERDUE RETURNS

THE annual collection of farm statistics for the year ended 31st March, 1963 has now been in progress for almost two months and, although most farmers have already lodged their returns, there are some who have not yet complied with the Statistician's requirements. These overdue returns are now urgently needed to complete information which is used extensively by farmers' organizations, marketing authorities and government departments for the ultimate benefit of primary producers.

The Deputy Commonwealth Statistician (Mr. R. J. Little) therefore urges all persons who have not yet submitted returns to complete them at once and forward them to the Bureau of Census and Statistics, Perth, without further delay. If required, advice and assistance will be given by letter or personal interview at the Bureau's Office, Eleventh Floor, T. & G. Building, 37-39 St. George's Terrace, Perth.

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