



## A SHORT NOTE ON THE POMEGRANATE AND ITS CULTIVATION IN SOMANUR (COIMBATORE DISTRICT)

By P. S. SURYANARAYANA AYYAR,  
*Sub-Assistant in Mycology*

*Introduction.*—The pomegranate is a fruit that has been grown in this country from time immemorial. It is reported to have been introduced into Southern Europe and seems to have travelled further west to America and the West Indian islands. In Europe, Granada in Spain was for a long time famous for its pomegranates, 'the fruits reaching a high degree of perfection in its gentle climate'. The word pomegranate is derived from two words *Pomum Granatum*, literally meaning seeded apple. Linnaeus gave it the scientific name of *Punica granatum*.

*Soil.*—The plant grows in almost all kinds of soils, but the yield is heaviest on 'deep soils of fairly heavy texture'. It grows also on alkaline soils but then it cannot be expected to yield as well. At Somanur it is found thriving on good red loam tending to be sandy.

*Nursery.*—For an acre of plantation the nursery required is half a cent. The plot is well dug up with an ordinary mamutti, a month before the actual sowing time. About 10 basketfuls of ashes, village sweepings or cattle manure are added to the soil and well mixed up and the plot levelled.

For sowing, seeds are carefully selected. About a dozen well ripened fruits are picked from a mature and healthy tree (10 to 15 years in age), the rind is removed and the juice squeezed out so that only the seeds are left behind. The selection of the fruits should be such that all the desirable qualities of a good fruit are present in them. The naked seeds are then well mixed with ashes and the mixture dried in the sun for about ten days. It is not definitely known how long the seeds can be kept in this state without getting their vitality impaired. Anyway they seem to keep well for about 2 to 3 months.

Having prepared the nursery as described above, it is divided into small convenient beds. The seeds are then sown broadcast in these beds and covered. Then irrigation begins which should be repeated once in two days until the seeds germinate. The usual time to raise the nursery is August-September. Sprouts appear above ground only after one to one and a half month. The intervals between waterings are then longer i.e., twice a week for another 3 months. The nursery is kept clean of weeds. After the fifth month waterings are given once a week. The seedlings may be allowed to grow in this state for a year. Throughout the nursery life no further manure is applied. The plants are ready for transplanting when one year old.

*Layering.*—This is another method by which plants are raised. Having selected a good tree the desired branches are bent, if necessary, so that a portion touches the ground and these are covered with earth and weighted. The trees should be 6 to 10 years old. This branch takes nearly a year

before striking root and when once it has done so, it can safely be transplanted. The new plant is separated from the parent tree and carefully lifted with a ball of earth round the roots and planted in the pit made ready to receive it.

It is a custom in some parts to plant the cuttings straightaway without any layering or attempt to make it strike root—like the rose or grape-vine cuttings. The difference between the plants raised from seeds and those from layerings is that the former takes about five years to bear fruit, while the latter begins to yield the next season. It is generally believed here that the trees raised by layering deteriorate sooner than the seed-raised trees.

*Planting.*—300 to 350 seedlings can be planted in an acre. A month or even more before transplantation, pits are dug and kept ready to receive the seedlings. The pits are 2' x 2' x 2'. They are dug generally during September-October and are manured at the rate of 2 basketfuls of village sweepings or tank silt per pit. Before pulling out the seedlings, the nursery is watered the previous day. Now the plants are lifted carefully and planted singly in the pits. A seedling when one year old will be 2 to 2½ feet high. It is planted leaving one foot of the shoot projecting above ground. All the plants are watered at once after the transplantation. The whole garden will have to be irrigated twice a week till the young plants put forth fresh leaves. Irrigation is unnecessary if rain intervenes.

*Irrigation and after-cultivation.*—After the plants are well established, the number of irrigations is reduced to one a month. The land is cultivated with a garden crop as *Ragi*, onions or sweet potatoes. By growing crops mentioned above, the garden is kept clean and therefore no special after-cultivation is found necessary for about 3 years. There being only 300 plants to an acre (and each plant being only 1 foot high) all the area can be successfully cultivated for about 2 years. The pomegranate withstands drought for a long period. On account of its resistance, it is possible and even desirable to grow good varieties in regions where water is scarce or the supply irregular. Once the plants begin to bear, the whole garden has to be kept clean and in a good state of tilth. For this purpose mamutty digging is generally given twice a year and also manure is applied. Green leaves can be dug in with profit (if they are available) or any bulky manure at the rate of about 4 or 5 basketfuls per tree.

*Pruning.*—No systematic pruning is done except cutting out the dead twigs and branches. This can be successfully introduced by actual demonstration. By intelligent pruning many plants can be made to bear more fruits and those that do not bear at all can be induced to fruit.

*Harvesting.*—It is possible that the trees will begin to bear even in the third year of transplanting. Normally they do so in the fourth year. The fruits are to be gathered, the garden should not be watered and the trees allowed to shed their leaves completely, which will be about December or January. Even if there are any green leaves left, have them removed so that the whole garden will look very bare. It should be in this state till it rains in April or May. It is believed that the more a tree sheds, the more it will bear afterwards. After a good rain the garden is well weeded, dug and manured with cattle manure and green leaf. It should now be regularly irrigated so that all the trees will put forth fresh shoots and begin to flower profusely. In a month or two the whole garden will be full of small fruits. In about another two or three months they are ready for

harvest. In this connection one thing should be noted and that is all the fruits do not come to maturity at the same time. For naturally some flowers come up earlier and become fruits earlier too. The harvest is done two or three times leaving an interval of about 15 days to a month between each harvest. Usually the ryot does not harvest them himself as he gives out the garden to the local contractor for a specific amount ranging from Rs. 300 to 600 (for an acre according to the stand of the crop) and he comes and takes away the produce at his own convenience. The ryot may realise for the first year about Rs. 300 and this will gradually go up to a maximum of about Rs. 600 in about 7 years. (*Note.*—A good tree will yield about 30 to 40 mature fruits.)

*Uses of pomegranate.*—This fruit can be put to various uses. Primarily it is an excellent fruit quenching the thirst to a very remarkable degree. The quality of the fruit varies according to the variety and different localities. Those got from North-Western Provinces are supposed to be the best obtainable in India. Of course better fruits are got from Persia and Afghanistan from where large quantities are imported into this country. The keeping qualities of the fruit are very good and it is said they can be kept as long as six months without in any way injuring their freshness and palatability.

‘A very cooling drink is prepared from the pulp and is said everybody appreciates it that has got a chance to taste it.’

‘In Syria the fruit is cut open, the arils are extracted and stewed with sugar, sprinkled with rose water and served on little plates, this being considered a dish of rare excellence’ (*The Pomegranate*. By R. W. Hodgson).

The flowers, the bark, the rind and the seeds of the fruit can be used as a dye or tan:

*Dye and Tan.*—The flowers are used in various parts of India to impart a light red colour, said to be fleeting, to clothes. The astringent rind of the fruit is a valuable tan and is also frequently employed as an auxiliary to the colouring agents (generally turmeric and indigo) in dyeing. Alone it imparts to clothes a greenish colour. The bark is similarly used as a dyeing auxiliary but its chief value is a tan and a dye for the leather. It is largely employed in preparing Morocco leather of Tangiers.

‘Samples of rind examined by Mr. Wardle were found to contain a moderate amount of yellow colouring matter readily given up to boiling water which gave colours varying from a dull yellowish-green to a bright reddish drab with tassur and corah silk and cotton.’

‘It contains about 25 per cent of tannic acid which with the combination of iron salts may be made to produce an almost black dye on wool.’

*Uses as medicine.*—‘The fresh juice is used as an ingredient of cooling and refrigerant mixtures and of some medicines for dyspepsia. The rind is valued as an astringent in cases of diarrhoea and dysentery. Ainshi, however informs us that the Mohammedan physicians besides using the flowers and the rind in a variety of ways on account of their astringency, recommended the root bark as the most stringent part of the plant and moreover considered it a perfect specific in cases of tape-worm. The seeds are believed to be a stomachic; the pulp cardiacal and stomachic; the flowers and buds styptic and cicatrizing.



'The root bark is also employed as an astringent application for relaxed sore throat and as a wash in case of uterine diseases. Dr. Kirkpatrick is quoted in the Pharmacopœa of India as stating that the decoction of the rind with cloves was the best remedy he knew for the chronic form of dysentery from which poor people of India suffer' (Watt's *Industrial Products of India*).

*Pests and diseases.*—The pomegranate suffers from a *Cercospora* [lythracearum (?)] which attacks both the leaves and fruits. The life history of the fungus is not yet completely worked out. An *Aspergillus* (*Sterigmatocystis castenea*) has been recorded to be doing a great deal of harm to the fruits in America (R. W. Hodgson).<sup>1</sup> Recently a *Colletotrichum* was also recorded in this province to produce a 'blossom-end-rot'. The pathogenicity of the organism is under investigation.

The chief remedial measures lie in taking good sanitary measures such as plucking out rotten and diseased fruits, twigs and leaves and burning them and keeping the garden under clean cultivation. In addition to the above one or two good sprayings with Alum Bordeaux mixture (1 per cent) will go a great way in keeping down almost all fungus diseases.

The pomegranate butterfly (*Virachola isocrates*) is reported to be a very bad pest for these fruits. It is the caterpillar that does the damage. The adult lays the eggs inside the flower buds and the larvae bore into the fruit and develop inside eating it meanwhile. They pupate there and emerge as butterflies. Once they begin, a lot of harm is being done by them. The prevention lies in not allowing the adults to lay eggs in the buds or flowers or fruits which may be done by tying paper or muslin bags to all the fruits in time (in very early stages).

*Economics of cultivation.*—The following is the approximate cost of cultivation of pomegranates in an acre in this village.

<i>Nursery—Preparation of—</i>		RS.	A.	P.	
Digging with mamutty for $\frac{1}{2}$ a day at 8 annas a day	...	0	4	0	
Manuring with ashes at $\frac{1}{2}$ anna per basket—10 baskets	...	0	5	0	
10 good fruits at 2 annas each (for seed)	...	1	4	0	
Total for the preparation of the nursery		...	1	13	0
<i>Preparation of the garden (1 acre)—</i>					
<i>Preliminary cultivation—</i>					
Digging 300 pits (2' $\times$ 2' $\times$ 2') at 10 pits per rupee	...	30	0	0	
<i>Manuring—</i>					
10 cart-loads of farm-yard manure at Re. 1-8-0 per cart-load	...	15	0	0	
Spreading the manure. 2 men at 8 annas	...	1	0	0	
<i>Transplanting the seedlings—</i>					
3 men at 8 annas per day	...	1	8	0	
<i>Irrigation—</i>					
For the first year after transplanting 24 irrigations at Rs. 2-8-0 per time	...	60	0	0	
Total expenses for the first year		...	109	5	0

<sup>1</sup> Hodgson, R. W., *The Pomegranate*.

		RS.	A.	P.
<i>2nd year—</i>				
Digging and weeding at Rs. 10 per acre	...	10	0	0
Irrigation ...	...	60	0	0
Total for second year		70	0	0
<i>3rd year—</i>				
Digging and weeding at Rs. 10 per acre	...	10	0	0
Irrigation;...	...	60	0	0
Total for third year		70	0	0
Assessment for 3 years at Rs. 2-8-0 per acre		7	8	0
Total expenses for the first 3 years		256	13	0

The cost of a permanent wire fencing is not given as the ryots usually put up a prickly pear fence which serves well for all ordinary purposes. This is not after all very costly and hence omitted. Normally the trees begin to bear in the fourth year and hence the return is calculated only for that year.

		RS.	A.	P.
<i>4th year—</i>				
Digging and weeding	...	10	0	0
<i>Manuring—</i>				
20 cart-loads at Re. 1-8-0 per cart	...	30	0	0
<i>Irrigation—</i>				
For 5 months at 2 irrigations per week (at Rs. 2-8-0 per irrigation)	...	100	0	0
<i>Watch—</i>				
1 man at Rs. 10 per month, for 5 months	...	50	0	0
Assessment	...	2	8	0
Total for fourth year		192	8	0
Total expenses so far incurred		449	5	0

*Returns—*

		RS.
In the fourth year if the ryot leases out the garden to a contractor he may realize normally	...	150
		to
		200
So far the ryot has spent about	...	450
For the fourth year he gets	...	250

		RS, A. P.	
<i>5th year—</i>			
Expenses as in fourth year	...	...	192 8 0
Deficit from the previous year	...	...	250 0 0
		Total	442 8 0
Income for the year	...	...	400 0 0

This year also he has a minus balance of about Rs. 42-8-0.

<i>6th year—</i>			
Expenses as fifth year	...	...	192 8 0
Deficit from last year	...	...	42 8 0
		Total	235 0 0

He realizes this year about Rs. 600. And so has a gain of about Rs. 365.

From this year onwards he will be gaining a net amount of nearly Rs. 40 every year throughout the life of the garden which is about 30 to 40 years.

The maximum expectations from an acre (taking the present demand for fruits into consideration) will be about Rs. 600 during normal years, i.e., if no diseases intervene.

Interest has not been calculated on the above calculations.

*Note.*—During the middle of June 1930, the writer was asked to proceed to a pomegranate garden at Somanur and do some spraying work there to prevent the spread of a disease. The disease was in a very severe form when the garden was visited and had it continued for sometime longer there would have been practically no good fruits. The owner had great expectations and thought of getting easily Rs. 600. But the disease intervened and very nearly spoiled everything. The spraying given acted as a good check in preventing its spread and he realized about one-half of the expected sum.

The writer wishes to express his gratitude to M. R. Ry. S. Sundararaman Avergal, Government Mycologist, for giving him an opportunity to make the above observations and for guidance in the preparation of this paper.