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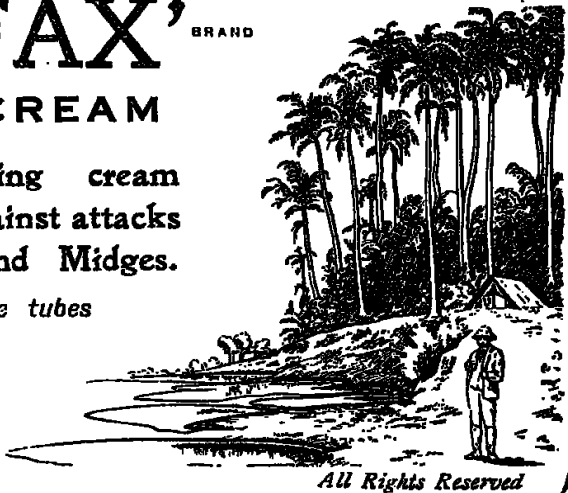
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GENERAL.

NOTES ON THE CULTIVATION OF ANNATTO.

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Annatto, *Bixa orellana*, is a large quick-growing shrub or small tree, native of tropical America.

The plant is cultivated on a small scale in India, Ceylon, the West Indies and other tropical countries for the dye afforded by its seeds. It also makes a good hedge, screen or windbreak.

CULTIVATION.

The tree is readily propagated from seed which is sown broadcast in slightly raised nursery beds about 5 feet wide. As soon as the seedlings appear they should be thinned out to about 6 inches apart. When the young plants are from 9 to 15 inches high they should be planted out in the field at distances of from 15 to 18 feet apart. The plant is very hardy indeed and requires no shade either in the nursery or when transplanted in the field.

The tree makes rapid growth in the open and under ordinary conditions will attain a height of 10 to 12 feet at the age of about two years, when it will begin producing fruit. It will continue to fruit for a number of years and the only attention it requires is systematic weeding and pruning of any dead branches.

There are apparently two varieties, one with a white flower with greenish capsules and the other with a pink flower and reddish capsules, the latter being the one usually cultivated. The flowers occur in terminal clusters while the fruits are ovoid, spiny, two-valved pods, containing from 30 to 50 seeds. The seeds are surrounded by a scarlet tissue from which the dye is obtained.

YIELD.

The fruits are collected when nearly ripe and as the shells dry they burst open. The seeds are separated from the pods and after being thoroughly dried in the sun they are screened and shipped without removing the scarlet covering containing the dye. In this condition they are packed in double gunny bags and marketed as Annatto "seed." Unfortunately the seed does not keep well and old stock is worth very little compared with fresh seed.

The yield is somewhat variable, but records from the Government Experimental Plantation, Serdang, show that the plant commences to fruit at about two years from the date of planting. The first year's crop gave an outturn of 5 cwt. of dry seed per acre and it is probable that this yield will be exceeded as the trees become older. Although the tree continues to produce fruit all the year round the heaviest crops are obtained in the months of March and September, following the dry periods. The market price fluctuates considerably and it has been known to vary from 3*d.* per lb. up to as high as 1*s.* 6*d.* per lb. C. I. F. London. The present price is about 8*d.* per lb.

USES.

Annatto dye is used to a small extent in colouring lacquer, silk, calico and wool, but its principal use is as a colouring matter for various foodstuffs, more particularly butter and cheese, and there is a regular demand for the product for this purpose. The active principle of annatto is annatoin.

MARKETS.

Hitherto there has only been a limited demand for this product and the consumption for the United Kingdom was within the region of 100 tons per annum, whilst a corresponding quantity was imported into the United States. The whole business is a comparatively small one and the chief supplies come from Jamaica and Southern India, where the crop apparently grows wild.

If the food preservative proposals issued by the Ministry of Health are put into operation the use of gamboge and a number of coal-tar dyes giving a yellow colour, will be prohibited. This might mean that annatto seed, which at the present time is only used in very small quantities, will probably find a greater outlet, as this is one of the very few yellow dyes upon which a veto has not been placed. This would of course have the effect of stimulating interest in the Annatto market.

In connection with a suggestion that annatto might be cultivated in Malaya as a commercial crop, enquiries have been made by the Imperial Institute, at the request of the Malay States Information Agency, regarding the present position of the market for annatto and the chief industries in which the product is now used.

As a result of these enquiries one firm of merchants stated that the demand for annatto appears to be increasing but in their opinion it is doubtful whether the total present consumption would warrant the seed being produced as a cultivated crop. They considered that the demand would require to be quadrupled before such a course would be worth while.

If the producer were in a position to hold over his stock and to distribute it evenly over the year the business would be more profitable, but the lack of keeping quality of the product prevents this with the result that there is either too much on the market or none at all.

The wild crop from Southern India is rushed home as early as possible, usually about the end of February and early arrivals realise good prices. If a cultivated crop could be placed on the market earlier than the wild crop an increased price would be obtainable.

Further, a firm of manufacturers of cheese and butter colours, etc., who use annatto seed for the purpose, stated that the price of the best annatto still remains at a high figure ranging from 1s. to 1s. 3d. per lb. according to the quality and colour of the seed.

GENERAL.

The information obtained from leading firms of merchants, brokers, and consumers suggests that no great increase in the demand for annatto is expected by the trade in consequence of the proposed new regulations of the Ministry of Health, but the possibility of marketing a cultivated crop earlier than the wild crop may be worth consideration.

A sample consignment of 10 cwts. of seed produced from a cultivated plot at the Government Experimental Plantation, Serdang, will shortly be forwarded home and, with the object of finding the most suitable market, it is hoped that it will be possible in future to make regular quarterly shipments of about this size.—The Malayan Agricultura Journal, Vol. XIII, No. 10.

RESULTS OF EXPERIMENTS REGARDING THE COMPARATIVE MERITS OF PROPAGATING PEPPER BY MEANS OF CUTTINGS GOT FROM TOP VERSUS FROM BOTTOM OF THE MOTHER VINES.*

BY THENGINAKERE SUBRAHMANYABHATTA.

1. The vines propagated from top cuttings require greater care.
2. Vines from top cuttings begin to bear very early, *i.e.*, within a year of their planting in their permanent places while other vines take about three years.
3. The vines from top cuttings are somewhat late bearers maturing their fruits in April. while other variety does so in March. Fruits of the latter drop off easily from their bunches as soon as they ripen while those from top cuttings do not so shed.
4. *Nature of Bunch.*—In the vines from top cuttings the fruits are more numerous and are closely set in the bunch and in others fertilization is less and fruits are further apart. The fruits in the latter are, however, a bit bigger in size.
5. *Yield of Crop.*—The quantity of pepper produced by the vines from top cuttings is about 3 seers as against $1\frac{3}{4}$ seers got from those of the other type. The above decidedly show the advantages of propagating pepper from cuttings taken at the top.—The Journal of the Mysore Agricultural and Experimental Union, Vol. VII, No. 2.

* Received from the Director of Agriculture in Mysore, for publication.