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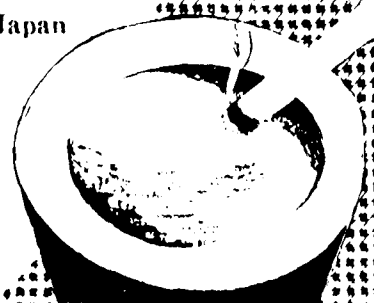
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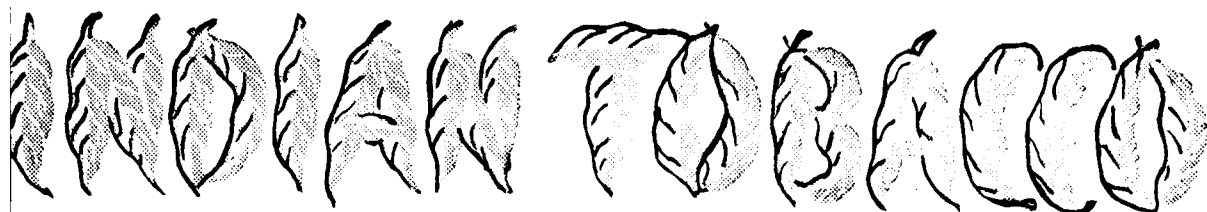
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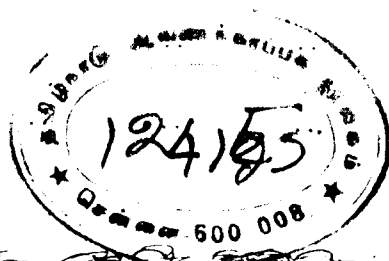
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INDIAN TOBACCO

Suppression of Suckers by Coconut Oil and Its Effect on Yield in Tobacco

By

N. L. PAL¹ and B. S. KADAM²

Central Tobacco Research Institute, Rajahmundry

KNOWLEDGE of physiological processes is being increasingly made use of in the regulation of plant growth and increasing crop yields. In case of tobacco, yield and quality of curable leaves have been sought to be bettered by removal of the apical inflorescence so that the top leaves get better nutrition and grow larger and thicker. But with the removal of the dominant apical bud, the dormant axillary buds begin to grow with remarkable activity and each produces branches with a number of small leaves which are of no commercial value. Therefore, the process of "topping" i.e., the removal of the top part of the plant or the inflorescence axis, has to be followed up by "sucker-ing" i.e., the removal of the axillary branches known as "suckers" as and when they grow to a convenient size. This is, however, a costly process, as the fields have to be visited a number of times for the removal of the suckers.

Attempts have been made, during the last few years at the Central Tobacco Research Institute, Rajahmundry, India, as well as in Australia and America to suppress the growth of the suckers in tobacco by growth regulators. Earlier, the works of Thimann and Skoog (1933, 1934) and others had demonstrated the production of auxins by the terminal bud which inhibited the growth of axillary buds. In case of tobacco, Calvert (1948) in Australia reported slight inhibition of axillary growth by four esters of 2,4-dichlorophenoxy-acetic acid. Complete suppression of the suckers was attained by Pal and Kadam (1949) at Rajahmundry by application of petroleum jelly to the axillary buds. Various mineral oils and fats were also found to suppress the buds in varying degrees.

Thus this first attempt to apply the chemicals to the buds themselves proved an immediate success.

In a paper presented to the World Tobacco Congress held at Amsterdam in 1951, Pal and Kadam discussed the effect of indole butyric acid, indole acetic acid, naphthalene acetic acid and 2,4-dichlorophenoxy acetic acid on the suppression of suckers. They found that application of these hormonal substances at concentration of 0.1 to 5% to the cut end of the stem in topped tobacco plants either as liquid or a paste had little effect on the sucker growth; but remarkable retardation in growth of suckers was achieved by application of these hormones directly on to the axillary buds. Thus application of 5% I.B.A. reduced the suckers growth by about 70% and those of N.A.A. and I.A.A. by about 60% and 30% respectively.

Paterson (1952), in America, conducted some field experiments using maleic hydrazide (as diethanolamine salt) as a spray to the topmost leaves at 0.5% to inhibit sucker development. Although he encountered considerable variability among different plants receiving the same treatment, he considered to have obtained satisfactory sucker control. More recently Calvert (1953) in Australia reported reduced sucker growth on spraying of 0.4% and 0.8% of aqueous solution of maleic hydrazide. Other phytohormones viz., naphthalenacetic acid, naphthalene acetanide and indole butyric acid applied as paste over the cut end of the stem proved ineffective. But in a glass house experiment, indole acetic acid in concentration of 50 to 10,000 p.p.m. significantly reduced the growth of suckers.

1. Plant Physiologist.

2. Director, Tobacco Research.

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Although Pal and Kadam (1949) could suppress suckers by application of mineral and vegetable oils on to the buds as well as with petroleum jelly, Calvert at Canberra (Australia) found it ineffective, which was attributed by him to be a temperature effect, the jelly not becoming liquid as under the Indian conditions. Calvert also reported highly effective results with various mineral oils both in the glass house as well as in the fields thus confirming the findings at Rajahmundry.

In this paper, the results obtained mainly with coconut oil used as a suppressor of suckers are reported. The method of application is as follows.

When the main axis ceases to produce leaves and develops into the inflorescence, the inflorescence together with the last two or three bract like leaves are removed by hand. The chemical is then applied on to the dormant buds at the leaf axils by means of a soft brush by rubbing the brush against the bud.

Experimental results and discussions

In table 1, the results of application, as per method described above, of various substances to the 5 topmost leaf bases after topping are indicated.

TABLE I

NUMBER AND WEIGHT OF SUCKERS DEVELOPED FROM 5 TOPMOST LEAF BASES TREATED WITH VARIOUS CHEMICALS.

Treatments.	No. of suckers from treated bases.	Wt. of suckers from treated bases.
Petroloum jelly-white	0	0
Petroloum jelly-yellow	0	0
Coconut oil	0	0
Sesamum oil	1	32
Groundnut oil	1	10.3
Castor oil	4	10.9
Kerosene oil	6	48.0
Control i.e., topped but not suckered.	16	210

All the substances tried influenced sucker growth but petroloum jelly and coconut oil proved to be most effective. Sesamum oil and groundnut oil also were quite effective.

Figures 1 to 3 illustrate the effect of coconut oil and 2, 4-D on the sucker development. Suckers are totally suppressed with coconut oil (Fig. 3). When 2, 4-D is simi-

larly applied (Fig. 4) although the suckers are suppressed, the leaves get deformed and show extreme epinasty within a few days of application.



Fig. 1.
In untopped plant showing the growth of the terminal inflorescence. Note the absence of any axillary branches.

It is evident from the above that vegetable oils must be containing something which adversely influences sucker growth. Some of the more common fatty acids together with lactic acid as an organic acid not constituting the oils, were examined together with coconut oil. The results of two experiments conducted on different dates are presented in table 2.

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Fig. 2.
A topped but unsuckered plant after 15 days of topping. Note the luxuriant growth of axillary branches.



Fig. 3.
A topped plant after 15 days of topping in which the suckers are suppressed by smearing coconut oil. No suckers are developed.

TABLE II

SUCKER DEVELOPMENT FROM PLANTS TREATED WITH FATTY ACIDS.

Treatment.		Sucker weight (Dry) in gms per plant					
		a) Treated on 28-2-1952			b) Treated on 5-3-1952		
		Treated bases.	Lower bases.	Total	Treated bases.	Lower bases.	Total
Stearic acid	0.1%	15.8	0	15.8			
	1.0%				9.0	0	9.0
Ricin oleic acid	0.1%	23.4	0	23.4			
	1.0%				18.6	2.0	20.6
Oleic acid	0.1%	13.4	0	13.4			
	1.0%				21.3	0.7	22.0
Lactic acid	0.1%	15.2	0	15.2			
	1.0%				18.6	2.7	21.3
Coconut oil		0	2.0	2.0			
Topped not suckered		21.4	0	21.4	16.0	0.3	16.3

It will be noted that only in case of stearic acid, applied at 1%, that there was some suppression of sucker growth. In all other cases, except in the case of coconut oil, suckers produced were of the same order as in the untreated plants. It is obvious that the fatty acid fractions in vegetable oils are not responsible for sucker suppression.

It was observed in these experiments that coconut oil applied on leaf axils situated at higher levels tends to drip along the stem to the lower leaf bases and as a result branches from these lower bases are also suppressed. When there was no dripping the lower bases generally continued to produce some suckers. In order, therefore, to become fully effective that is to obtain complete suppression of all suckers, the oil should be applied to all the leaf bases.

In blue-cured tobacco plants the number of leaves produced may be 20 to 30 per plant and it is not a practical proposition to apply the oil to all the bases in a field scale. It is, therefore, necessary to assess the result of application of oil to restricted number of leaf bases.



Fig. 4.
A topped plant smeared with 2, 4-dichlorophenoxy acetic acid. Photograph taken after 8 days of topping. Note the deformation of the leaves.

Table 3 represents the sucker growth obtained by application of coconut oil to varying number of leaf bases counted from top. Care was taken in this experiment to prevent dripping. It will be noted that not only did the

untreated lower bases produce some suckers, but the restricted supply of oil on to the treated bases also caused some of these to become active. In spite of the care taken oil seemed to drip in certain cases.

TABLE III

SUCKER DEVELOPMENT IN PLANTS TREATED WITH COCONUT OIL AT VARYING NUMBER OF LEAF BASES

Treatment.	Sucker wt. (fresh) in gms per plant (Average of 10)		
	Treated bases.	Lower bases.	All bases.
Application of oil to			
3 leaf bases	0	99.5	99.5
6 leaf bases	10	36.7	46.7
9 leaf bases	18.1	46.7	64.8
12 leaf bases	35.0	—	35.0
Controls:			
a) Top and hand suckered after 10 & 30 days.		90	86.4
b) Topped—unsuckered.			459.0
c) Untopped.			133.0

In topped and unsuckered plants sucker development was enormous being on an average 459 gms. per plant as compared to 133 gms. of fruits and inflorescence produced in untopped plants. Among the treatments the least amount of suckers were produced when 12 bases were treated and the largest when only 3 bases were treated. As it is time consuming to smear oil on to as many as 12 leaf bases, from the practical point of

view, treatment of 6 bases seemed to be promising.

Some experiments were also conducted to see if coconut oil would be effective in a diluted condition. Two dilutions were used in 1952 and only one in 1953, besides pure coconut oil. In 1953, a 20% emulsion of coconut oil and a sample of oil emulsion from Japan (rape seed oil) were also included in the trial, (see table 4).

TABLE IV

SUPPRESSION OF SUCKERS BY COCONUT OIL OF DIFFERENT DILUTIONS AND IN EMULSIFIED FORM.

Treatment.	Sucker growth in gms per plant.					
	Treated bases.	1952 Lower bases.	Total	Treated bases.	1953 Lower bases.	Total
Coconut oil pure	0	0	0	0	80.6	80.6
Coconut oil (diluted 1:5)	0	1.2	1.2	69.2	32.2	101.4
Coconut oil (diluted 1:10)	63.8	66.5	130.3			
Coconut oil 20% emulsion				68.4	7.0	75.4
Emulsion from Japan				43.0	114.0	157.0
Control—topped not suckered.	75.8	0.2	76.0	13.5	7.3	20.8

In 1952 season both pure and 1:5 diluted coconut oil proved effective suppressor but the next year, although no suckers were produced from treated bases in case of pure coconut oil, taking the plant as a whole these seemed to have little influence. It may be noted that this was an abnormal season so far as flue-cured tobacco was concerned, and the plants everywhere produced more and bigger leaves. It is obvious that the season had affected the action of coconut oil as suppressor.

influece of Sucker Control on Yield and Quality in Flue-cured Tobacco

It has been stated in the preliminary remarks that the utility of topping lies in increased yield and better quality of the crop. In other countries, topping flue-cured tobacco is a general practice but in India, flue-cured tobacco is generally not topped fearing an adverse affect on the quality, because of the more dry weather conditions. Topping experiments in Guntur and Rajahmundry, have given varying results but it seems that topping if not done too early, is advantageous.

In a field trial, the following treatments were tried to find out if coconut oil has any adverse effect compared to normal suckering. There were 16 replicates of randomised plots each of two rows of eight plants. The treatments were:—

- (1) Suppression of 5 topmost buds by coconut oil (T. Sup)
- (2) Topped and hand suckered (T S)
- (3) Topped unsuckered (TUS)
- (4) Untopped (UT)

The yield and grade percentages were compared. Although there were 16 replicates originally, some plot yields were vitiated due to uneven growth and stand of plants and the blocks so affected were discarded. The data were thus analysed from 11 replicates. The variety used was Harrison Special in the year 1952.

The yields were as follows:—

TABLE V

YIELD (CURED LEAVES) OF HARRISON SPECIAL ON SUPPRESSION OF SUCKERS BY COCONUT OIL.

Average yield in lbs per acre (Calculated)				
UT	TUS	TS	T. Sup	Mean
995	1031	1082	1142	1063
S.E.	± 31.0	C.D.	88.8 lbs per acre.	
The significance of the results was		T. Sup	TS	TUS UT
The yellow grades obtained from the different treatments were:				
Treatment.		Percent yellow grades		
UT		34.2		
TUS		29.5	There were no significant differences.	
TS		34.9		
T. Sup		31.5		

It may thus be concluded that application of coconut oil increased the yield over untopped unsuckered plants without affecting the quality.

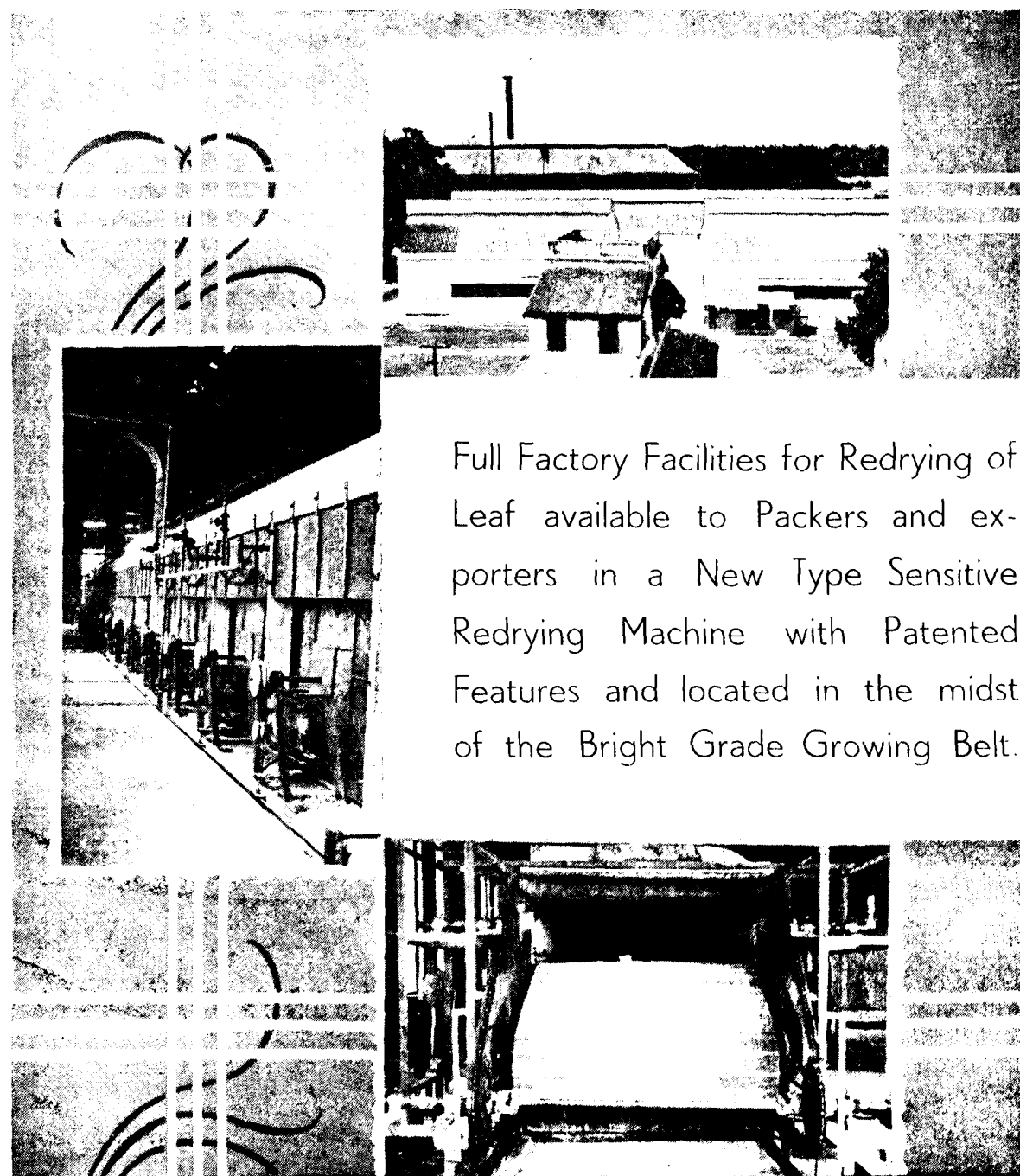
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M. S. PATEL¹ and P. N. B. PILLAI²

Indian Central Tobacco Committee

SINCE last year interest among public to know more and more about Jaffna Tobacco has increased. Enquires have also been received in this regard. The writers have attempted, therefore, to give below the available information on this subject for readers' interest.

Though there are certain varieties of tobacco which are preferred for chewing, there is no single variety which is solely used for chewing purposes.

The same variety is also used for other purposes such as Hookah, Snuff, Bidi etc.

The total area and production of chewing tobacco alone is difficult to estimate. Still more difficult it is to estimate the acreage and production of each variety separately. However, the total quantity of tobacco meant for chewing and cleared for home consumption in various States are given in the table below :—

	YEAR			
States.	1950-51 (lbs)	1951-52 (lbs)	1952-53 (lbs)	1952-53% of the total
1. Ajmer	39,865	12,828	18,750	0.020
2. Assam	1,914	...	...	...
3. Bombay	19,828,234	9,257,399	10,863,485	10.010
4. Bihar	15,523,631	12,703,836	13,021,734	11.970
5. Bhopal	...	279,001	449,900	0.410
6. Coorg	3,859	245	5,596	0.006
7. Delhi	549,619	249,854	328,557	0.310
8. Hyderabad	...	1,000,852	1,162,231	1.080
9. Kutch	...	51,329	55,117	0.050
10. Madhya Pradesh	4,170,882	3,888,149	4,239,908	3.905
11. Madras	60,923,714	56,465,384	53,857,836	49.620
12. Madhya Bharat	...	1,249,561	1,973,055	1.806
13. Mysore	...	2,238,197	2,902,065	2.680
14. Orissa	3,378,223	3,167,492	3,200,336	2.940
15. Pepsu	...	...	41	0.000
16. Punjab	49,030	894	46,147	0.042
17. Rajasthan	...	88,029	411,810	0.370
18. Saurashtra	...	52,902	142,279	0.140
19. Travancore-Cochin State	...	215,753	1,012,514	0.940
20. U. P.	14,057,629	12,054,603	13,518,494	12.460
21. Vindhya Pradesh	...	261,658	330,116	0.304
22. West Bengal	659,102	608,297	1,017,055	0.937
23. Others	...	...	288	0.000
Total	119,413,814	103,846,263	108,557,314	100.000

1. Secretary.

2. Statistical Assistant.

It will be seen from the above table that about half the total quantity of chewing tobacco is cleared for home consumption in Madras State U P. Bihar and Bombay are the next important States.

In Madras State, production of chewing tobacco is concentrated mainly in Coimbatore, S. Arcot, Tanjore, Salem, Tiruchirappalli and Madurai districts. The tobacco grown in certain areas in the above districts is noted for its quality and enjoys high reputation in tobacco trade circles. The varieties popularly noted for their quality are Meenampalayam and 'Bhavani'



Fig. 1—Meenampalayam tobacco field ready for harvest.

(Coimbatore Distt.,) 'Shivapuri,' (S. Arcot) 'Veduranyam' (Tanjore), and 'Monnai' (Madurai)

Though more than 100 million lbs. of tobacco are cleared for chewing purposes in India, yet she imports a few lakh lbs. of chewing tobacco from Ceylon for use in Travancore-Cochin State. This tobacco is produced in the Jaffna district of Ceylon. This is called 'Malayalam tobacco' in Ceylon and 'Kalipukayila' in Travancore-Cochin State. The other type of chew-



Fig. 2—Meenampalayam tobacco—Harvest in progress

ing tobacco consumed in Travancore-Cochin State is the Meenampalayam variety grown in Coimbatore district. Tobacco grown in Tirunelveli district is also imported. But Jaffna tobacco has a particular attraction for certain section of the consumers in the State because of its particular taste. This variety more or

Fig. 3—Green tobacco leaves hung up to the bamboo pandal for sun-curing. →



Fig. 4—Jaffna Tobacco

less closely resembles the Meenampalayam tobacco grown in Coimbatore district of Madras in physical characteristics, but is very dark. The extent of white incrustation (bloom) on the surface of the cured leaf is popularly believed as an indication of quality in the case of chewing tobacco produced in Coimbatore district.

There is not much difference in the cultivation of Jaffna tobacco as compared to that of chewing tobacco grown in Coimbatore district in Madras State, except that the green manuring practice is used to a greater extent for Jaffna tobacco than that for Coimbatore tobacco. Remarkable differences are, however, noted on the curing and processing methods employed in these two types. While Coimbatore tobacco is air-cured, the Jaffna tobacco is smoke-cured. In the processing also, Jaffna tobacco is treated with salt water while Coimbatore tobacco is treated with jaggery water.

A brief survey given below on the cultivation and trade of Jaffna tobacco as practised in Ceylon will be of interest to the readers.

Tobacco cultivation is by far the most important activity of the agricultural community of Jaffna district (Ceylon). Tobacco cultivation in the Jaffna Peninsula is estimated at about 3,000 acres of which about 1,200 acres are cultivated with Malayalam Tobacco. The Malayalam tobacco is grown mainly in the Valigamam north and east areas of Jaffna by small cultivators. Malayalam tobacco consists of three main varieties.

(1) Thennamattai Naramban, so called because its mid rib resembles that of a Coconut leaf. The length of the leaf varies from 38"—42". The leaves are the heaviest of the varieties of Malayalam tobacco.

(2) Sonaiyan. It is so named because the stalk end of the leaf bulges out. The length varies between 30—34 inches. The leaves are generally broader than the variety mentioned above but is the least weighty of the varieties.

(3) Kullaiyan, It is so called because the leaf is shorter than that of the other varieties. The length of the leaf varies from 25—30 inches. Leaves are proportionately less broader but more weightier than the Sonaiyan variety. This type is mostly cultivated in paddy fields.

The cultivation of Malayalam tobacco is confined to areas where the annual rainfall is 25 to 35 inches and in rare cases upto 40 inches per annum. It is mainly grown on red loamy soils as well as on sandy soils. The planting is usually done at such part of the year as to enable the leaves to mature during the dewy season and is therefore done in December and January and in some areas as late as February and March.

The cultivation of the crop is carried on by small cultivators in areas of one acre and less because of the reported high cost of cultivation due to heavy manuring, irrigation difficulties and high land rent. The lands in the red soil area are subjected to cultivation throughout the year, one crop succeeding the other.

Preparation of the land :

Tobacco lands are either penned with cattle or goat from the latter part of October to December and then either green leaves of *Thespesia Populnea* (T. Poovarasu, S. Suriya) or *Tiphrosia Purpurea* (T. Kavillai) or *Psoralea Corylifolia* (T. Kavoti) or *Pongamia Pinnata* (T. Panker) or a mixture of all these, or Palmyrah leaves either fresh or old are turned into the soil in the early part of December. Growing of *Thespesia* is an important auxiliary industry in Jaffna. Being a plant which can be easily propagated vegetatively, green twigs of this plant are used as fencing. By careful pruning the main stem is made to produce a tuft of branches at the top. These are cut down at the time of preparing the fields for planting tobacco seedlings. On an average 8 to 10 cartloads of green manure per acre are buried in the soil. The land is then levelled, clods broken and then hand dug with spade to produce a fine tilth. The land is then marked out

30 inches squares. Another top dressing with cowdung takes place when the plants have put forth four or five leaves and the soil is fit to be turned into small square beds for flood irrigation. Lately, some cultivators have taken to the use of artificial manures. It is said that the tobacco crop is heavily manured in the Jaffna district.

Raising of seed-beds :

Seedlings are usually raised on elevated ground under shade. In order to spread the seeds evenly, the seeds are mixed with fine ashes or sand before sowing. The seeds after sowing are lightly covered with soil and surface pressed down. The seed beds are lightly watered. As the seedlings are easily susceptible to sun and heavy dew, the seed beds are artificially protected from them.

Transplantation :

When the seedlings have put in about four leaves they are ready for transplanting. After transplantation, watering is made on three successive days. When the plants have put in about five leaves, the whole field is hand dug. The plants are then irrigated in furrows and later the whole field is spread with well rotten dung manure and hand dug and turned into beds of 30 inch squares with plants at each corner. Some cultivators pen the field with sheep one or two weeks after transplanting.

Irrigation :

When the fields are turned into square beds, irrigation is carried on in alternate days. This is an important and costly operation. Unlike in other countries the field in Jaffna requires watering every third day. This continuous process of irrigation goes on till the crop is ready for harvest. It is believed that irrigation delays maturity of the crop.

When the plants near flowering season, the top buds are broken off leaving ten to twelve leaves

on each plant. In some cases 14 leaves are also left, depending on the growth of the plant.

Harvesting :

The crop is usually harvested when the leaf is brittle, crumbled on the surface and covered with yellow spots. There are three methods of harvest:

- (a) the entire plant is cut down.
- (b) Stripping of the leaves one by one.
- (c) Cutting each leaf with a portion of the stem.

The third one is the common form of harvest for the manufacture of tobacco to be used in Travancore-Cochin State and in South Ceylon markets.

Curing :

In Jaffna, leaves after harvest are allowed to remain in the field for a few hours before they are taken indoors and stacked. They are then tied into bundles. These bundles are hung on lathes in a smoke hut and is smoked for 12 hours. A smoke hut is a small circular pit about 4 feet in depth. It is about 10 feet in diameter. All round, it has a mud wall about 4 feet in height from the ground level. A shed is put over this in order to protect the mud walls from rain. The roof is usually thatched with palmyra leaves in the model usually made to protect grain stacks. Fuel is put into the pit through an entrance in the wall and burnt to give forth smoke. Lathes on which the tobacco is hung are suspended on the mud walls. Small leaves are spread over these lathes to prevent smoke coming out. Smoke is created by burning coconut husk, leaf stalks and palmyrah nuts. The smoke is carefully regulated to prevent over heating by fire by sprinkling water over the fuel. After the first smoke, the bundles are removed and stacked for 3 days. In some cases if the leaves are not properly smoked, they are subjected to a third smoking. Two smoking is the normal treatment. After this, the bundles are hung in open

sheds usually for seven days to enable them to dry before stacking the same under pressure. The mid-vein is bent to see if it would break. If it breaks, it indicates that the leaves are well dried. The stacking is done with the stalk ends facing outwards. The stack is left unbroken for 21 days to a month. The bundles are then untied, sorted, tied into bundles of 50 each and stacked again.

Salt-water treatment :

Salt-water treatment for chewing tobacco is a process which is generally practiced in Ceylon. Chewing tobacco processed in Coimbatore and sent to Travancore-Cochin State is on the contrary treated with Jaggery Water. Curing of Jaffna tobacco by smoke and treating with salt water is considered to have added to its peculiar taste. Salt water treatment is usually done between January and April. It is said that during this period there is the right salinity on the Jaffna lagoon water. The standard of salinity in the lagoon water varies from 20.75% in December to as high as 41.84% in August.

The godowns are situated by the side of the lagoon and salt water is pumped to the tanks in the godown. The traders who treat their tobacco with salt water in their own houses carry the lagoon water by carts in big barrels. The stacks are broken, the leaves are arranged into uniform bundles of 70-110 leaves and tied with palmyrah leaves. These bundles are weighed to provide a uniform weight. A tank built near the place used for treating the tobacco is filled with water. The stalk end of the small bundles is dipped in the tank of salt water and held upside down to allow the water to trickle down amongst the leaves. The bundles are then piled on a special stand to allow the surplus water to drain off. After 18 to 24 hours, the bundles are removed from the stack and the leaves in each bundle are arranged and tied at the tip with palmyrah mid-rib, into neat bundles. When the required period is over, the bundles are heaped into small stacks and allowed

to remain for a day, when the process of baling begins.

Baling :

For baling tobacco, coir rope and palmyra mats are required. The former is mostly obtained locally and is sometimes imported from South Ceylon. When the baling is done, each bale is marked with tar indicating the serial number of the bale, the grade to which it belongs and the address of the owner. When the bales are made, they are evenly spread and allowed to remain so, for two or three days to cool. Then the bales are gradually put one over the other till the pile reaches five or six feet high.

Marketing :

It was understood from a report published in Ceylon that without proper credit and marketing facilities, the cultivators were not able to get a fair price for their produce. The cultivators often borrowed money at a high rate of interest (generally 18% per annum) from petty traders to whom they sold their crop on credit and for payment only after the completion of the sales. The petty traders, who were in turn financed on a lower rate of interest by the big traders or firms, collected and delivered the crop to the latter at their godowns. The big traders and firms cured and treated tobacco with salt water, bundled them into bales and shipped them to their selling agents in Travancore. All charges for handling, curing, grading, bundling, shipping and godown rents were ultimately passed on to the cultivators to whom the petty traders finally paid prices very much lower than what were originally agreed upon, and by this means, the petty traders always had the whip-hand over the cultivators.

To overcome the above difficulty, a marketing society known as the "Jaffna Malayalam Tobacco Co-operative Sales Society Limited" was started in 1934, with a membership of 219 cultivators. Membership increased to 2,120 in 1951. They

installed a new processing house also. When the cultivator takes his crop to the society, he is admitted as a member, and his tobacco is then graded into ten grades and weighed in his presence. He receives as advance payment, 60% of the value according to rates fixed and advertised earlier. The tobacco is then processed treated with salt-water, bundled into bales and exported to Travancore Cochin State in India, where it is sold by the Society's agent. The processing and handling costs including duty are charged to the account of that crop, and the available balance is distributed among the members in proportion to the values of their supplies. The Society charges a Commission to cover the working expenses for the maintenance of the office and staff.

Exports :

The Society has its own paid agent in Travancore who sells the tobacco for cash. The standard maintained by the Society has dispelled all fears as to the quality of the tobacco, so that bales are now sold without having them opened for inspection.

Distribution of Jaffna tobacco in Travancore Cochin State :

The distribution of Jaffna tobacco in Travancore Cochin State is left in the hands of three different kinds of tobacco licencees viz., the 'A Class' or the stockist licencees, the 'B Class' or the wholesale licencees and the 'C Class' or the retail licencees. But, in view of the limited quantity of Jaffna Tobacco available for consumption in the Travancore-Cochin State, the monthly quota to be allotted to each district is fixed by the State Board of Revenue according to its demand in each district. The 'A' Class licencees who stock Jaffna tobacco are permitted to release only the quantity fixed by the Board to the 'B Class' licencees of the State. These 'B Class' licencees are at liberty to sell the commodity to the 'C' Class licencees and to the general public.

The actual quantity and value of tobacco imported into the Travancore Cochin State during the last three financial years is given in the table below:

Year	Quantity in lbs,	Value in Rs
1950-51	890,345	14,57,000
1951-52	354,119	6,04,250
1952-53	1,440,872	27,08,921

The import of Jaffna tobacco into Travancore Cochin State dates back to about 400 years. The use of Jaffna Tobacco is generally limited to a section of the society who can afford to pay the high price of this imported variety. In spite of this limitation, records show that in certain years in the past over 6 million lbs. of tobacco were imported from Ceylon. The importable quota which was then an unlimited quantity was some 15 years back restricted by the Government of India to 5,745 candies or about 3.45 million lbs. Only the Travancore Government was permitted to import this tobacco at an import duty of Rs. 135/- per candy of 600 lbs. Any quantity imported in excess of this amount was liable to duty at the rate of Rs. 900/- per candy. The import duty was thereafter revised to Rs. 300/- per candy in 1945. With the integration of the native states into the Indian union, the Government of India adopted a policy of uniform tariff for all Indian ports and raised the duty on all unmanufactured tobacco imported from foreign countries to Rs. 9/6/- per lb. (Rs. 5,625/- per candy of 600 lbs.)

The Government of India had, however, granted a concession in import duty from 1950 to relieve the hardships caused to the people who have long been accustomed to the use of Jaffna tobacco. The maximum quota of Jaffna tobacco importable into Travancore Cochin State at a duty of Rs. 300 per candy was fixed at 1800 candies (1.08 million lbs.) for the first year with a diminishing return of this quota by 10% every year during a period of ten years at the end of which the duty payable on every candy of Jaffna tobacco would be Rs. 5,625 (Rs. 9/6/- per lb.) This was raised to Rs. 5,906-4-0 per candy (Rs. 9/13/6 per lb.)

Jaffna Tobacco

This agreement has since been revised in 1953. According to the Indo-Ceylon trade agreement concluded in 1953. The Government of India have allowed to import annually a maximum quota of 1.5 million lbs. of Jaffna tobacco for the next four years commencing from 1953-54. The import duty on the quantity over and above the allotted quota stipulated by the 1950 Agreement, upto a maximum of 1.5 million lbs. will be at the rate of Re. 0-12-0 per lb. Details regarding the importable quota during the next four years are given in the following table:

Year	Quantity subject to an import duty of Rs. 0-8-0 per lb.	Quantity subject to an import duty of Rs. 0-12-0 per lb.
1953-54	756,000	744,000
1954-55	648,000	852,000
1955-56	540,000	960,000
1956-57	432,000	1,068,000

The agreement stipulated that the imports would be made through the Alleppey Port in Travancore Cochin State. Imports through other ports as well as imports in excess of the quantities specified above will be subject to the Indian Tariff rate

applicable for the time being to the import of un-manufactured tobacco.

The Indian Central Tobacco Committee at its last meeting had considered a scheme received from Travancore Cochin State for experimental cultivation of Jaffna Tobacco at Shertalai. The Committee recommended that exploratory work on Jaffna tobacco might be undertaken for a period of three years and the opinion of the trade on the cured product obtained. The Committee had also decided that experiments on the cultivation of Jaffna tobacco might also be undertaken at the Committee's Cigar and Cheroot Tobacco Research Station, Vendasandur (Dindigul) in Madras State.

In short, Jaffna Tobacco is favoured for its quality and flavour to Coimbatore and Tirunelveli tobacco by certain sections of the consumers in T. C. State.

Before closing, it may be mentioned that the writers would not have been able to prepare the above review without reference to valuable publications both from India and abroad. Material supplied by the office of the High Commissioner for India in Ceylon has been particularly found very useful. Photos were furnished by the Secretary, Coimbatore Market Committee, Tirupur. Our thanks are due to them.

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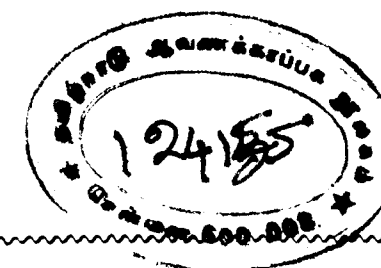
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The constitution, by the Government of India, of a Central Commodity Committee, charged with the responsibility for the promotion of various measures for improvement of a particular crop and its products, with representatives of all the interests connected with that commodity as its members, viz. the growers, the traders, the industrialists, the co-operators, the consumers, the agricultural research officers and the officers of other concerned departments, is an important step forward in achieving all-round progress of that commodity.

Working through such a combination of officials and non-officials interested in the commodity, provides an invaluable forum for discussion of the many problems affecting the commodity and its trade and helps in arriving at solutions based on broader outlook.

In the succeeding pages of this first number of the fourth year's publication of the "INDIAN TOBACCO" quarterly, it was made possible for us to publish the photographs and brief life-sketches of most of the members of the Committee as on 31st March, 1954, and those of the Editorial Board, with a view to enable the different interests to know their representatives and the men who constitute the Committee. This may also avoid various references made to the Committee's Secretariat in this regard.



JANUARY—MARCH 1954

INDIAN TOBACCO



DAMLE, Kashinath Ragunath, I.C.S.—Joined Indian Civil Service in 1930; was a District Judge in Uttar Pradesh (1937-44); Official Secretary to the High Commissioner for India in Australia (1944-47); Acting High Commissioner for India in Australia (1947-48); Joint Secretary to Government of India in the Ministry of Food & Agriculture (Agri) (1949-50); Joint Vice-President, Indian Council of Agricultural Research; Leader of the Indian Delegation of Agricultural Extension officials to U.S.A.; Vice-President, Indian Council of Agricultural Research, *ex-officio* Additional Secretary in the Ministry of Food & Agriculture and President of the Indian Central Tobacco Committee and other Central Commodity Committees since November 1952.



PARIKH, Mohanlal Ambalal, B.A.—Joined the business firm of Messrs Mohanlal Hargovinddas & Co., Bombay, of which the proprietors of the bidi manufacturing firm Messrs. Mohanlal Hargovinddas at Jabalpur are partners; member of the Executive Committee of the Indian Merchants Chamber for the last 24 years; Vice-President of the Bombay Shroffs Bankers Association Ltd., for a number of years; was President of the Passengers & Traffic Relief Association; served on the Advisory Board of the then B.B. & C.I. Railway; as public worker, engaged in Khadi & Harijan uplift movements; founder-member of Soya Sangh; started an education society in Kapadwanj, Gujarat; Member of the Indian Central Tobacco Committee representing the Federation of Indian Chambers of Commerce and Industry since the Committee was started in November, 1945; Vice-President of the Committee from November 1945 to March 1951 and again since April 1952; Member of the Indian Council of Agricultural Research and its Advisory Board representing the Committee since September, 1948.



UPPAL, Dr. Badri Nath, Ph.D. (Iowa)—Fellow, Indian Academy of Sciences; Fellow, National Institute of Sciences of India; worked as Plant Pathologist to Bombay Government; Principal, College of Agriculture, Poona; Director of Agriculture (Research and Education) Bombay; Director of Agriculture, Bombay State till August 1952 and since then Agricultural Commissioner with the Government of India; Author of several scientific papers; *ex-officio* member of the Indian Central Tobacco Committee since August, 1952.

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GHATGE, Dr. M.B., B.Ag., Ph.D. (Wales)—Professor of Agricultural Economics, College of Agriculture, Poona; afterwards worked as Chief Marketing Officer, Bombay and in various other capacities; Since April 1953, Agricultural Marketing Adviser to the Government of India and *ex-officio* member of the Indian Central Tobacco Committee. →



KRISHNAMOORTHY, Ennapadam Sundara Iyer, M.A., LL.B., Dip. Pub. Adm., (London)—Entered Imperial Customs Service in 1930; Assistant Collector of Customs at Karachi and Rangoon; Attache and Under Secretary, Commerce Department, Government of India (1938-40); Trade Commissioner in Japan (1940-42); Deputy Secretary, Commerce Department, Government of India, (1942-46); Collector of Central Excise (1946-48); Indian Consul-General in China, Shanghai (1948-49); Collector of Customs, Madras (1949-50); Joint Secretary, Ministry of Food & Agriculture (1950-51); Collector of Customs, Bombay (1951); Since September 1951, Member, Central Board of Revenue; Leader of the Indian Delegation to and Chairman of the International Locust Conference, Delhi in November 1950; Government of India Delegate to the U.N. Narcotics Commission, 7th & 8th Sessions in New York (1952 & 53); Leader of the Indian Delegation to the U.N. Opium Conference, New York, 1953; Member of the Indian Central Tobacco Committee representing Central Board of Revenue since August 1952.

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RAGHURAMAIAH, Kotha, M.A. LL.B., Bar-at-Law, M.P.—Called to the Bar from the Middle Temple, London in 1937; Practised in Madras High Court from 1937 to 1941; In 1941 entered service of the Madras Government as District Munsiff and as Assistant Secretary to Government in Legal Department; In 1946 as Assistant Director of Employment and as Publicity Officer in the Regional Directorate of Resettlement and Employment, Government of India at Madras and later as Assistant Solicitor in the Central Ministry of Law; In 1947 as Deputy Secretary, Joint Secretary and for a while as Secretary in the Legal Department Government of Madras; Resigned from Government service in August 1951 and elected to the House of the People; Member, Railway Corruption Enquiry Committee; Associated member, Madras Delimitation Commission; Member of the Indian Central Tobacco Committee representing tobacco consumers since May 1953 being elected by the House of the People.

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DWIVEDY, Surendra Nath, M.P.—A journalist and public worker; Founder of "Krushak" an Oriya weekly; One of the sponsors of the Kisan movement in Orissa; Was one of the Governors of the Khoj Parishad, Calcutta for number of years; Participated in nationalist movements and imprisoned on several occasions; Member of the Indian Central Tobacco Committee representing tobacco consumers since May 1953 being elected by the Council of States. →



SAINI, H.R., M.Sc., B.Sc., (Edin)—As Fodder Specialist, Punjab from 1926 to 1940, evolved and introduced several new varieties of fodder crops; Deputy Director of Agriculture 1950-51; Studied agricultural extension work in U.S.A. and Japan from August-November 1952, under Ford Foundation; Till January '53, Principal and Professor of Agriculture, Government Agricultural College, Ludhiana; Since January 1953 Director of Agriculture, Punjab; member of Indian Council of Agricultural Research and various Commodity Committees; Author of large number of scientific papers, leaflets and a book on fodder crops of the Punjab; Member of the Indian Central Tobacco Committee representing the Department of Agriculture, Punjab since January 1953.

←

Members of the Indian Central Tobacco Committee

EKBAL CHAND, I.A.S.—Entered Hyderabad Government service and served as Deputy Collector, Mominabad; Assistant Settlement Commissioner; Secretary to the Agent of H.E.H. the Nizam in Berar; Deputy Collector, Jalna, Assistant Revenue Secretary; Collector, Warangal; Deputy Secretary, General Administration Department; Textile Commissioner and Collector, Gulberga; Selected for Indian Administrative Service in 1951 and appointed as Director of Commerce and Industries in January 1953; Since October 1953, Director of Agriculture, Hyderabad and member of the Indian Central Tobacco Committee representing Department of Agriculture, Hyderabad State. →

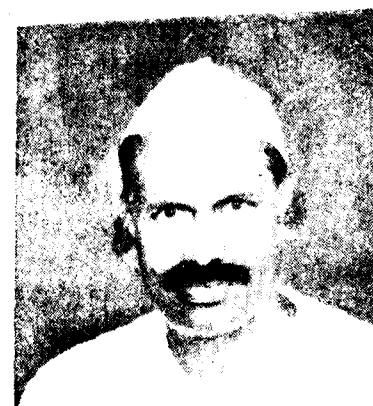


APPAJAPPA, M.K., I.A.S.—Entered Mysore Government Service in 1929; Worked in different capacities in Agriculture and Food Departments; Director of Agriculture and Commissioner of Food Production in Mysore State; Member of the Indian Central Tobacco Committee representing the Department of Agriculture, Mysore State. ←

PATEL, Ambalal Bawaji—An enthusiastic agriculturist who successfully introduced in 1936 cigarette tobacco in Gujarat; Member of the Indian Central Tobacco Committee since November 1945 representing tobacco growers from Baroda State and now from Bombay State after merger of Baroda. →



PATIL, S. I., B.A., LL.B.—Member of a joint family of agriculturists owning 125 acres and growing good quality tobacco; Chairman of the District School Board; Member of the Bombay State Primary Education Board, District Development Board, Area Development Committee, Hukori—Gokak Project, Advisory Committee of the regulated markets, Karnatak Division, Taluka Hony. Organiser of Cooperative Societies; Member of the Indian Central Tobacco Committee representing tobacco growers from Bombay State since April 1952. →

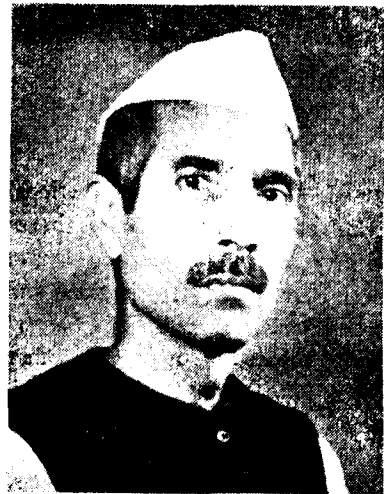


SINHA, Basudeva Prasad.—Participated in national movements even as student and was imprisoned several times; in 1946 elected unopposed to Bihar Assembly; was member of the managing committees of several educational institutions and keen worker among the kisans; Member of the Indian Central Tobacco Committee representing tobacco growers of Bihar State since June 1951. ←

AHMED, Maziruddin, B.L., M.L.A.—Advocate in Cooch Behar High Court; Took interest in cultivation of tobacco and other crops on scientific lines; Was Commissioner of Cooch Behar Municipality for 25 years; Took active part in establishing schools, libraries and hospitals in rural areas; served as a member of the College governing body, Red Cross and Secretary S.P.C.A. for 8 years; Joint Secretary of the Cooch Bihar Bar Association for 4 years; Elected member of the West Bengal Legislative Assembly; Member of the Indian Central Tobacco Committee representing tobacco growers from West Bengal since November 1952. →



SUBBANNA, M. L., B.Sc., (Hons)—Joined Mysore Agriculture Department in 1933 as an Assistant Botanist; District Agricultural Officer (1943); Sugarcane Research Officer (1947); Posted to Mysore Tobacco Co. Ltd. in 1949; As a result of reorganisation of the Company and propaganda among farmers, production increased 25 times and the company was placed on sound footing; Member of the Indian Central Tobacco Committee representing tobacco growers from Mysore State since November 1952.



SINHA, Ram Ekbal—Participated in national movements even as student; was Hony. Secretary of the Bhagwanpur Cooperative Development and Cane Marketing Union Ltd.; Member of the Governing Body of the Bihar Cooperative Federation (1950); Member of the Working Committee of the Muzaffarpur District Cooperative Federation since 1949; Since 1945 Hony. Secretary of the Bhagwanpur Tobacco Grading and Marketing Association; Member of the Indian Central Tobacco Committee since October 1952 representing the cooperative movement in North India.

SANKARAI AH, Kalidasu—An enlightened cultivator owning 100 acres in Nellore District (Andhra); A grower of Virginia tobacco since 1938; Organised growers in Nellore and Guntur Districts in 1942 into an Association and registered it as "The Guntur District Tobacco Growers and Curers Cooperative Society Ltd., Ongole."; Was Secretary and at present a Director of the Society; Secretary of Kandukur Taluk Ryots Association; Member of the Nellore District Ryots Association; Was a member of the Nellore District Food Production Committee for 3 years; Member of the Guntur Tobacco Minimum Prices Sub-Committee; Member of the Indian Central Tobacco Committee representing cooperative movement in South India since October 1952.



BARUA, H. K.—After fall of Burma in 1942, started manufacturing high class Burma Cheroots of Burma type, shape and aroma and introduced the products in Indian market; Member of the Indian Central Tobacco Committee representing cheroot tobacco trade from January 1949 to March 1952 and cigar tobacco trade since October 1952.

PATIL, R. B.—President of the Merchants' Association at Jaysingpur 1939-40. Associated with various educational institutions as member of the Governing Council of the New Education Society in Kolhapur and Karnatak Lingayat Education Society in Belgaum and member of the Committee of Prince Shivaji Education Society, Kolhapur; Director of the Bank of Kolhapur Ltd., Kolhapur; Member of the Indian Central Tobacco Committee representing bidi tobacco trade since October 1952.



SHAHA, Devchand Chhaganlal, M.L.C.—Public and social worker for the last 15 years, worked either as President or Vice-President of the Nipani Borough Municipality; was a Director of the Bank of Kolhapur Limited and the Bank of Citizens Ltd., Belgaum; Member of the All-India Tobacco Bidi Federation, Calcutta; President of the Chikodi Taluka Tobacco Licencees Association; Member of the Indian Central Tobacco Committee representing chewing tobacco trade since January 1949.



ANJANEYULU, Aka.—Took part in National movement and imprisoned. Since 1920, in tobacco trade; toured U.K. & the Continent in 1924-25 to create and establish markets for Indian Tobacco; To Japan & Korea in 1929 and to Shanghai in 1941; For several times and now the President of the Indian Tobacco Association, Guntur; Chairman of the Committee in Guntur to examine and certify tobacco intended for export to the U.K., prior to inauguration of the Tobacco Grading Scheme; life member of the Hindu College & High School Committee, Guntur; Member of Indian Central Tobacco Committee representing Cheroot tobacco trade from Nov. 1945 to March 1948, & Cigarette tobacco trade since April 1953.

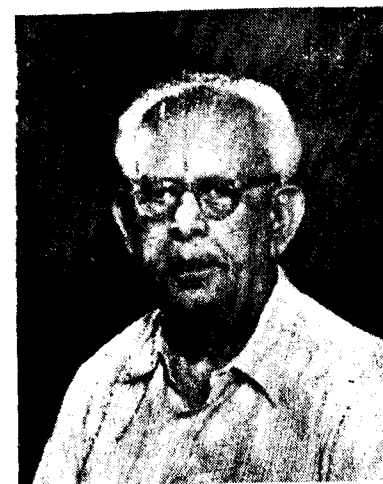
←

PRASAD, Ramchandra—Took part in national movements; Member of the Executive Committee of the District Board Hospital at Shakra (1944-49); Since 1946, Hony. Secretary of Dholi Tobacco Grading and Marketing Association Ltd.; Since 1949 co-opted member of District Board; Member of Indian Central Tobacco Committee representing Cigarette Tobacco trade from January 1949—March 1952 and since April 1953.

→



EDMONDSON A.T.W.—Joined the Staff of the Imperial Tobacco Company of India Ltd., in 1926, since when travelled and worked in many parts of India on the company's business; Since 1948 Depot Manager of that company in Madras; Member of the Indian Central Tobacco Committee representing Associated Chambers of Commerce of India from August 1949 to February 1952 and since November 1952. (Photo not available)



RANGACHARI, T.M., B.A.B.L.—Member of the Southern India Chamber of Commerce, Madras, Indian Merchants Chamber, Bombay and London Chamber of Commerce, London for over 30 years; Tobacco Utilisation Officer for a short period; Member of the Export Advisory Council; Undertook several foreign tours to find markets for Indian Tobacco; Took prominent part in bringing the AGMARK system in tobacco trade into existence and in the conclusion of trade agreements on tobacco with various countries; Member of the Indian Central Tobacco Committee since its inception in November 1945, being nominated by the Government of India under their reserve powers.

←

PATEL, C. L.—After early associations with business and commerce, became public & social worker since 1935; organised relief camps during the last war for refugees from Far East; General Secretary of the Federation of Rural Peoples Organisations; Organised All India Tobacco Growers' conference at Delhi in 1946 and since then its Hony. Secretary; member of several Development Committees formed by the Union Government; General Secretary of Bharat Kisan Sammelan since 1949 and of Indian Council of Beekeeping in 1953; Member of the Indian Central Tobacco Committee since February 1946 nominated by the Government of India under their reserve powers.

→



KESAVA RAO, V.C.—Public and Harijan Welfare worker; Member, Constituent Assembly of India, General Secretary, Andhra Provincial Agricultural Labour Union for 2 years; Member, Andhra University Senate for 1 year; President, Andhra Pradesh Agricultural Labour Congress; Member of the Indian Central Tobacco Committee representing tobacco consumers from March 1948 till May 1951, having been elected by the Constituent Assembly; since May 1951 nominated under reserve powers of Central Government.

←



PATEL, Dr. Maganbhai D., M.Sc., (Cornell), Ph.D. (Wisconsin)—Took part in national movement in his student days; Joined the Institute of Agriculture, Anand in 1940 as Head of the Animal Husbandry Section; Director of the Institute since 1942; Member of the various committees of the Indian Council of Agricultural Research; A post graduate teacher of Gujarat University; Member of the Indian Central Tobacco Committee since April 1952 nominated by the Government of India under their reserve powers.

←



MURTHY, B.S., B.A., B.Ed., M.P.—A journalist and Harijan Welfare Worker; imprisoned twice in National Movements; elected to Madras Legislative Assembly in 1937; Parliamentary Secretary to Madras Government, 1937-39. Since 1946 President, Andhra Provincial Agricultural Labour Congress; Member of Senate, Madras and Andhra Universities; Member, Madras Port Trust; Adviser Labour Delegate to 32nd International Labour Organisation Conference, 1949; Founder-President, Harijan Sewak Samiti; elected to the House of the People; Member of the Indian Central Tobacco Committee since April 1952, nominated by the Government of India under their reserve powers.

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Besides those whose photos are published, the following are also the members of the Committee, thus completing the list:

- | | |
|--|---|
| (1) Sri. S. Bhoothalingam, I.C.S.,—
Representative of the Ministry of
Commerce & Industry,
Government of India. | (8) Director of Agriculture, West Bengal,—
Representative of the Department of
Agriculture, West Bengal |
| (2) Sri. Rameshwar Sahu, M. P.,—
Representative of the Consumers | (9-10) Representatives of growers in Madras
and Andhra States. |
| (3) Representative of the Department of
Agriculture, Andhra. | (11) Sri M. Sulaiman—
Growers' representative from U.P. |
| (4) Director of Agriculture, Madras,—
Representative of the Department of
Agriculture, Madras. | (12) Sri V. Bhaskar Rao,—
Growers' representative from Hyderabad. |
| (5) Cotton Botanist, Bombay State,—
Representative of the Department of
Agriculture, Bombay. | (13) Sri. R. Deen Dayal,—
Representative of Choroot trade. |
| (6) Director of Agriculture, Bihar,—
Representative of the Department of
Agriculture, Bihar. | (14) Sardar Harnam Singh Sethi,—
Representative of Hookah trade |
| (7) Sri. Ram Surat Singh,—
Representative of the Department of
Agriculture, U.P. | (15-16) Mr. D. Winders & Sri S. Mehta,—
Representatives of the Cigarette trade. |
| | (17) Mr. F. H. Usher Smith,—
Representative of the Cigarette small
manufacturers. |
| | (18) Sri. K. Appaldoss,—
Representative of the Guntur Market
Committee. |

KADAM, (Katarnikar), Dr. Babu Rao Shankar Rao, B.Sc., (Iowa), M.Sc., Ph.D. (Cornell)—Crop Botanist, Bombay (1930-42); Deputy Director of Agriculture (Crop Research), Bombay (1942-44); Assistant Agricultural Commissioner with the Government of India (1944-45); on deputation to U.S.A., Canada and U.K. (1946) for training in tobacco; Director, Tobacco Research under the Indian Central Tobacco Committee since February, 1947; Member of the Society of Sigma xi, Cornell Chapter, (1940); Life Member, Indian Society of Genetics and Plant Breeding, (1941); Fellow, Indian Academy of Sciences (1943); Fellow, National Institute of Sciences (1946); Fellow, Botanical Society of India (1946); Published about 70 papers on genetical and agronomical aspects of rice, wheat, bajra, tobacco and other crops

→



PATEL Dr. Maganbhai Shanabhai, M.Sc., Ph.D., (N. Carolina)—Scholarship holder of former Baroda State; Agricultural Officer, Tobacco Breeding Station, Nadiad (1944-46); studied various aspects of tobacco crop and its marketing in U.S.A. under the Imperial Tobacco Company of India Ltd. scholarship sponsored through the Indian Central Tobacco Committee (1947-49); Tobacco Marketing Officer under the Indian Central Tobacco Committee (1950-1951); Secretary, Indian Central Tobacco Committee from February 1951 and doing the duties of Tobacco Adviser; Member, American Society of Sigma xi; Author of several articles on tobacco culture, marketing, industry and trade.

←

TANDON, P.L. B.Sc., (Wales)—Was a fellow of the Royal Economic Society, London; Now member of the Indian Society of Agricultural Economics; 1928-35, Special Inspector for Industrial Societies in Uttar Pradesh Cooperative Department; Joined Central Agricultural Marketing Department (now Directorate of Marketing & Inspection), Government of India in February, 1935; As Assistant Marketing Officer, Supervising Officer, Grading Stations, Marketing Officer and Senior Marketing Officer conducted inquiries into agricultural commodity problem in its economic aspects and guided marketing development work; As Chief Inspector, Tobacco Grading since April 1945, responsible for organising and developing Tobacco Grading Scheme and for technical supervision and administrative control of the tobacco inspectorate since its inception; wrote several reports, bulletins and brochures on marketing studies in India.

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Report on Nicotine Factors from North Carolina

Current knowledge on "Factors Affecting the Nicotine Content of Flue-Cured Tobacco," was contained in a nineteen-page report issued recently by the North Carolina Agriculture Experiment Station, in the U.S.A.

The report asserts that the nicotine content of tobacco depends largely on moisture supply, level of nitrogen fertility, and variety with moisture listed as "the most important single factor".

The findings are based on hundreds of tests by Experiment Station scientists, according to Dr. W. E. Colwell, Assistant Experiment Station Director, who is in charge of tobacco research.

Authors of the report are J. A. Weybrew, G. L. Jones, T. J. Mann, W. G. Woltz, T. B. Hutchinson Jr., C. J. Nusbaum, and C.H.M. van Bavel.

Here are their major conclusions:

1. Varieties are inherently different in their nicotine content, which is genetically controlled. The newer disease resistant varieties are lower in nicotine content than the older non-resistant varieties.

2. Nicotine accumulation is directly related to the level of nitrogen fertility.

3. The cropping system or crop rotation used may affect nicotine, since fertility residues from one crop may be used by the next. This is particularly true with respect to nitrogen.

4. After tobacco is topped and suckered, nicotine is concentrated in the remaining tissues. The degree of concentration is related to the completeness of pruning.

5. Irrigation tests have shown forcefully that moisture supply is the most important factor affecting nicotine.

The scientists also list five conditions, which they say have little or no effect on nicotine. These are:

1. Closer spacing, requiring more plants per acre, does not affect nicotine beyond what could be expected due to competition for available nitrogen.

2. Nicotine concentration does not change with various rates of phosphorus, potassium, calcium, chlorine, and sulphur applied to the soil except for starvation rates or extreme overdose.

3. Fertilization with minor plant foods like boron, copper, zinc, manganese, and molybdenum does not change nicotine content.

4. Use of winter cover crops does not affect nicotine in the following tobacco crop beyond what can be explained on the basis of nitrogen fertility.

5. There were no after-effects on nicotine content from using dichloropropane (DD) or ethylene dibromide (EDB) fumigants to control nematodes.

According to Dr. Colwell, the Experiment Station, as a normal part of its tobacco research work, regularly tests hundreds of samples of leaf from experimental plots for nicotine content and other chemical qualities.

In the report, J. A. Weybrew points out that nicotine is produced in the roots of the tobacco plant from simple compounds made in the leaves plus nitrogen from the soil. Once formed, it is carried into the leaves and stems where it accumulates.

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Beginning about 1920, the trend in smoker preference has been toward a milder smoking, lower nicotine cigarette, the report says. Today's cigarettes and all tobacco products contain remarkably close to two per cent nicotine.

Tobacco companies take elaborate pains to mix about two parts of flue-cured tobacco containing about 1 to 2½ per cent nicotine with one part of burley containing about 2 to 3½ per cent nicotine, plus smaller amounts of Turkish and Maryland types of tobacco to make modern blends.

On nicotine content of different varieties, G. L. Jones and T. J. Mann report that even though the general level varies somewhat from year to year, the varieties rank just about the same in each year. In relation to each other, their rank remains "remarkably constant". The inherited ability to produce nicotine is more important than climate and soil factors.

In the breeding programme for disease resistance headed by E. L. Moore and resulting in the release of Dixie Bright 101 and 102, close attention is given to nicotine level and in these two resistant varieties nicotine is about one-half per cent lower than in older lines.

On fertilization, W. G. Woltz and T. B. Hutcheson Jr., say that for all plant foods, "only the increasing nitrogen applications were directly and significantly accompanied by increasing nicotine concentrations in the cured tobacco".

In six tests reported by C. J. Nusbaum, soil fumigants to control nematodes showed no effect on nicotine. Differences in nicotine content from various rotations for nematode control probably reflected the carryover fertility effects from preceding crops.

When number of plants per acre was increased 50 per cent, nicotine content dropped slightly, but W. G. Woltz and C. H. M. van Bavel say this

"would appear to reflect competition for the nitrogen supply."

However, topping and suckering directly affect nicotine, Woltz adds. These practices cause nicotine to accumulate in the leaves rather than go into the flower and suckers which are removed.

On mosaic studies C. J. Nusbaum found that plants artificially infected with the disease consistently had lower nicotine than healthy plants—a somewhat surprising result, he says.

Dry weather invariably means higher nicotine content, reports van Bavel, who adds that varieties respond quite differently in nicotine production under varying rainfall conditions. Dixie Bright 101 not only is naturally low in nicotine but also is affected least by seasonal differences. On the other hand, Hicks and Oxford 1 normally are quite high in nicotine and are affected markedly by moisture supply.

On the average, says van Bavel, nicotine content can be expected to go down by 0.07 per cent with each one-inch increase in "soil moisture index".—"Tobacco", N. Y. 21st Jan. 1954.

Insecticides Can Affect Leaf Quality

Tobacco products can be contaminated by use of spraying processes during the growing season, a tobacco insecticide expert claims, in the U.S.A.

The effect of insecticides on tobacco quality was reported to approximately 200 persons at the concluding session of the sixth annual pesticide school at North Carolina State College.

R. L. Rabb, tobacco and forage insect expert in the Department of Entomology at N.C. State, told the group that, "Ideally it is desirable to produce tobacco with no insecticide flavours, but tobacco companies recognize the need for using insecticides and they want to

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know what materials cause objectionable flavours or odours."

He said that the latest results of test conducted cooperatively by the State College Experiment Station, the U.S. Department of Agriculture, and cigarette manufacturers showed there were five ways that tobacco could be contaminated by insecticides.

Contamination, he said, can come from foliar application of insecticides, soil application, planting tobacco in rotation with cotton that has been treated, planting tobacco adjacent to cotton that receives treatment, and from the use of insecticides in trans planting water.—"Tobacco", N. Y. 28th Jan. 1954.

Smoking machines eliminate error

The possibility of human error in the scientific and chemical tests of tobacco and finished cigarettes is eliminated in the United Tobacco Companies' factories because every test is operated either electrically or mechanically. For example, even the cigarettes, under test, are "smoked" by machines.

The "smoking machine" is an affair of small glass tubes with rubber connections, operated by an electric motor. It "inhales" and "exhales," like a pair of human lungs. Each machine has eight pairs of "lips"—a rubber mouth-piece into which a cigarette is placed. The machine "smokes" the cigarettes and records certain of their essential properties.

In the United Tobacco Company's laboratory another ingenious machine is the tintometre—a colour-measuring instrument. Specimens of leaf are placed in a container alongside a substance of pure white. A battery of electric lights is focussed on both and a microscopic device moves indicators which define the colour of the tobacco in relation

to pure white.—*Rhodesian Tobacco Journal*—Sept. 1953.

Mechanical Chain-smoker

To determine just what comes out of a cigarette when one smokes, the American Medical Association has set up a mechanical chain-smoker in its Chicago laboratory. The robot huffs and puffs all by itself without a single pair of real lungs to help it, gathering the smoke for careful qualitative and quantitative tests.

In their first report on the continuing study which has another six months to go, the Association's research workers said they had found that less than a quarter of the nicotine present in the burned portion of all cigarettes ever reaches the smoker's mouth. The other three-quarters, disappears in the "side-stream"—smoke rising from the burning tip—or is destroyed in the burning ash.—*Rhodesian Tobacco Journal*—Novr., 1953.

Judge Rebels

A District Court Judge in U.S.A. has rebelled against the red and white signs that adorn his courtroom and forbid all persons the pleasures of tobacco.

The Judge has announced in Court that the "No smoking" signs in his courtroom may now be ignored and those desiring solace from the golden weed may imbibe to their heart's content. The precedent established by this case has been acknowledged and further approved of by another District Court Judge who has also "ruled" against the sign.—"Tobacco," N.Y. 24-9-53.

Don't Try It

An old Mexican cure for recurrent fever was to anoint the patient's body with tobacco juice and then sprinkle once over lightly with salt and pepper.—"Tobacco" N.Y. 15-10-53.

Jailbreak?

A cord made of strips of cloth tied together was dangling from a window of the Wake County Jail. Passers-by wondered if a jail break was afoot.

Several persons rushed up to the end of the cord. They found this note attached: "Please tie a pack of cigarettes to this string. Thank you."

A pack about two-thirds full of smokes was tied on, and the prisoner hoisted happily away.—"Tobacco" N.Y. 8-10-53

Night Letter

Burglars who broke into a cigarette machine found instead of money, a note that read: "Note to burglars—emptied every night. Tell your friends, too—The Management."—"Tobacco" N.Y. 15-10-53.

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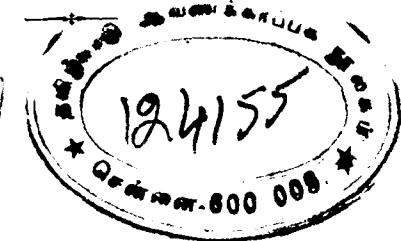
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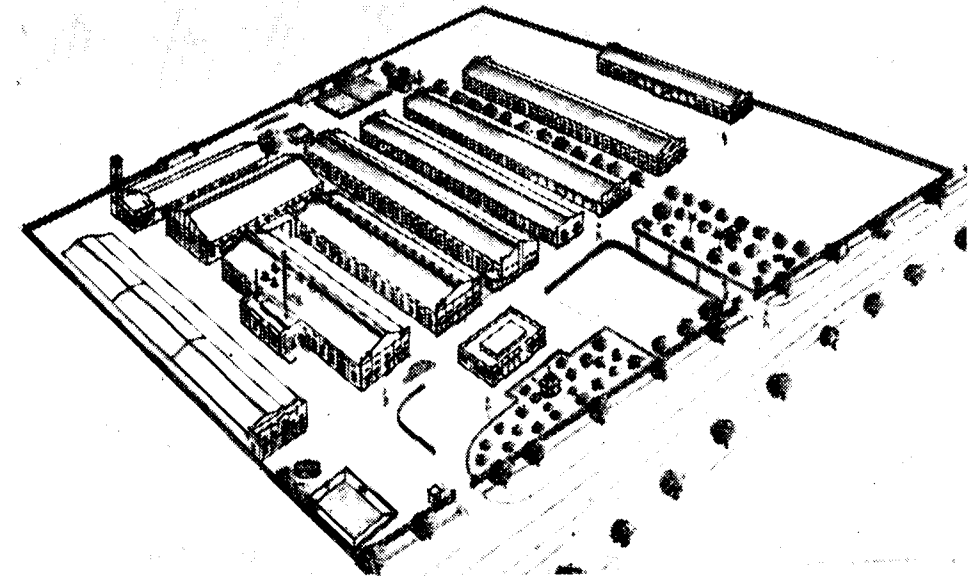


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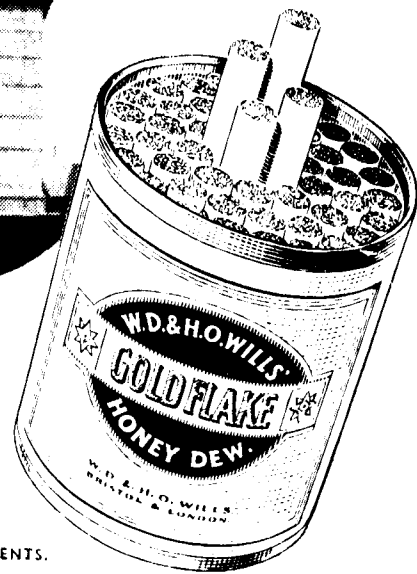


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