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EDITORIAL

The Production of Milk Dr N. C. Wright computed the consumption of milk to be 7 ounces per head of population in India, when he surveyed the cattle and dairy industries in 1937. This is conceded to be low. Public health and nutrition workers stress that the average intake of milk in India should be at least 15 ounces and that the consumption should be doubled. It is said that the new edition of the *Report on the Marketing of Milk* points out that the consumption of milk in India is just 5·8 ounces per head. The dietary requirements are met to a little over a third, instead of a little less than half as estimated previously. This state of affairs is not desirable and demands the immediate attention of authorities responsible for the well-being of the nation. Milk supplies first class proteins of high biological value, makes up the deficiency of minerals and vitamins in the common Indian vegetarian menu and is a highly protective food. The low consumption and production of milk is not a matter for complacency, but one of grave concern. We have already referred on previous occasions to the necessity for concentrating attention on the development of cattle during the post-war reconstruction period. The low figure of the consumption of milk given in the marketing report should further stress the need for such a policy.

The increased production of milk by itself is not enough. Side by side the effective demand for milk should also be increased by reducing the cost of production of milk or by increasing the purchasing power of the poorer classes or by both, so that everybody could have his quota of milk. But what is it that we find? The cost of production of milk has increased considerably due to increases in the price of feeding stuffs and the cost of cows, caused by conditions created by the War. Along with it the population in the country has increased,—may be temporarily and partaking of the nature of a floating population—and the demand for milk has increased. With increased cost of production and a heavy and unprecedented demand, the price of milk has gone up in the urban areas and is going up further every day. This upward trend in the price of milk is seen in other countries also. The price of milk fixed by the Pure Milk Association of Chicago was 2·38 dollars per cwt. in February 1942 and 2·95 dollars in February 1943 (roughly equal to 11 lb. per rupee), that is by 24 per cent nearly. The spiral of shooting prices is much higher here. To illustrate: The price of milk at the Co-operative Milk Supply Union, Coimbatore

was one anna four pies per lb. ($=\frac{1}{4}$ Madras Measure) in February 1942 and three annas six pies now in September 1943. This is about $4\frac{1}{2}$ lb of milk per rupee, 160 per cent over and above the 1942 February price at Coimbatore and 144 per cent over the highest price in Chicago. It may be that there is justification for so putting up prices; may be that the cost of producing milk is so much, but one thing is certain: this will have disastrous consequences. The people who need the milk most will not be able to purchase it, the poor children will not have the milk they require for their maintenance and growth and the effect of this will be far-reaching. The country will be raising more weaklings, susceptible to go under with the least unfavourable environment. When epidemics like cholera, typhoid and dysentery make their appearance, the famine areas, especially after a period of famine, suffer the most. The incidence of the diseases and the resulting mortality are great. The people are in a run-down condition and do not have sufficient vitality to stand these diseases. Want of sufficient nutrition during the growing period of individuals affects them in a similar manner. Their system is enfeebled and stamina to stand diseases and rough life is reduced permanently for life.

Increasing the production of milk in the country and reducing the cost of production are obviously national necessities. The production of milk can be increased by selective breeding from the best stock, by judicious feeding and by checking up the economics of production by maintaining in a systematic manner milk-production records. This is the method adopted in all countries producing good quantities of milk economically; milk-recording and maintenance of records of animals through generations have come to stay in those countries. This, in brief, is the history of the evolution of the world famous milk breeds of the day. The heaviest milk yielding cow in the world is Carnation Ormsby Madcap Fayne, with a daily average milk-yield of *seventeen Madras Measures*; during the peak period she was giving *thirty-five Madras Measures*. This has been achieved by selective breeding for generations.

Rationing The rationing of rice has been introduced in Madras with effect from the beginning of this month. We are told that the anxiety that was prevalent among the poorer classes has given place to a feeling of confidence. Uncertainty about the morrow has been done away with. What is in stock will be available and distributed equally among all the people, rich and poor alike, is the feeling of the people. It is understood that rationing is to be extended to the mofussil towns also and that preliminary enumeration and other arrangements are being made therefor. This should be a solace to the town dwellers in the deficit districts and this should set at rest their anxiety about the future. We have no doubt that such a beneficent measure has come none too soon, and that in due course it will be extended to other commodities as well; as and when the need arises. The preliminary work that has been done and the experience gained in the actual working of the rationing of rice would make the extension of rationing to other essential commodities comparatively an easy task.

A Brief Survey of the Palghat Tobacco Market *

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Introduction Among the various uses to which tobacco is put to, chewing occupies a major place and 25 per cent of the area and production of tobacco in this province is under chewing varieties. It has been recently estimated that consumption of chewing tobacco is at the maximum in the States of Cochin and Travancore and in British Malabar. Palghat is the most important centre for the assembling and wholesale distribution of chewing tobacco grown in the Coimbatore and adjacent districts. The Palghat market buys outright the produce from these districts and processes them to meet the tastes of the West Coast consumers.

The following is the result of an enquiry conducted at the Palghat tobacco market with the idea of studying the systems of assemblage, curing, trade and distribution from Palghat, and the scope for improvement in the system of marketing is suggested.

Palghat as an assembling centre Palghat has grown into importance in this trade for over a century due to the enterprise of certain merchants, mainly the Muslim Rowthers—who had dealings with the Tamil districts in other commodities. Apart from its commanding geographic position as the gateway between the Tamil districts and the West Coast it has gained in importance in this trade on account of the spirit of enterprise of the expert commission agents and the assembling middlemen. Palghat has the advantage of high humidity of the atmosphere due to the copious rainfall of 85 inches per year both during the South West and the North East monsoons, just in those months when most of the tobacco from producing districts is imported, which facilitates easier handling and processing of the produce. This cannot be done in the drier districts where the tobacco is grown and where the preliminary curing after the harvest of the leaves, is done.

Chewing tobacco is of many grades varying in taste and flavour. The consumers of the various parts of the Kerala territory require different grades of tobacco and as the consumers cannot go about the growing districts to select their particular speciality, all the varieties are assembled, processed and kept at Palghat for inspection, selection and final sale.

Besides this, the growers are badly in need of money. They are financed by the commission agents who are adepts in the business. Again, the grower is not an expert in processing and sorting the cured stuff to suit the different markets in the West Coast. It is said that in olden times some growers used to bring curing experts from Palghat for curing tobacco on their own farms, but it is no longer in vogue. Thus gradually this town

* Ramasastrulu Munagala Prize Essay 1942-43.

has gained in importance in assembling, sorting and distributing, the cured commodity to the different parts of the West Coast.

Sources of supply It has been computed that annually about 25,000 to 30,000 candies (of 500 lb. each) of cured leaves are imported into Palghat from the districts of Coimbatore, Trichinopoly and Madura (vide *Report on the Marketing of Tobacco in Madras.*)

TABLE I Imports and exports of chewing tobacco in the Palghat tobacco market in bales of 125 lb. each

Years—	1937-38	1938-39	1939-40	1940-41	1941-42	1942-43
Imports	150,260	165,300	140,060	135,000	135,200	135,150
Exports	111,650	123,060	106,210	101,490	101,390	101,370

About 76 per cent of the imports is from the Coimbatore District, 16 per cent from the Madura District and 8 per cent from the Trichinopoly District. Satyamangalam, Puliampatti, Gobichettipalayam, Erode, Chithode, Avanashi, Adiyoor, Pollachi, Udumalpet, Dharapuram, Palladam and Kangayam in the Coimbatore District, Karur in the Trichinopoly District and Palni and Oddanchatram in the Madura District are the main centres from which chewing tobacco is supplied to Palghat.

Supply season In the Coimbatore District transplanting is done in October—November, harvesting in January—February and curing up to March. The supply season begins by the third week of March and goes on up to the end of August. In the Madura and the Trichinopoly Districts sowing and transplanting are two months later and harvesting is in February-March, and the supply season starts by May and ends with July. So the period of supply extends from March to August.

Varieties There are mainly two varieties coming into the wholesale market, viz. Meenampalayam and Thenmukham (or Udumalpet). The latter is inferior in quality and is grown in the vicinity of Pollachi and Udumalpet. The other variety is grown in other parts of Coimbatore and in the Madura and the Trichinopoly Districts. There are more than two grades in each of these varieties.

Methods of transport Transport is as a rule by means of bullock carts. In olden times bales were brought on bullocks' back and it was done on a co-operative basis among the importers or assembling middlemen with a view to escape the highway robbery prevalent in those days. Even now way-side pilfering is not uncommon; so transporting is done by a number of carts (25 or 50) plying together between the centres of production and Palghat. Bullock cart transport is resorted to up to a maximum distance of 80 miles. About 25 per cent of the imports is by rail, a negligible percentage is by lorries and the rest by bullock carts. Transport by rail is very common from Oddanchatram and Palni in Madura, but is rare from the Coimbatore District. But if there is any trouble on the road due to high winds, heavy rains or floods, the produce is sent to Mettupalayam (from certain parts of the Coimbatore District) and thence to Palghat by rail.

A bullock cart holds 12 to 16 bales of 125 lb. each and the transport rates during normal times in two specific instances are given below.

TABLE II Rates for transport by bullock carts.

From	To	Distance	Rate per bale of 125 lb.	Bales per cart	Rate per bale per mile run
Satyamangalam	Palghat	75 miles	Rs. 1—8—0	16	3·80 pies
Pollachi	Do.	35 miles	Rs. 0—10—0	12	3·43 pies

Freight charges are met by the assembling merchants as stipulated for in their contracts, or are borne by producer cum curers who sell the produce to these assembling middlemen.

Curing for the market Sun and pit curing are the two methods generally adopted to cure chewing tobacco. But only the sun-cured tobacco is sent to the Palghat market. A brief account of the method is detailed below:—

1. The crop is harvested in the evenings and are left in the field itself.
2. Two or three days after the harvest plants are hung up on poles fixed horizontally inside *pandals* erected in the field. They are left in the shade for 15 to 20 days, until the midrib turns yellow. During this period once in every four days the plants are disturbed in the morning so as to expose fresh surface to the action of the air. If weather be dry, the floor is moistened with water.
3. About the 20th day after hanging on the poles by which time the leaves turn completely yellow, the plants are removed and heaped in bulk, square or rectangular—locally termed *Ambarams*. This is disturbed once in three or four days and again reheaped to slow down the fermentation. Sometimes it is weighted with stones and allowed to ferment for a further period of two to three weeks.
4. After this stage the leaves develop a strong aroma. The leaves are now stripped, sorted and tied into hanks of 6 to 12 leaves, locally called *Kanni* or *Mothai*. They are then baled and kept in store.
5. If the tobacco does not develop aroma, the heap is left undisturbed for a week or more. And in some cases when the quality is low, the hanks are dipped in a solution of palmyra jaggery in brackish water got from the specific wells called 'tobacco wells'. Such wells are of great renown in the Coimbatore District.

There is practically no curing done at Palghat, and only in some cases are curing experts taken from Palghat to the producing centres. Carelessly cured or low quality stuff gets a treatment with palmyra jaggery solution in brackish water. For this purpose, merchants usually procure water from the renowned 'tobacco wells' of Coimbatore, as they believe that this water improves taste, flavour and aroma of low grade tobacco. The most important operations of processing at Palghat are repeated bulking, heaping and lying.

There is a wrong notion that tobacco brought from the Tamil districts is treated at Palghat with horse's urine to increase aroma and flavour. For the matter of that, any decomposing organic matter gives off ammonia, and the pungency of ammonia combined with that of nicotine in the tobacco emits a strong odour, and this might have misled the people into thinking otherwise.

Packing materials The material used for packing is mat made of the leaves of the date palm or the sago palm, the latter growing luxuriantly in Malabar. Mats are got from the Mysore State also. The ropes used for binding are from the fibre of the stem of (*kytha*—Mal., *thazhai*—Tamil) *Pandanus* Sp. growing wild in the coastal regions of Malabar. Two mats of dimensions 5 ft. 6 in. by 4 ft. are required to pack a bundle of 125 lb. of tobacco (both the mats together weigh about 5 lb.). Each mat costs 2 annas and about 2 annas worth of fibre is required to tie each bundle (6 annas per bale—pre-war rates). The cost of packing materials is borne by the assembling party.

Changes in quality and quantity during storage As regards the changes in quantity, cured tobacco fresh from the curing place is not completely rid of the moisture and so storing results in a loss of weight. This loss is more during the first few weeks after curing. It has been noted at Palghat godowns that the bales brought during the beginning of the season, i. e., April—May decrease in weight by five to six lb. per bale during the first week and one or two lb. per week during the next two weeks, and thereafter the loss in weight is almost negligible. But a consignment received during later months, i. e., July—August, does not lose weight so significantly, due to the high humidity and slow evaporation. Quality, flavour, taste and aroma improve by aging, i. e., in storage with repeated bulking for a long period of one or two years. Acting on this principle, there is, in parts of Malabar a practice of storing inferior tobacco under paddy in wooden bins, called *Pathayam*, to improve its quality. The produce, when it once leaves Palghat for the coastal areas, improves in quality. This is attributed to the tobacco absorbing the sea breeze laden with moisture, containing traces of mineral salts. Thus it is believed that tobacco of the Ponnani Taluk is better than that of the Palghat Taluk markets, the former being nearer the coast.

Pests and diseases in storage The tobacco borer beetle—*Lasioderma sericornis*, fam. *Anobeidae*, is a serious pest of tobacco in godowns, where produce two or three years old is kept. The grub, the larva of the beetle and the adult are voracious feeders of the stored produce. But fortunately, this does not turn out to be a pest on produce fresh from the curing shed. A mould like a bird's eye with a dot in the middle with a tendency for perforation is a serious disease of freshly stored tobacco. This is as much dreaded as small pox in human beings. Incidence of this is common during all seasons and is at the maximum this year.

Grading At the place of curing, after stripping, the leaves are graded and then only tied into *kannies*. Grades are designated according to the colour differences, and colour mainly denotes quality.

Chewing Tobacco Grades

	Meenamalayam	Thenmukham (Udumalpet)
Grade I	Bright—good texture, body and aroma.	Bright—good texture, body and aroma.
„ II	Light Brown—Medium texture, body and aroma.	Light Brown—Medium texture body and aroma.
„ III	Light Dark and Heavy Dark—Tough, heavy body and low aroma	Light Dark—Medium texture body and aroma.
„ IV	...	Heavy Brown—Tough, heavy body and low aroma.
„ V	...	Heavy Dark—Tough, heavy body and low aroma.

The brightest tobacco indicates maximum aroma, flavour, taste, nicotine content and good texture. There is a deterioration in quality with the fading of colour. The consumers of the Kerala territory require different qualities with different percentages of nicotine content. It is denoted by the colour of the leaves, the bright ones contain the maximum and the heavy dark ones the minimum. There is no strict specification or standardisation fixed for sorting the cured produce; and there is no legislative provision for this such as the Commercial Produce Grading and Marketing Act. Superior quality Bright bales often contain various other grades in the same *kanni*, such as inferior Heavy Dark, and slender leaves, or diseased and aphid-infested leaves. In the interest of honest business strict grading is necessary.

Assembling Tobacco grown in the Tamil districts is drawn to Palghat by a system of financing the cultivators in advance to aid cultivation. The rich Rowthers and some of the Hundi merchants belonging to the Brahmin community are interested in the business and they or their agents tour the centres of production and finance the cultivators. Some of them lend money at or below 12 per cent interest to their agents, who distribute smaller loans in turn to the producers, at rates ranging from 12 to 25 per cent. These agents are assembling merchants who are responsible for drawing the produce to the market at Palghat. Those cultivators who are in need of money receive the loan and enter into contract to sell the produce to their creditors at stipulated prices which are definitely lower than the prevailing market price, while impecunious *ryots* are so tied to those who advance loans. The well-to-do *ryots*, especially the rich Gounders of the Coimbatore District demand of the merchants an advance of 10 per cent of the price fixed and ask them to enter into a contract to buy the produce not later than one month from the date of transaction after which they forfeit the right to purchase. In the agreement which is sometimes unwritten the price specified is that ruling at the producing centre and the ruling prices are Rs. 150 to 200 per bharam for the Meenamalayam and Rs. 80 to 100 per Bharam of 500 lb. for the Thenmukham variety. It is only in rare cases that the *ryot* deals directly with the commission agent

at Palghat. Brokers play a very important part in distributing loans and getting the produce to the market.

Warehouse and commission agents The tobacco thus assembled is stored in the warehouses owned by the commission agents. There are thirty commission agents at Palghat. Twenty are first class agents with provision for storing more than two thousand bales; the rest are agents who have not facilities for such large storage and who cannot finance the grower on any considerable scale. The main function of the commission agent is one of financing the grower, the assembling merchant, and the wholesale purchaser. The total investment in the tobacco trade in Palghat is estimated to be about ten lakhs of Rupees per annum, and the entire capital is found locally.

According to the Madras Tobacco Taxation Act of 1939, the commission agents have to pay a tax varying on the annual turnover — Rs. 6 for sales up to Rs. 200, Rs. 12 from Rs. 200 to Rs. 400, and above Rs. 400, 3 per cent for the first Rs. 400 and 10 per cent for the rest of the turnover value. But this has been repealed by the Tobacco Duty Excise Act of 1943 of the Government of India. The tax is now levied not on turnover, but on the quantity of tobacco stored for sale. (A licence fee of Rs. 5 for a maximum of 500 maunds of stored tobacco, Rs. 50 up to a maximum of 2000 maunds, and a maximum of Rs. 100 above 2000 maunds.) Further, according to the Act an excise duty of one anna on every pound of tobacco has to be paid before dealing in the commodity and storing it in private warehouses. If the duty is not paid the commodity has to be kept under the direct supervision of the Excise Department. Such warehouses are called 'Bonded warehouses.'

Disposal of the produce The wholesale merchants from the different parts (mentioned in Table No. VII) visit frequently the assembling market and select and purchase their requirements from the commission agent. The assembling merchant at whose risk the whole produce is stored and sold is seldom present when the deal is made, but depends on the commission agent who gets a percentage as commission. The sale is in most cases on a credit system. The purchaser enters into a contract with the commission agent to buy a certain amount of produce at a certain rate and to pay the money within forty-five days from the date of the transaction, in default of which he undertakes to pay interest on the sale price at 12 to 25 per cent. The commission agent gets a commission of 9 pies per rupee of the sale price. The risk of the assembling merchant is now over and the commission agent credits the sale price to the account of the former and takes the responsibility of collecting the money and the right to collect the interest by dealing directly with the purchaser.

Finance and financing Practically all the finance amounting to 10 lakhs of rupees comes from the Rowther community and the Hundi merchants of the Brahmin community. By virtue of their monopoly and long experience gained in the trade they are able to forecast the trend of prices and demand in the market, and to estimate the yield and probable value of the

crop in the field. They take advantage of the indebtedness of the producer and thrust money on him as though to oblige him in times of need, while he really is obliged to sell his produce to the creditors at a rate lower than the prevailing market price. This system is attended by the evils of forced sale of produce, under-rated prices and extortionate rates of interest ranging from 12 to 25 per cent ; and in some cases there is a bad practice of immature harvesting to expedite sale of produce and to satisfy the pressing demand of the money lender. This reduces the quality and value of the produce and this is detrimental to the *ryots'* interest. With all the glaring disadvantages of the present system the *ryot* is attracted and tied firmly to these money lenders. This is due to their readiness and elasticity in dealings as contrasted with co-operative and other joint stock organizations, although co-operation in its application to agricultural marketing no doubt possesses certain merits over the present system.

The commission agents take little or no risk as tobacco commands a good sale as it is not grown in the West Coast. In addition the assembling merchants bear the risk of market vagaries, minimising thereby the risk to the commission agent. The commission agent is also responsible for financing the wholesale purchaser. Though the market vagaries and financial stability of the *ryots* do not affect him, he has sometimes to meet with arrears and insolvency of wholesale purchasers. There are not wanting instances of this kind.

Fixing prices Prices are fixed by negotiating a rate for the day or week for I grade Meenampalayam No. 1, and lower grades are sold at correspondingly lower rates. In fixing prices there is no public bidding or even open bargaining. The commission agent and the wholesale dealer negotiate the price secretly by bringing their palms under cover of a cloth and denoting the prices each desires to fix with his fingers, to avoid a second person knowing it. So the price varies from customer to customer.

Sale season Unlike in many other commodities the demand for tobacco at the Palghat market is at the maximum during the importing months. From September to February there is a lull in the trade and price.

*TABLE III Yearly average prices per Bharam of 500 lb. (wholesale) and retail per lb. of Meenampalayam No. 1 and Thenmukham (Udumalpet). No. 1 chewing tobaccos at the Palghat Tobacco Market

Year :	1937-38	1938-39	1939-40	1940-41	1941-42	1942-43	1943 May
Meenam- palayam No. 1							
Wholesale	Rs. 207 8	Rs. 213 8	Rs. 189 2	Rs. 227 4	Rs. 268 13	Rs. 297 9	Rs. 400 0
Retail	7 as.	7 as. 3 ps.	6 as.	8 as.	8 as. 6 ps.	9 as. 3 ps.	14 as. to 1 Re.
Then- mukham No. 1							
Wholesale	Rs. 103 10	Rs. 96 11	Rs. 105 6	Rs. 126 2	Rs. 144 7	Rs. 174 12	Rs. 250
Retail	3 as. 3 ps.	3 as.	3 as. 6 ps.	3 as. 9 ps.	4 as. 9 ps.	5 as. 10 ps.	8 as.

TABLE IV Monthly average prices of chewing tobacco (per Bharam of 500 lb.) at the Palghat Tobacco Market

Month	Meenamalayam No. 1				Thenmukham No. 1			
	Average for 5 years ending with				Average for 5 years ending with			
	1941-42		1942-43		1941-42		1942-43	
	Rs.	as.	Rs.	as.	Rs.	as.	Rs.	as.
April	220	2	296	14	117	11	176	13
May	223	9	304	10	117	13	177	2
June	226	5	305	1	118	14	180	1
July	231	4	298	15	118	6	179	11
August	229	5	297	6	118	11	178	11
September	226	13	296	13	113	9	173	0
October	221	6	295	14	113	2	172	13
November	219	15	294	11	113	14	171	14
December	214	4	293	15	112	12	172	6
January	213	14	294	9	112	10	171	11
February	213	8	295	12	112	9	171	8
March	214	11	296	1	113	9	171	1
Average	221	4	297	9	115	4	174	12

Prices fluctuate very much as the above tables indicate. The present price of first quality bright Meenamalayam is Rs. 400 per bharam of 520 lb. and that of Thenmukham No. 1 is Rs. 250 per bharam. The price of tobacco in this market has not been shooting up as high as that of other commodities in spite of the war. At present (May 1943) prices are tending to rise. This is perhaps due to the decreased supply of tobacco consequent on the *ryots'* preference for cotton, which gives a better return now. The pressing need to grow more food crops is another reason for the shrinkage in the area under tobacco. In future cultivation of tobacco is to be taken up under the direct supervision of the Excise Department and illiterate *ryots* never want to take the risk so long as at least the cotten crop will fetch a decent remuneration. So speculating on this, merchants have begun to store the produce to meet the demand during the next year.

The prices of tobacco vary from month to month though not sharply as may be seen from table IV. The price is very low during December, January and February and increases from May onwards.

Marketing services and their remuneration 1. *Melal or Dhellal commission* Brokers who bring purchasers to the wholesale market receive a commission of 4 as per bale from both the parties (i. e. buyer and seller).

2. *Thorakumandi commission* For the sales effected the commission agent gets a commission of 9 pies per rupee of sales. This is paid by the seller merchant.

3. *Vandimothai* The servants and cart drivers get a pound of low quality tobacco as remuneration for their labour. This is borne by the seller.

4. *Theenpukayila* The purchaser gets about a pound of tobacco as specimen for chewing. This is also borne by the seller.

5. *Tying and weighing charges—Kettucooly.* The purchaser pays the servants at the rate of 1 anna 6 ps. per bale for tying and weighing the bundles, and also one to two annas worth of low quality tobacco stripped from

the hanks. This is called *Oorupukayila* which means cast-off tobacco. If the bales have to be repacked and rearranged they have to be paid an additional remuneration excluding the cost of mats and ropes at the wholesale purchaser's cost.

6. *Vaida* or *Thavanai* The seller allows the wholesale buyer a period of 45 days from the date of transaction to pay the purchase price. Thereafter interest is charged at from 12 to 25 per cent. But in case the purchase money is paid at once or before the lapse of the period of grace, the seller gives a rebate being the interest on the purchase price for the period not lapsed. This is said to promote cash payments being made in some cases. This is known as *vaida* interest. *Vaida* means period and it is usually 45 days.

TABLE V. Trade Commissions etc. at the Palghat Tobacco Market.

Particulars	Paid by Seller		Paid by Buyer		Unit charged for
	Rate	To whom paid	Rate	To whom paid	
1. <i>Melal</i> or <i>Dhella</i> commission	4 as.	Broker	4 as.	Broker	Per bale of 125 lb.
2. <i>Tharakumandi</i> commission	9 ps.	Commission agent	...	...	Per rupee of sale price
3. <i>Theen pukayila</i>	One <i>kanni</i> or hank of 6 to 12 leaves tobacco	Buyer	...	...	Per bale of 125 lb.
4. <i>Vandi-mothai</i>	Do. (inferior quality)	Menials & servants	...	...	Do.
5. <i>Kettucocly</i> —Tying and weighing charges	Do.	...	1½ as to 3 as.	Servants	Per bale of 125 lb higher rate if rebulked and repacked.
6. <i>Oorupukayila</i>	...	...	1 or 1½ as. worth of inferior tobacco	Do.	Cast-off tobacco for remunerating servants for their labour in addition to wages
7. <i>Vaida</i> (interest)	12 to 25 per cent as per purchase terms	Buyer	...	...	...

Retail sales of tobacco in Palghat In addition to the commission agents there are a number of wholesale merchants and retail merchants who deal in tobacco within the town. The retailers get their supply from the wholesalers. In addition to it they receive from the servants and others at a low cost the cast-off or inferior quality stuff earned by the latter as presents or wages in kind. This is the kind of stuff which meets the demand of the working classes and other poor consumers in the town.

Distribution and centres of consumption Merchants from Cochin, Travancore, Cannanore, Tellicherry, Calicut, Tirur, Madras, Madura and Mangalore visit the market and purchase their requirements. Tables VI & VII show the particulars of the grades purchased by the various centres and their percentage distribution. Every year about 85 per cent of the imported produce is sold away and the rest is carried over till the end of the second or the third year, and then sold off

TABLE VI Distribution of different Grades of tobacco and consuming centres of Palghat chewing Tobacco

	Meenampalayam	Thenmukham
Grade I	Palghat, Cochin State, Mangalore, Madura, and Madras	Cochin State
Grade II	Cochin State, Travancore, Tirur, Chowghat and Edapal	Travancore
Grade III	Calicut and Cannanore	Tirur, Tellicherry, Wynad, Edapal and Chowghat
Grade IV		Calicut
Grade V		Cannanore

TABLE VII Centres of consumption and percentage of distribution

Centres of Consumption	Percentage of distribution
1. Travancore State	26.0
2. Cochin State	24.0
3. Cannanore	8.4
4. Calicut	8.4
5. Tellicherry	4.2
6. Tirur	2.7
7. Madura, Mangalore, Madras etc.	1.3
8. Local consumption including shandies & retailers in the taluk	25.0
	Total 100.0

The Palghat Leaf Tobacco Merchants Association This is an association organised to protect the interests of the commission agents. They assemble and discuss matters of common interest mainly about the financial stability, solvency or otherwise, regularity in dealings and reliability of the various assembling agents, wholesale purchasers and brokers. Thus they determine the limit to which every individual could be financed without risk. This prudent policy prevents dealings with insolvent merchants and beyond their capacity to repay. Over and above this the association functions as an organ to represent their grievances to the Government and railway authorities.

The Tobacco Excise Duty Act 1943 The various clauses of the Act restrict the cultivation of tobacco as an excise crop like ganja or opium subject to licencing and supervision of the Excise Department; and an excise duty of one anna per lb of cured tobacco is to be paid by those who deal in tobacco (and not the cultivator). This year even during the heaviest season i. e. from April onwards the dealing has been considerably curtailed.

Though tobacco could be stored in bonded warehouses (and duty paid at the time of sale) merchants do not want to take the risk of penalisation, for tobacco loses in weight considerably and this sometimes out-runs the limits provided in the Act under 'Loss in weight' as the excise duty increases the price of every pound of tobacco by one anna, payment in kind is withheld for certain items of services (mentioned in table V.); for, those who store in bonded warehouses cannot at all utilise the tobacco for payment in kind. This directly tells upon the poor servants and menials who used to get three to four annas worth of tobacco per day. These have tended to raise the rates of interest on which money is lent for assembling and purchasing purposes.

Importance of Specialists: As stated above the commission agents are experts in financing cultivation, in assembling the cured produce directly or through deputies, processing, curing, grading, sorting and identifying the grades. They play an equally important role in financing wholesale purchasers who buy the commodity on a credit basis. In short, these are important functionaries in all the stages from production in the field to consumption. They have been enjoying a monopoly in this trade for over a century. But for them the consumers of tobacco in the Kerala territory might have to go without chewing tobacco suited to their tastes.

Conclusion It is a matter for some satisfaction that the grower gets 55 to 65 per cent of the consumer's price in spite of the toll collected by so many middlemen. It is hoped that the market can be better organised and improved by the application to tobacco of the Commercial Crops Marketing Act followed by standardisation of units and weights, licencing the hosts of middlemen and restricting their control on the *ryots*, making provision for warehouses and regulation of the trade commission and other charges.

There is no co-operative loan and sale organisation at present. Such an organisation is bound to improve the present system of financing and marketing. But considering the long distance between the centres of production and consumption and the difficulty of judging the quality of different kinds of tobacco and the heavy sums involved in financing the cultivator and the wholesale purchaser it would be too optimistic to think of achieving a perfect co-operative organisation in the near future. However a stage has reached when the State should undertake to reorganize and minimise the evils of this system of financing the producer.

It may be said that tobacco is, after all, a luxury, but it has also become a habit, a second nature and a necessity with the consumers. The practice of chewing is on the decline with the younger generation, its place being taken up by other forms of tobacco, especially cigarettes. Let not jurists grudge the working classes, especially in rural areas, this little luxury.

Acknowledgment I take this opportunity to express my sincere gratitude to Sri S. V. Duraiswami, B.A., B. Sc. (Ag.) Assistant Lecturer in Agriculture, for his kind guidance and direction in the conduct of the investigations

and for his valuable suggestions and criticisms on this report. I am also greatly indebted to Janab K. A. Sheik Rowther, Commission Agent and Secretary of the Paighat Leaf Tobacco Merchants' Association for the valuable information he furnished and the help he rendered during my investigations.

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India Must Grow More Food*

By Sri V. N. SUBBANACHAR

District Agricultural Officer, Anantapur

It is almost an year since we met last for a similar purpose. As you are all aware, we have turned the corner and started pounding the Axis. Last week, Italy dropped her pilot and Mussolini left the scene. While we are happy and hopeful about the outcome of the War, our living conditions have been causing much concern to the public at large and the Government. We have had a year of famine. Our food production had been insufficient to meet the demands. At the same time, unscrupulous people hoarding the grains without consideration for the starvation around them, have created difficulties by reducing the supplies in the market.

The cry for food is great. The responsibilities of the Agricultural Department have become heavy and we are striving our best to increase the food supplies. We are trying to expand cultivation by bringing uncultivated lands under the plough. The *ryots* are permitted to grow grain crops on these lands free of assessment. Favourable terms for food cultivation as, free cultivation of tank beds with vegetables and certain dry crops when there is no water in the tanks, the cultivation of railway lands under reasonable rental, and free cultivation of backyards with dry food crops and vegetables, have been offered. We are offering free seeds and manures to poor *ryots*. We have opened our purse wide and are granting loans for sinking new wells or repairing old ones and making them fit for use. Government have granted remission of assessment for three years for the cultivation of food crops under such wells and have said that *ryots* may begin repaying the loan from the fourth year onwards. We are granting loans free of interest for purchase of manures and improved seeds up to a maximum of Rs. 50 in each case. With such a large number of concessions, Government have put before you the opportunity for growing more food crops and feeding the hungry people.

To understand properly the need for increased food production, it is necessary to know something about the peacetime situation. The principal food grains in our country are rice, wheat, *jonna*, *sajja* and grams, which

* Lecture delivered on 1-8-'43 at Anantapur, during the inauguration of the 'Tree Planting cum Grow More Food' week.

between them, account for 80% of the total production of food crops in India, estimated to be about 600 lakh tons. Their shares are rice 265, wheat 102, *jonna* and *sojja* 92 and grams 35½ lakh tons a year. In normal years, India is self-sufficient in respect of her food requirements except for about 14 lakh tons of rice representing a little over 5¼% of the total rice production and about 2½% of the total food production of the country as a whole. Until the loss of Burma, we had been importing this quantity of rice.

There is now a gulf between the food that is produced and the actual requirements of food. We are trying to bridge the gulf by the application of agricultural science. The preservation of soil from loss by erosion, the application of well preserved and quality manures, and the use of improved seeds of crops are the three pillars on which the bridge rests. Over wide regions of the world, in the prairies of America, the steppes of Russia, and the bleak treeless expanses of our own Rayalaseema, continuous washing away of the surface soil has caused irreparable damage and immense losses. On an average, there is a loss of about 2% of land due to erosion, and considering only the black soils of this district, taking an average value of Rs. 100 to the acre, the loss to this district is to the tune of over 10 lakhs of rupees, or taking the annual rental value at Rs. 10 per acre, the loss to the *ryot* by rental is about a lakh of rupees annually. What can a *ryot* do if his wealth of surface soil is washed away leaving the less fertile or rocky subsoil only to be cultivated with crops? That is what is happening around us. In a *ryot's* life-time of 60 years, it is estimated that three inches of fine valuable surface soil is washed down into the *vankas*, and what will the future generation get but mere land without soil. Any amount of manuring the land can never make good the loss of soil that takes place year after year. The control of soil erosion is as important as anything else in agriculture and he who declines to regard this as a problem to be solved is not a good *ryot*. And, as long as the problem is left untackled, we are bound to lose by the much of reduced yield. Big and permanent bunds over large blocks of land, and smaller bunds in between is a solution to the problem. Bunding of the fields should become part and parcel of the *ryots'* practice like the other field operations as ploughing or working *guntaka*.

In the matter of manure, the potential loss to the country due to improper preservation of cattle manure is estimated at 600 lakhs of rupees. Just think of it and think of the number of fighter planes we could give with this amount. 600 lakhs of rupees worth of manurial matter is lost by disregard of the elementary principle that the cattle dung and urine should be kept preserved in covered pits. Consider how much increased food we can grow by applying all this manure to our fields. Here we are in a pretty situation, with a lack of food on one hand and wasting manure on the other. Then there are thousands of acres of paddy land that are hungry for green leaf manure. *Ryots* are spending Rs. 10 to Rs. 12 per acre for fetching green leaves from outside while they could actually grow it easily in their own lands. Already in this province, there are over two lakhs of acres of

paddy manured with green manure crops as sunnhemp, daincha and ~~Yempali~~, putting a profit of over 10 lakhs of rupees in the ryots' pocket, by producing about 5% increased yield. In our own district, there are about $1\frac{1}{3}$ lakhs of acres of paddy which could be made to yield 65,000 bags more paddy, or as much as 5,000 tons, by a judicious use of green manures and other manures like bone-meal and superphosphate. Considerable areas of stiff and alkaline lands in our district could be improved by growing daincha on them. There is a difference in yield of at least 5 bags of paddy per acre between a normal good soil and an alkaline soil. In our district of Anantapur, there are a number of groundnut expelling factories that produce oil cakes. These cakes are very good manures for paddy. For those ryots who are not in a position to purchase and apply them, Government are ready to grant *takkavi* loans for the purpose. It may interest you to know that several hundreded tons of cakes from these factories are sent to Bombay and the southern districts for the very purpose of manuring paddy that is so neglected here.

Then there is the seed. Apart from the benefits of proper manuring, the improved varieties of seeds alone are capable of enhancing the yields of crops from 10 to 20 per cent. There are improved strains of *jonna*, *ragi*, *sajja*, *korra* and paddy that are used by ryots to a certain extent already in this district. The increased output of food grains by their use last year was nearly 1,500 tons in this district inspite of the failure of the season. In paddy alone, there are 70 improved varieties suitable for different conditions prevailing in the Presidency and these strains occupied more than a sixth of the total paddy area of this Province. At a modest estimate of 10% increase in yield, the use of improved strains of paddy alone would add to our food by over a lakh of tons of rice. If along with improved strains, better manures are applied, there is no doubt that 20% increase could be obtained.

All the improved methods of increasing food production would be of little avail, if the damage by insect pests and diseases are not prevented. To mention only one instance, the smut on *jonna* is responsible for a considerable loss of grain annually. This loss could be prevented by a cheap remedy costing less than three pies per acre—the use of sulphur on the seed before sowing. A few thousand acres of *jonna* are being treated every year by the Department, but more and more ryots should adopt this treatment and save their crops from unnecessary loss. By carelessly storing grains, by storing them before they are completely dry, insect damage is encouraged. Due to one insect alone, the stored paddy in this province is estimated to suffer a loss of nearly a crore of rupees annually. This represents so much loss of food grain which would otherwise feed a large population. In a similar manner, rats have been estimated to damage our grains to such a large extent annually that it has been calculated to be a rupee per head of the population. This is not a small amount and while we know that rats are also responsible for the frequent outbreaks of plague, it is all the more necessary that every step should be taken to destroy them.

While mentioning food crops, it is necessary to remember the pulses like redgram and Bengal gram. There is an increasing demand for these products and more production is needed. It would be an easy matter to mix redgram with groundnut. It is also a good practice to sow redgram on the bunds in paddy fields and thus utilise the bunds to the best advantage.

Food habits need also to be overhauled to meet the situation. We should make the best out of our present rice and wheat stocks. Milling of rice and wheat leads to the loss of vitamins. Polished rice is deficient in vitamin B and so also is wheaten flour (*maida*). Hand-pounded rice is more wholesome and nutritive, besides giving about 4% more of rice than what the same quantity of paddy would give by machine hulling. A mixed diet comprising wheat, rice and millets is found to be better balanced than one based only on a single staple food, for example rice or wheat or millet. As none of the food grains can provide all the nutritive requirements, the inclusion of fresh vegetables in our diet to supply the minerals and vitamins is a matter of importance.

The Grow More Food campaign going on right through the world includes the growing of vegetables to a great extent. When an industrial country like England has brought under the plough more than a million acres of open spaces, lawns, and even tennis courts for growing vegetables, one could realise the necessity for our little effort to this great work. For, the duty of the civilians is no less important than the duty of the armed forces in the prosecution of the war, and the man or the woman who grows a patch of vegetables is as much a war worker as those who are in the battle fields. Those who have not got even that small plot of land, could also help in growing vegetables in baskets, broken mud pots or boxes of earth on verandahs or even roofs of houses. Vegetable growing is a simple matter. It is a hobby which every man and woman could easily take up. There is a pleasure in producing one's own vegetables. It is an occupation which is at once useful and healthy, and then you have the satisfaction of having helped the war effort. A home garden is therefore a victory garden and it is a pleasant occupation for the whole family since even the children can help. There cannot be an excess of vegetables even if every one of us starts growing them tomorrow. We ourselves require a lot of vegetables in our diet, as many of us are really not well nourished and could improve by adding more vegetables to our menu. At the same time, you will find that you cannot take as much grain food as formerly and thus the grain stock lasts longer and goes a little further.

This is bridging the gulf between scarcity and abundance. Those who own lands owe a duty to the landless to produce food. It is almost a crime to produce less food where it is possible to grow more of it. It is a crime against society to leave a well unused or a land fallow. The demands of the population are great. The opportunity for producing more food is equally great. Let us all set forth and help to our utmost in producing more food. Let us fight for the third freedom, the freedom from want. Food will win the war and write the peace.

The Story of Ginger

By E. R. CHELLAM VINCENT, Student,
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Would you not like to know about the romance of ginger other than the stereotyped information about its cultivation and marketing?

A considerable number of people in England make their living by distilling essences from ginger. So does every mineral water maker. Ginger has a story which reaches back to the long forgotten past. "It has associations which make the story of George Stephenson and the romance of the founding of Marine Insurance by the Italians."

Let us trace the word 'Ginger' back through ages and see what the philologists have to tell us:—

Modern English	— ginger
Old English	— gingiber
French	— gingembre
Latin	— zingiber or zingiberi
Greek	— zingiberis
Arabic	— zingibil
Hindustani	— zunjubeel
Sanskrit	— Sringa vera (horn shape)
Tamil	— Injgi

Thus the interesting fact is established that the early Hindus described it by comparing it with the horns or antlers of certain animals. A glance at a fully grown piece of ginger will easily prove the aptness of the name.

The following information would enable any one to deduce many interesting facts about ginger. We can see, for instance, that the ancient Romans and Greeks knew this wonderful spice. We find corroboration of this in the pages of the Roman historian Livy who believed that ginger came into Europe from Arabia by way of the Red sea. Moreover as Sanskrit was a dead language as early as the 3rd century B. C., it follows that ginger must have been known and used over two thousand years ago, establishing the claim of antiquity.

The fact that there is a word for ginger in old English also shows that the English forefathers knew and used this spice. But we have more precise information than this. Ginger is often referred to in the Anglo-Saxon leech-books of the 11th century, that is, before the Norman conquest.

Apparently then the medicinal virtues of ginger have been recognised even in England for at least 900 years. Its use has persisted to the present day with the sanction and approval of the medical men of every age, country and nationality.

Ginger root is frequently mentioned in the history of the Middle ages. It was an important item of commerce between East and West. Documents

exist to prove that it was included in the tariffs levied at Acre in Palestine in 1773 and at Barcelona in 1211. Marseilles in 1228 and Paris in 1296

In the 13th and 14th centuries it was in very common use, being next in value only to pepper. Indications are not lacking that the acquisition of these valuable spices played a considerable part in the Crusades, as a motivating factor.

The Elizabethan historian Gerarde writes 'our men which sacked Domingo in the Indies digged up ginger there in sundry places wilde..... Ginger groweth in Spaine, in the Canerie Islands and the Azores. It is most impatient of these our northern regions, as myself have found by proofs for there have been brought unto me at seuerall times sundry plants there of,, fresh, green and full of juice, which have sprouted and budded foorth greene leaves in my garden in the heat of somer; but as soon as it hath bin but touched with the first sharp blast of winter it hath presently perished both blade and roote.'

Leaving the historical associations of ginger aside for a moment, let us consider the root itself. What we know under this name is the rhizome of *Zingiber officinale*, a perennial reed-like plant growing from 3 to 4 feet high. This plant rarely flowers and the fruit is unknown. It is not found in the wild state but is believed to be a native of the warmer parts of Asia from where it has spread to the West Indies, S. America, Western Tropical Africa and Australia.

In commerce ginger is used in various forms. As a spice or a flavouring agent it has been always popular and one may safely prophesy that it will always be so. It finds a way into the confectionary (gingerbread etc.), and it is eaten as a sweet (crystallised or preserved ginger). We should not in this connection forget the *Injimuraba* and the *Sukku karuppatti* of the Tinnevely District prepared with ginger and jaggery. Ginger is largely introduced as the main flavouring constituent of aerated waters, ginger beers, cordials, wines, etc. The principal varieties of ginger are from Jamaica, Cochin, Africa, Ceylon, Malabar and Barbados, the two first named being the most used for the various ginger drinks.

The medicinal values of ginger have long been recognised. Its principal constituents are (1) starch, (2) a volatile oil to which its characteristic aromatic odour is attributed, (3) gingerol to which it owes its pungency and (4) resin.

The flavouring principles were first made completely soluble by Mr. William Hay of Hull, England, some 50 years ago. In medicine ginger is mainly used as a stimulant and carminative. Ginger is put to a score of medicinal uses in India and it is one of the plant products always exploited by ayurvedic and allopathic doctors to cure patients. For the production of non-alcoholic drinks the ginger root is being almost entirely superseded by ginger essences. A beautifully clear ginger ale or ginger beer is very common now-a-days. Of course its fore-runner the cloudy 'Stone' ginger beer is still popular in parts of England.

SELECTED ARTICLES

A new method for estimating the Fertilizer Requirements of Citrus Trees

By A. C. BATHURST,

Division of Horticulture, Pretoria

[The fertilizer requirements of crops are ascertained by (a) field experimentation and (b) soil analysis. The author has been experimenting with a new method promising to be cheaper and quicker than the field experiment and more accurate and reliable than soil analysis.]

Field experiments are accurate but slow, and costly and beset with a number of limitations: (1) The field should be uniform, (2) The field should be large enough to accommodate the desired number of repetitions of the various treatments and (3) The experiment should be conducted for a number of years for eliminating residual effects of previous fertilization and seasonal effects and for studying the after effects of the treatments themselves.

Soil analysis is cheap and quick, but the results obtained are vague. Various methods of determining the soluble plant food in the soil are in vogue. The results obtained need not necessarily represent what actually the various crops could extract from the different soils. Abstract of the first part of the article. Ed.]

Plant Analysis: A new and promising method The idea of analysing a plant to determine its fertilizer requirements is not strictly speaking, a new one, since it was first suggested some sixty years ago. For various reasons, however, chiefly due to unreliable sampling methods, poor analytical methods, faulty methods of drawing conclusions, and lack of knowledge of basic principles governing plant growth, the method did not become popular. It may be of interest, however to quote briefly from a recent paper by two of America's leading plant physiologists, who recently received the annual thousand dollar award granted by the American Association for the Advancement of Science for a very notable contribution to science for the year 1940. The authors Drs. Hoagland and Arnon, state: 'The idea of analysing plant tissues in the study of nutrient deficiencies is a venerable one, but we gain the impression that there is a renewal of interest in this approach.....' In experiments with barley and tomato plants there was a high correlation between percentages of potassium in the dried vegetative tissues, and the response of the plant to potassium fertilization. The possibility also exists of sometimes obtaining useful indications of potassium supplying power of soils from analysis of samples of plant tissue taken at suitable stages of growth from plants growing in the field,

It is precisely this aspect, namely the relationship that has been found to exist between the amount of a certain plantfood found in a plant, and the response it will show to applications of that plantfood that is the basis on which the 'Plant Analysis Method' is founded. While in soil analysis we extract the plantfoods with water, acids, or other chemicals, we can never be sure that what we get out of a soil is the same as what the plant would get out of it. By analysing the plant however, we are taking a short cut as compared with soil analysis, but we use the plant itself as the means of removing the plantfoods from the soil. Theoretically speaking, this method of approach should take us a big step nearer the heart of the problem. By making a large number of analyses, both of healthy plants and also of plants known to be suffering from definite shortages or excessive amounts of various plantfoods, we can eventually find out with

very fair accuracy how much of each of the essential plantfoods a healthy plant of any particular species should contain. This has actually been done in the case of various field crops over widely varying conditions in the U. S. A., Great Britain and Sweden, with encouraging results. To sum up the findings from these countries we may state that regardless of the climatic and soil conditions, the chemical composition of the healthy plants of a certain species varied only within a very small range, and also all plants containing less than normal quantities of any particular plantfood usually responded to fertilizers containing that plantfood. The evidence available suggests very strongly that it should be quite possible, by means of plant analysis, to predict the main fertilizer requirements of any plant, no matter what the soil and climatic conditions may be. This is something which soil analysis cannot do for neither the individual requirements of the plant, nor the plantfoods which it can actually take up, nor the prevailing climatic conditions are taken into account.

Predicting the fertilizer requirements of citrus During the past four or five years, the writer has laid down several large fertilizer experiments on citrus in various parts of the Union. The objects were twofold: firstly, to find out by trial and error the best fertilizers for Valencias under each of the different soil and climatic conditions, and secondly, to discover just how the amounts of the various important plantfoods in the trees were affected by the various soils and the fertilizers given. These experiments have now provided some valuable information which may be summarised as follows:—

In an orchard in the eastern Transvaal striking improvements in yield—two or three times the yield of unfertilized plots—followed annual applications of nitrogen in the form of sulphate of ammonia at the rate of 3 to 7 lb. per tree. This orchard has previously received practically nothing in the way of fertilizers or manures. In another orchard in the western Transvaal, receiving exactly the same treatments slight but definite *decreases* in yield resulted from the same applications of ammonium sulphate—the heaviest applications causing the greatest falling off in yields. This orchard had previously received about 150 lb. kraal manure per tree annually for several years, though no artificial fertilizers

Still a third orchard on the rich alluvial soils of the eastern Cape Province which received no fertilizers or manure in the past, showed no response to the identical fertilizer treatments one way or the other.

Analysis of Citrus leaves The above results may seem rather confusing at first sight, yet when analyses of leaves from these orchards were made, the whole position became clear.

In the case of the first orchard, which showed the greatest response the amount of nitrogen in the leaves was originally very low. Where ammonium sulphate was given, the nitrogen content of the leaves was raised and at the same time increases in yield invariably followed. In no case was the nitrogen content of the leaves raised to what could be called an abnormally high figure, and in all cases the more nitrogen given as ammonium sulphate, the more the yields were raised.

In the case of the second orchard (in the western Transvaal) the leaves were already very high in nitrogen when the experiment was started due to the effect of the nitrogen previously given in the kraal manure. Here the applications of ammonium sulphate raised this content even higher still and the more of this fertilizer given, the more the yields *decreased*. From this it was judged that nitrogen was not lacking in this orchard, and that by giving more than was actually required, the tree was so to speak, nitrogen poisoned, and yields fell off in consequence.

In the third orchard (in the eastern Cape Province) the leaves were about normal in nitrogen content at the start, and even after several years of fertilizing only slight increases could be brought about by giving ammonium sulphate. In this orchard no provable differences in yield were found between any of the different treatments. This again fits into the picture, and suggests that the way in which a tree is likely to respond to nitrogen fertilizers can be predicted if we know whether its leaves are low, normal, or high in nitrogen to start off with. If the content is low, the crop will probably be increased; if normal—probably not, though harmful effects will not necessarily follow; if already high, no good can be done, nitrogen fertilizer will be wasted, and an actual falling-off yields is quite possible.

The amounts of the other most important plantfoods, namely phosphorus, calcium, potassium, magnesium and sulphur present in Valencia leaves have been investigated in a similar manner, and both the normal content of leaves and the levels at which deficiencies are likely to occur for each of these has been determined.

A practical example An interesting case of the practical application of leaf-analysis may be mentioned here in connection with the eastern Transvaal orchard already referred to. Here soil analyses showed that the soil was very acid, and low in both calcium (or lime) and magnesium. The normal recommendation here would be to give lime, or perhaps dolomite, which contains both lime and magnesium. An analysis of the citrus leaves, however, showed that they were very high in lime and very low in magnesium. Applications of magnesite (which contains magnesium, but no lime) were therefore given to two out of the four trees in each experimental plot. After two years it now appears that this treatment is having beneficial results, since in eleven out of sixteen cases the magnesite treated trees are now outyielding the trees which did not receive it. Had lime alone been given the uptake of calcium, already high, would have been raised still higher and the shortage of magnesium would probably have been aggravated, with probable harm to the tree.

Method of taking samples Many hundreds of analyses of leaves made by the writer during different times of the year, and of samples taken in various ways have shown quite clearly that the amounts of each of the different plantfoods vary greatly from leaf to leaf in any particular tree, chiefly according to the age of the leaf on the tree. This makes it quite clear that for leaf analyses to be of any value a definite method of taking samples must be followed, and leaves must only be picked from a certain stage of growth and at a certain time of the year. This sampling method is simple and may be summarised as follows:-

Leaves are taken from the stalk of the fruit, directly up against the fruit, during the period June to July. Since the date of the Spring flush when the fruits and leaves were first formed, can easily be found out, the exact age of these leaves can also be found—namely, ten to eleven months old. All samples, picked in any part of the country, will be of approximately the same age, and are thus comparable. No great skill is needed in selecting a good sample of leaves, which can easily be picked by any interested grower.

An invitation to growers The work outlined above has now reached a stage where it seems desirable to test out conclusions more extensively. To this end, the Division of Horticulture wishes to get into touch with interested growers in all parts of the country with a view to diagnosing the fertilizer needs of their orchards by leaf analysis methods, and following up the responses caused by the fertilizers applied.

The fertilizer position in the Union at the moment is such that every effort must be made by all growers to apply only those fertilizers actually essential for maintaining or raising production.

In very many cases fertilizer mixtures are quite unnecessary for citrus trees, and growers could economize by changing over to single fertilizer alone. In other cases it is quite possible that the amounts of fertilizer given are excessive, and could be cut down quite safely without causing a drop in yields. Growers would not only help themselves by such economies, but would leave more fertilizers to those farmers who might otherwise be forced to do without them.

Any growers interested in this subject, and wishing the Department to report on the probable fertilizer requirements of their orchards as indicated from leaf analyses are cordially invited to communicate with the Chief, Division of Horticulture, P. O. Box 994, Pretoria. No charge will be made for this service, and the grower will be under no obligation to carry out suggestions which may be made. *Farming in S. Africa, Vol. 18, No. 206, May 1943.*

Intensified Potato Culture in the U. S. S. R.

By H. V. GARNER, M. A., B. Sc.,

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At the outbreak of war the Russian Agricultural Research Stations devoted themselves to the problem of maximum production of food and raw materials in the U. S. S. R. The potato, yielding as it does the highest amount of human food per acre of any crop in common cultivation, naturally figured prominently in the plan. The necessary large increase in potato acreage raised several serious problems in regard to the supply of seed tubers, and the way in which these difficulties are being met is an interesting example of the work of Russian scientists during the war.

Tips as Seed The first problem was to reduce the tonnage of potatoes taken for seed to an absolute minimum. Something much more drastic than the usual cutting of large potatoes into two sets was required. The solution came from Professor Lysenko and his colleagues at the Lenin Agricultural Science Academy who developed a method of saving for seed the tips of potatoes that were to be used for domestic or industrial purposes. The procedure was to cut off quite a small portion of the rose end of the tuber with the buds attached and collect and store the tips in such a way that their vitality was preserved until planting time. The remainder of the tuber was used as food. The weight of the tip being only about $\frac{1}{2}$ oz., the quantity of food material used for seed could therefore be reduced to about one-quarter of the normal when this procedure was adopted. By organization, demonstrations and the issue of working instructions, some 380,000 acres were planted with tips in 1942, representing a saving of thousands of tons of seed.

Comparisons of the produce of tips with that for whole seed under field conditions showed that the yield from the tips was much the same as that produced by ordinary seed potatoes. The idea has been carried still further by Professor Yakushkin of the Timizyazev Agricultural Academy, Moscow. He proposes a method of "tuberless" sowing of potatoes. The eyes are cut in spring and planted in boxes or forcing houses, and in May the young plants are put out in the open. At least three-quarters of the original tuber is saved for food by this method and it is claimed that the plants grown from eyes are 15–20 days earlier than those from ordinary seed tubers (in 1942 at any rate), and that they yielded quite as well.

Two crops in one season Other physiological studies on potato seed have been directed towards controlling the period of dormancy of tubers. In certain parts of the U. S. S. R. it would be quite practicable to secure two crops of potatoes in a single season if seed dug in early summer could be planted the same

year. Normally this is not possible because such seed would not germinate. It has been found that the length of rest period in potatoes depends on external conditions and particularly on the supply of oxygen to the inside of the tuber. The skin of new potatoes prevents the penetration of oxygen. If the skins are removed and prevented from reforming, the tubers will germinate in 7—10 days. Methods for carrying out these requirements in practice have been worked out and successfully tested on collective farms in the irrigated areas of Central Asia. The results of this work will increase the potato area in southern regions in 1943.

The practices outlined above clearly demand an appreciable amount of detailed organization, extra care, and trouble. In normal times they would probably be discountenanced as tending to deterioration of stocks but their value in a state of emergency is undoubted and reflects the energy with which every avenue of production is being explored in the U. S. S. R. *J. Min. Agri.* 50 (1943): 20—21.

Abstracts

Production Recording Scheme (*Food per Acre* by R. H. Smith. *J. Min. Agri. London Vol. 49, No. 4, March 1943.*) So far, judging farm management efficiency has been difficult, with the basis of money returns per acre or per unit of labour, as the criterion. This has been complicated by the diversity in the types of soil and farming.

The plan A new plan conceived by Captain L. R. Bomford, of Tufton Warren solves the problem in an ingenious and simple manner. It is characterised by (1) simplicity in keeping records, (2) simplicity of results obtained after the results are collated, and (3) results lending themselves for comparison of even different types of farming. Records were maintained according to the new plan for 28 farms in Whitchurch district for 1941—42. A monthly return of all sales and purchases of produce, livestock and feeding stuffs was prescribed,—corn and milk by measure, potatoes, feeding stuffs etc., by weight, and eggs and livestock by number. The information so obtained was summarised for the year, the June return giving the opening and closing stock.

Assessing results The commodity sold off the farm is translated into the acres, that should have been adequate by dividing the actual sales by the standard yield of the district that is fixed. In the case of animal produce, the output per animal and the acreage that will maintain the animal furnishes the standard for the animal produce. Thus the year's output is converted into the number of acres from which it should have been obtained. From this is deduced the number of acres that should have produced the feeding stuffs received during the year. This net acreage is represented as a percentage of the farm area and is a measure of the efficiency of management. The result depends on the yield of crops, the effective utilisation of produce by livestock, the efficient use of machinery, labour etc., and efficient marketing. The efficiency percentage is a true index of the farmer's ability to manage farms in any locality and farms are comparable irrespective of the type of farming, provided the soil conditions do not vary widely. Where soil conditions are divergent, different standard yields may have to be assumed.

Weakness revealed The variation in efficiency of the 28 farms in Whitchurch varied from 31 to 106 %, with the majority lying between 50 and 70 %. The efficiency was not correlated either to the size of the farm or the type of farming. The low level of the results was not expected by the farmers concerned. The low level indicates that all the several departments of the farm do not give a uniform and high output as is presumed by the complacent. The low and high outputs in the different sections tend to counter-balance each other and

100 % efficiency is possible only where efficiency is maintained in each and every section.

With the data and information recorded it was not possible to locate the weak links in the system without details of the farm-grown grains and feed used for feeding the different classes of livestock. The production figures give indications of low efficiency, where they exist, and a diligent search will furnish the answer. Farm efficiency could be built up by suitably changing the farm policy and management.

Value of production recording The scheme:

1. Is simple and readily understood by farmers and does not involve the maintenance of special detailed records.
2. Requires all round efficiency to obtain 100 % efficiency.
3. Enables comparison of neighbouring farms, irrespective of the type of farming adopted.
4. Shows the suitability or otherwise of the farm policy.
5. Is a true index of the farmer's efficiency and management.

The advantages of the system and the many interesting and valuable facts obtained from a very meagre amount of information far outweigh any disadvantage, that is inherent.

V. T. S.

Formation of nicotine in plants grafted on tobacco A Shmuck, A. Smirnov, and G. Ilyin (*Compt. Rend. (Dok.) Acad. Sci. U. R. S. S., n. ser., 32 (1941), No. 5 pp. 365-368*) When scions of *Solanum nigrum*, tomato, and *Datura stramonium*, none of which normally synthesize nicotine, were grafted on to tobacco stocks, all three species were found to elaborate nicotine. Conversely, when tobacco scions were grafted on to stocks of these three species, the tobacco itself lost its power to synthesize the alkaloid. It thus seems obvious that formation of nicotine by tobacco is connected in some obscure way with the root system and stem of the plant. Tobacco grafted into *Nicotiana glauca* also lost its ability to elaborate nicotine, forming anabasine instead, but when *N. glauca* was grown on a tomato stock it produced as much anabasine as control plants on their own roots. The significance of these findings are briefly discussed. *Exp. Sta. Rec. Vol. 88 pp. 174-175, February 1943.*

New Cambridge breeds of poultry by M. S. Pease, M. A., School of Agriculture, Cambridge. *J. Min. Agri. (1943) 50-43-44.* The new Cambridge breeds of Poultry are new auto sexing varieties of poultry which breed true and show sex distinction in the tint and markings of the chick-downs at hatching. This difference is clear at a glance and perpetuates itself unchanged from generation to generation. There are several varieties.

Cambar has been bred from Barred Rock crossed by Campine and graded up to Canadian and American utility Barred Rocks. It is medium sized, close feathered, hardy, non-broody, utility type and has given very good egg production. The tint of the egg is variable. The sex distinction in the downs is particularly sharp and reliable. The breed has been made in both silver and Gold variants.

Legbar has been developed from the Brown leghorn. It has the merit of high egg production but there is a tendency to develop small body size and produce small eggs. Pure females can be mass-produced by putting a Legbar male to ordinary brown leghorn females.

Dorbar is based on the Silver Grey Dorking but is an active utility egg producer. Eggs are pure white and large. Sex distinction in the downs is sharp and constant. The breed has been made in both Silver and Gold.

Buffbar is the barred variety of the Buff Orpington. It is excellent in winter egg production but there is a tendency to broodiness in summer. The female buffbar can be bred from mating the Buffbar male back to the basic Buff Orpington breed as in the legbar. The sex distinction in the downs, is one of tint only; the deep gold or salmon buff downs being the females and the pale downs the males. The distinction is not so sharp as in the other breeds.

The new Cambridge breeds open up two new extensions of sex linked crossing. Firstly when crossed amongst themselves *in either direction and in almost any combination*, the chicks still retain the sex distinction in the down at hatching. Secondly, if a male gold Cambar, Dorbar, or Legbar is put to ordinary silver females (say, Light Sussex) sex linked cross bred pullets are obtained which can themselves be used for further sex linked crossing; the pullets from this cross can similarly be used and so on indefinitely. This method of repeated sex linked crossing has many advantages.

T. N.

Gleanings

Snake-bite cures I have tried Some years ago I had read with a smile of incredulity, in the "Tropical Agriculturist" writes Mr. Donald Obeyesekere in the *Ceylon Observer*, that in Burma the remedy commonly used by the people of that country for snake bite was the juice squeezed out of the lower portion of the trunk of the Ash-plantain tree.

Months later, a bull-terrier dog of mine was badly bitten by a cobra which he had seized and when he was about to die, what I had read in the "Tropical Agriculturist" flashed across my mind and I got a plantain rooted up and had the root end of its trunk pounded in a mortar and the juice squeezed out of it and administered a breakfast cupful of it by slow degrees to the animal, with the result that a complete recovery was effected much to the amazement of everyone in my house.

Since then I have always resorted to that remedy using any variety of plantain tree whenever my dogs get bitten by snakes, and have found it a sure and certain cure. I have recently come into possession of an ancient *ola* Sinhalese manuscript dealing with snake-bites and the cures for them and it may interest the public to know a few of the numerous prescriptions contained in it.

For Cobra Bite: 1. Make a mellun (dry curry) of the root end of the Ash-plantain (*Musa-paradisica*) tree, add a little salt to it and tie it over the wound.

2. Take the leaves of the Hathavaria (*Asparagusraemosus*) and Kiriangua (*Dregea volubilis*) and grind them with human urine and apply a plaster of it to the wound.

For Polonga (*Viper Russeli*) Bite: 1. Wipe the wound with the leaves of Volpenela (*Cardiospermum helicacabum*).

2. Take the leaves, root and bark of the Kaduru tree (*Strychnos-nuxvomica*), pound them adding a little salt and turmeric, make a mellun (curry) of it and tie it over the wound.

3. Take the leaves and bark of the Kambaranga tree, add turmeric and salt, make a mellun (curry) of it and tie it over the wound. (*The Hindu*, July 17, 1943).

Sugar as a food In Australia, too, the institution of sugar rationing has let loose a number of statements by so-called experts depreciating the value of sugar as a food and suggesting that such rationing is likely to improve the health of the community. Actually, as the Australian Sugar Producers Association point out, the people of Australia and New Zealand, who have for some time eaten something like $4\frac{1}{2}$ ounces per day, are as is well known, among the healthiest and most vigorous people in the world. We are reminded from the same

source that Sir James Crichton Browne, a noted authority on diet, has expressed a conviction that races of mankind which consume but little sugar show a physical condition decidedly inferior to that possessed by those who are large consumers. The American Army finds that 5 ounces per day is a desirable ration for the fighting men, and sees that they get it. (*International Sugar J.* May 1943)

Insecticidal Aerosols An aerosol is a kind of mist in which a liquid or solid in colloidal dispersion is suspended in a gas. Insecticidal aerosols have been found to be highly toxic to many species of insects. Heretofore their preparation has been found to be a difficult matter; but now it has been found that they are formed when a solution in some low boiling solvent is allowed to escape under its own pressure through a fine nozzle. An aerosol well adapted for the control of flies and mosquitoes in the presence of man is prepared by spraying a solution of purified pyrethrum extract and sesame oil in dichlorodifluoromethane. This preparation is non-toxic to man, non-inflammable, and does not produce oily deposits. It is now being manufactured commercially, and dispensed in 1 lb. packages, but for the time being the entire output in the U. S. is being used by the allied armed forces. (*The International Sugar J.*, April 1943.)

Copper dusted wheat as a supplementary feed for sheep Farmers who have on hand quantities of wheat treated with proprietary copper dusts for the prevention of bunt, have approached the Department for advice as to whether this treatment of the wheat makes the grain dangerous as food for sheep. A small feeding trial was recently conducted at Glenfield in order to determine this point. It was found that no serious ill effects resulted, and that the grain was just as nutritious as untreated wheat. (*Agri. Gaz. N. S. W.* June 1943.)

Research Items

CLIMBER CHILLY

In one of the agricultural tours, I came across climbing types of perennial chillies in the country side in Mysore State bordering Hindupur Taluk. These plants were clinging on to Areca palms, in a climber fashion. Plants 4½ years old were 15 to 20 feet high. Half a dozen plants put in originally have been supplying the gardener with green and ripe chillies in quantities sufficient for his family consisting of 12 members. Two types were noted, one with fruits ¾ to 1 in. and the other with fruits 1¼ to 1½ in. long. Both the forms are very pungent and are required to be used in quantities less than the ordinary chillies.

Seedlings are raised in nurseries and 6 weeks old plants are set out in their permanent places in pits 2 ft. × 2 ft. × 2 ft. filled with a mixture of well-rotted cattle manure and rich soil. The plants begin to bear from the 4th month onwards continuously, without a break. The plants have to be manured every year.

It is suggested that the climber chilly can be planted in place of the ornamental bower plants in gardens and parks, in odd corners about the residential buildings and in arecanut, betel vine and coconut gardens, in fact in any piece of irrigated land and even in shady places. This in turn will release a certain area from the cultivation of the ordinary bush type chillies grown in the field and which could be devoted to food crops. The ordinary chilly occupies 3 lakhs of acres in the Madras Presidency and what an extent of land can be released when the planting of the climber chilly is taken up in earnest in all possible places.

Freedom from attack of thrips is another major point in favour of the climber. Thrips have not been noted in the gardens that are having the climber now for a period of about 5 years. Chilly is a costly crop to grow and the annual loss caused by thrips is something enormous, in the aggregate. Possibly

the climber could be used for crossing work, for evolving thrips-resistant varieties.

The perennial habit of the climber is another desirable character under certain conditions.

Seeds can be made available by the author in small quantities, for people who want to grow the crop for seed multiplication. Arrangements are being made for the identification of the plant and it will be notified in these columns in due course.

Hindupur, }
August-19, 1943. }

K. V. Seshagiri Rao,
Asst. Agricultural Demonstrator.

Hints for Bee-keepers

For October 1943

Bee-activity for this month is more or less governed by seasonal factors. The weather is generally calm, and if the usual rains are received by the end of September, the condition of the vegetation improves and bees readily respond to these favourable environments. The chief pollen yielding flora for the month are castor, sun-flower, *cholam*, maize, *cumbu*, *Peltophorum ferrugineum*, *Azanthus excelsa*, *Holoptalia integrifolia* and *Commelina forskalaei*. The nectar supply is comparatively poor, the main sources being *bhendi*, gingelly, soapnut, *Chionachne kosniigi* and a few cucurbitaceous plants. If weather and pasturage conditions are favourable, there will be active field work and brisk breeding with consequent improvement in the condition of the colonies. As a large field force of bees is necessary for honey collection, steps should be taken to build up the strength of the colonies from the very advent of the breeding season. The following few manipulations, if given at the right time, would go a long way to achieve this object. The improvement in the condition of the hive is first indicated by the increased rate of oviposition in the central combs. The area for egg-laying can be augmented by placing a clean comb, or a frame with a piece of comb foundation sheet. If these are not available, the side combs, which are generally stocked with food material, may be transferred to the centre after the brood cells in the central comb are sealed. If there are a few strong colonies, one or two combs with brood may be taken and given to the weaker colonies. Deficiency in the nectar supply can be made up by artificial feeding. If on the other hand the rains fail and pasturage is meagre the condition of the colonies deteriorates and the colonies have to be tended with great care to prevent their desertion.

M. C. Cherian and S. Ramachandran

Crop and Trade Reports

Cotton—First Report—1943-44 The average area under cotton in the Madras Province during the five years ending 1941-42 represents 9.8 per cent of the total area under cotton in India.

The area under cotton in the Madras Province up to 25th July 1943, is estimated at 230,000 acres. When compared with the area of 240,600 acres estimated for the corresponding period of last year, it reveals a decrease of 4.4 per cent.

Central districts and the South—mainly Cambodia tract. The area in the Central districts and the South represents generally the last year's crop left on the ground for second pickings before the plants are removed in September in compliance with the provisions of the Pest Act. The area in these districts is estimated to have fallen from 165,900 acres to 139,900 acres, the fall in acreage being confined to Salem, Coimbatore, Trichinopoly and Madura. The yield is expected to be generally normal.

Westerns tract The area under Westerns is estimated to have risen from 59,700 acres to 68,400 acres. The increase in area in the current year is due mainly to the good rains received in May 1943.

White and Red Northernns tract The area under White and Red Northernns is estimated to have risen from 5,500 acres to 7,000 acres.

Warangal and Cocanadas tract The area under Warangal and Cocanadas cotton is estimated to have risen from 3,500 acres to 10,500 acres, i. e., by 200 per cent.

The average wholesale price of cotton lint per imperial maund of 82½ lb. or 3,200 tolas as reported from important markets on 31st July 1943 was Rs. 41-2-0 for Cocanadas, Rs. 41-2-0 for White Northernns, Rs. 34-9-0 for Red Northernns, Rs. 40-15-0 for Westerns (Mungari crop), Rs. 45-1-0 for Westerns (Hingari crop), Rs. 72-4-0 for Coimbatore Cambodia, Rs. 57-2-0 for Virudhunagar (Southern) Cambodia, Rs. 63-2-0 for Coimbatore Karunganni, Rs. 52-9-0 for Tinnevellies and Rs. 38-14-0 for Nadam cotton. (*From the Commissioner of Civil Supplies.*)

Cotton—Intermediate—report 1943-44 *Last year's crop:* The yield of the second or summer pickings of the 1942-43 crop is estimated to be generally normal.

Current year's crop: The main season for sowing is not yet over in most parts of the Province. Sowings of the crop are in progress in parts of the districts of Kistna, Kurnool, South Arcot, North Arcot, and Coimbatore. The condition of the early sown crop is reported to be generally satisfactory except in parts of the Deccan where the crop had a set back due to drought in August.

The average wholesale price of cotton lint per imperial maund of 82½ lbs (or 3,200 tolas) as reported from important markets on 4th September 1943 was Rs. 37-1-0 for Cocanadas, Rs. 34-13-0 for White Northernns, Rs. 34-9-0 for Red Northernns, Rs. 31-15-0 for Westerns (Mungari), Rs. 29-2-0 for Westerns (Hingari), Rs. 73-11-0 for Tirupur Cambodia, Rs. 59-14-0 for Coimbatore Karunganni, Rs. 51-11-0 for Virudhunagar Cambodia, Rs. 47-9-0 for Tinnevellies and Rs. 37-4-0 for Nadam cotton. When compared with the prices published in the last report, i. e., those which prevailed on 31st July 1943, these prices reveal a fall of 35 per cent in the case of Westerns (Hingari), 22 per cent in the case of Westerns (Mungari crop), 15 per cent in the case of White Northernns, 10 per cent in the case of Cocanadas, Virudhunagar Cambodia and Tinnevellies, 5 per cent in the case of Coimbatore Karunganni, and 4 per cent in the case of Nadam cotton and a rise of 2 per cent in the case of Tirupur Cambodia, the price remaining stationary in the case of Red Northernns. (*From the Commissioner of Civil Supplies.*)

Statistics—Groundnut—Second report—1943 *Summer crop—Area and yield* The area under the summer crop of groundnut in parts of the Madras Province during the five months—January to May 1943—is estimated at 86,300 acres as against 39,700 acres estimated for the corresponding period of last year, representing an increase of 117·4 per cent. The large increase in area is due partly to the prevalence of attractive prices for groundnut and partly to its being sown in certain areas where the supply of water in irrigation sources was not sufficient for raising second crop paddy. The harvest of the crop is in progress. The yield per acre is expected to be normal in all districts except Chingleput and South Arcot where the crop is reported to have been damaged by heavy rains in May '43 and Ramnad where the crop was damaged by insect pests to some extent. The total yield is estimated at 72,300 tons of unshelled nuts as against 35,100 tons estimated for the corresponding period of last year, representing an increase of 106·0 per cent.

Early crop—Area and yield: The area under the early crop of groundnut (mostly unirrigated) up to 25th July 1943 in the districts of Salem and Coimbatore

is estimated at 143,500 acres. When compared with the area of 141,000 acres estimated for the corresponding period of last year, it reveals an increase of 1.6 per cent. The yield per acre is expected to be normal in both the districts. The yield in these two districts is estimated at 71,600 tons of unshelled nuts as against 70,500 tons estimated for the corresponding period of last year, representing the same increase as in the case of acreage namely 1.8 per cent.

The wholesale price of groundnut (machine shelled) per imperial maund of 82½ lb. (equivalent to 3,200 tolas) as reported from important market centres on 7th August 1943 was Rs. 13-3-9 in Erode, Rs. 13-1-0 in Vizianagaram, Rs. 13/- in Guntakal, Rs. 12-14-0 in Cuddapah, Rs. 12-11-0 in Vizagapatam, Rs. 12-0-0 in Guntur, Bellary, Cuddalore and Vellore, Rs. 12-6-0 in Nandyal, Adoni and Salem, Rs. 12-1-0 in Hindupur. When compared with the prices published in last report, i. e. those which prevailed on 10th April 1943, these prices reveal a rise of approximately 27 per cent in Guntakal, 18 per cent in Bellary, 8 per cent in Vizianagaram, 6 per cent in Salem, 5 per cent in Vizagapatam, 4 per cent in Cuddalore, 2 per cent in Guntur, Cuddapah and Erode and a fall of approximately 4 per cent in Nandyal and 2 per cent in Adoni and Vellore, the price remaining stationary in Hindupur. (From the Commissioner of Civil Supplies.)

Sugarcane—Intermediate—or condition report 1943 The condition of the sugarcane crop is reported to be generally satisfactory in all the districts of the Province. The recent rains are expected to benefit the crop in the Deccan. The yield per acre is expected to be normal if the season continues to be favourable.

The average wholesale price of jaggery per imperial maund of 82½ lb. (or 3,200 tolas) as reported from important markets on 4th September 1943 was Rs. 15-13-0 in Erode, Rs. 14-2-0 in Salem, Rs. 12-8-0 in Mangalore, Rs. 11-9-0 in Cuddalore, Rs. 11-8-0 in Rajahmundry, Rs. 11-7-0 in Trichinopoly, Rs. 11-2-0 in Bellary, Rs. 11-1-0 in Coimbatore, Rs. 10-5-0 in Chittoor and Vellore, Rs. 10-1-0 in Vizianagaram and Adoni and Rs. 9-4-0 in Cocanada. When compared with the prices published in the last report i. e., those which prevailed on 7th August 1943, these prices reveal a fall of about 24 per cent in Cocanada, 14 per cent in Chittoor, 10 per cent in Cuddalore and Mangalore, 7 per cent in Bellary and 3 per cent in Trichinopoly and a rise of seven per cent in Coimbatore, the prices remaining stationary at Vizianagaram, Rajahmundry, Adoni, Vellore, Salem and Erode. (From the Commissioner of Civil Supplies.)

Pepper—First Forecast Report, 1943 The area under pepper up to the 25th August 1943 in the districts of Malabar and South Kanara is estimated at 102,500 acres (94,000 acres in Malabar and 8,500 acres in South Kanara) as against 104,500 acres (95,800 acres in Malabar and 8,700 acres in South Kanara) estimated for the corresponding period of the previous year. The yield per acre is expected to be normal.

The wholesale price of pepper per imperial maund of 82½ lb. (equivalent to 3,200 tolas) as reported from important market centres on the 4th September 1943 was Rs. 50-3-0 at Calicut, Rs. 48-10-0 at Tellicherry and Rs. 54-6-0 at Mangalore. When compared with the prices that prevailed at the time of issue of the final forecast for 1942-43 i. e. on the 11th January 1943 these prices reveal a rise of approximately 64 per cent at Mangalore, 68 per cent at Calicut and 76 per cent at Tellicherry. (From the Commissioner of Civil Supplies.)

Ginger—1943—First forecast report The area under ginger up to 25th August 1943 is estimated at 12,600 acres in Malabar and at 600 acres in South Kanara as against 11,600 acres in Malabar and 350 acres in South Kanara estimated for the corresponding period of the previous year. The condition of the crop is satisfactory and the yield per acre is expected to be normal. (From the Commissioner of Civil Supplies.)

Cotton Raw, in the Madras Presidency The receipts of loose cotton at presses and spinning mills in the Madras Presidency from 1st February to 20th August 1943 amounted to 295,167 bales of 400 lb. lint as against an estimate of 406,300 bales of the total crop of 1942-43. The receipts in the corresponding period of the previous year were 509,009 bales. 424,799 bales mainly of pressed cotton were received at spinning mills and 839 bales were exported by sea while 163,227 bales were imported by sea mainly from Karachi and Bombay. (From the Director of Agriculture, Madras.)

Moffussil News and Notes

Srivilliputhur A small agricultural Exhibition was held at Srivilliputhur during the Andal festival from 28--7--43 to 3--8--43 in the vicinity of the temple. All the wall posters were very prominent, attractive and highly educative. The implements for the tract, specimens of seeds and manures and specimens of fungus diseases and insect pests were exhibited in the stall in separate compartments. A few fruits of Sathugudi oranges grown in Rajapalayam were also put on show. Preparation of *cholam* malt was practically demonstrated. Above all the Rathna Sing's hand paddy-sheller drew the attention of the visitors. The simplicity in construction and design with its high efficiency were very much appreciated.

With intermittent lectures to groups of *ryots* and other visitors, leaflets were freely distributed and advice on various agricultural improvements and 'grow more food' and vegetable cultivation in particular was given. (N. S.)

War Services Exhibition, Madras As a wing of the War Services Exhibition at Madras from the 1st to the 14th September 1943, an agricultural stall was put up in a scale not attempted so far. The special feature of the exhibition was a field scale show of field, fodder and green manure crops, and fruit plants representative of the presidency, and a vegetable ornamental park to demonstrate how in war time the flowers and Crotons in the ornamental home park and garden could give place to vegetables in an useful way. The various sections of the Coimbatore Agricultural Research Institute were represented. Practical demonstrations were arranged of the use of the wooden hand huller for hulling rice, the use of inedible oils for lamps, dehydration of vegetables, the preparation of "Yeast-food" using molasses, edible mushroom culture, bee-keeping, malt-making, and biscuits and cake-making using *cumbu*, *ragi* and banana flour. Aero-plane and gun models decorated with fruits to represent the slogan "Fruits for home defence", attracted considerable attention. Flags were hoisted to decorate the premises and carried instructive captions: "Grow More Food," "Eat More Millets", "Use Hand-pounded Rice" etc. The exhibition was highly educative and much appreciated by the visitors. His Excellency the Governor of Madras, several distinguished persons and officers of high rank, both civil and military, visited the stall. It was estimated that 20 lakhs of people visited the exhibition.

College and Estate News

Students' Corner Students' Club An interesting debate was held on 23--8--43. with Sri P. V. Rajagopalan in the chair, the proposition being 'in the opinion of the house absentee landlordism is a menace to Agriculture' Sri K. Appalanarasayya of class III opened the debate, and the opposition was led by Sri V. T. Subbiah Mudaliar. Several students and a few members of the teaching staff took part. The proposition was carried by a majority. Mr. R. C. Broadfoot, ex-principal was the observer and he gave his views on the proposition for the benefit of the students.

Games Cricket The Victory cup matches began on 21st August when the 1st year class was pitched against class III. The latter won with 77 runs (V. Pai 21, Priyavratha Rao 17) to 38. (P. Pai 5 for 19). On 22nd August, the second year class played against class III and won over with 65 runs (Krishnan 22, Madhava Rao 22) to 47 (Krishnan 7 for 21).

In a friendly match with C. C. E. the College won by 2 wickets and 12 runs (Alwa 38, Muthukumarappa 21 and Madhava Rao 20).

Hockey In a series of matches played against Navy A., Stanes European High School, A. R. P., and Sporting Union teams, our College team was successful in all.

Foot Ball The only match played with the Navy team ended in a draw.

College The first terminal examinations for all the classes commenced with practicals in the first week and ended with theory from 14th to 16th. The College closed for the Michaelmas vacation on the 17th and most of the students have left for their homes.

Madras Agricultural Students' Union At a meeting of the Editorial Board of the Union held on 23rd August, Sri M. A. Sankara Ayyar was elected as a member of the Board in the vacancy caused by the transfer of Rao Bahadur V. Ramanatha Ayyar to Madras. He was also elected as the sub-editor.

A. R. P. An A. R. P. practice was held on 13-9-43, in which a batch of Wardens were given training in message writing, marshalling of vehicles etc.

Officers' Club An oil painting portrait of Sri K. Krishnamurthi Rao, retired Assistant Sugarcane Expert, presented by some of his friends to the Agricultural College Officers' Club was unveiled by Sri V. T. Subbiah Mudaliar, the president, on 4th September 1943. Sri K. Krishnamurthi Rao was himself present on the occasion.

Departmental Notifications

Gazetted Service—Appointments

Sri V. Thirumala Rao, Assistant in Entomology, to act temporarily as Assistant Entomologist, in connection with the scheme for the breeding and liberating of the predator Lady Bird.

Sri K. Gurumurthi, Agricultural Demonstrator, to act temporarily as District Agricultural Officer for the scheme of supply of fresh fruits and onions to the troops in Vizagapatam area.

Postings

Sri M. Suryanarayana on return from leave to resume his post of Assistant Agricultural Chemist, Coimbatore.

Sri K. Venkatarama Ayyar, on return from leave to be D. A. O. Ellore.

Subordinate Service—Appointments

Sri V. Satagopa Ayyangar, A. D. deputed for a period of one month to investigate the scope for increased cultivation of food crops on temple and mutt lands in the Tanjore District.

The following officers are appointed as Food Inspectors:

- Sri M. Venkataramayya, A. D. Gudur to Nellore.
- .. T. Paramanandam, A. D. Narasaraopet to Guntur.
- .. S. Sithapathi Rao, A. D. Amalapuram to Cocanada.
- .. P. Lakshminarayana, F. M. Samalkota to Bheemavaram.
- .. T. Lakshmpathi Rao, A. D. Tadepalligudem to Tadepalligudem.

Sri C. S. Krishnamurthi, Fieldman, Central Farm, Coimbatore to be Asst. in Mycology.

Sri K. Raja Rao, upper subordinate to be Asst. in Cotton, A. R. S. Nandyal.

Transfers and Postings

Name of officers	From	To
Sri M. V. Narasimha Sastry	A. D. Chodavaram	F. M. A. R. S. Guntur
„ A. Subba Raju	F. M. A. R. S. Guntur	Asst. in Cotton Mungari Scheme
Janab M. Fassuddin Sahib	Asst. in Cotton Mungari Scheme, Adoni	A. D. Kistna Dt.
Sri D. Bapayya	F. M. A. R. S. Guntur	A. D. Kurnool Dt.
„ G. Rama Rao	Asst. in Fruit Section, Koduru	F. M. A. R. S. Anakapalle
„ A. Sankaram	F. M. A. R. S. Anakapalle	Asst. in Chemistry, Coimbatore
„ S. Suryanarayana	A. D. Vizagapatam	A. D. on special duty for cultivation of fresh fruits and onions, Vizagapatam
„ H. Narasimhamurthi	Fieldman, A. R. S. Hagari	Asst. in Cotton, A. R. S. Hagari
„ K. Satyanarayanamurthi	Asst. in Cotton, Adoni	Asst. in Cotton, Hagari
„ D. Narayana Rao	Asst. in Cotton, Nandyal	Asst. in Fruits, F. R. S. Kodur
„ M. L. Narayana Reddi	A. D. Anakapalle	A. D. Chipurupalli
„ K. Suryanarayana	A. D. Chipurupalli	A. D. Salur
„ P. Y. Chintamani	A. D. under training Bobbili	A. D. Anakapalle
„ M. Vaidyanathan	A. D. Wheat Rust Control Scheme, Ootacamund	A. D. Coonoor
„ P. A. Venkateswara Ayyar	A. D. (on leave)	A. D. Rasipuram
„ V. M. Ramunni Kidavu	A. D. (on leave)	A. D. Omalur
Janab P. M. Sayeed Sahib	Asst. in the Coconut Scheme, Kasaragod	Asst. in the Coconut Scheme, A. R. S. Nileshwar
Sri S. D. S. Albuquerque	Asst. Coconut Scheme, Nileshwar	Asst. in Oil Seeds Section, Coimbatore
„ C. T. Ittyachan	Asst. in the Coconut Scheme, Coimbatore	Asst. in the Groundnut Scheme
„ M. V. Narasimha Sastry	A. D. Chodavaram	F. M. A. R. S. Guntur
„ V. Achutharamayya	D. A. O. Ellore	F. M. A. R. S. Samalkota

Leave

Name of officers	Period of leave
Sri N. Krishna Menon, Sub Asst. Entomology	Extension of l. a. p. for 2 months from 5-9-43
„ P. Somayajulu, A. D. Ramachandrapuram	L. a. p. for 30 days from 1-9-43.
„ G. Kameswara Rao, A. D. Dhone	Earned leave for 30 days from 14-3-43
„ S. V. Naidu, A. D. Markapur	Extension of leave on half average pay on m. c. for 2 months from 2-8-43

„ S. Bhima Raju, A. D. Chandragiri	Extension of l. a. p. on m. c. for 3 months from 17-8-43
„ N. Krishnā Pillai, A. D. Pollachi	L. a. p. for 2 months on m. c. from 10-8-43
„ C. Venkatachalam, A. D. (on leave)	Unearned leave on m. c. for 60 days from 28-7-43
„ M. K. Swaminathan, A. D. (on leave)	Extension of l. a. p. for 2 months on m. c. from 16-9-43
„ M. Damodara Prabhu, F. M. (on leave)	Extension of l. a. p. for 1 month from 28-9-43



TD. 5.

NURSING ORDERLIES OF THE BRITISH WOMENS AUXILIARY AIR FORCE

W. A. A. F. ambulance orderlies now fly in British ambulance 'planes, tending sick or wounded airmen and bringing them back from remote stations for hospital treatment. These women receive flying kit and flying pay. They have all volunteered for this special duty.

Picture shows: Two of Britain's W. A. A. F. nursing orderlies attending to an airman patient in an ambulance 'plane.