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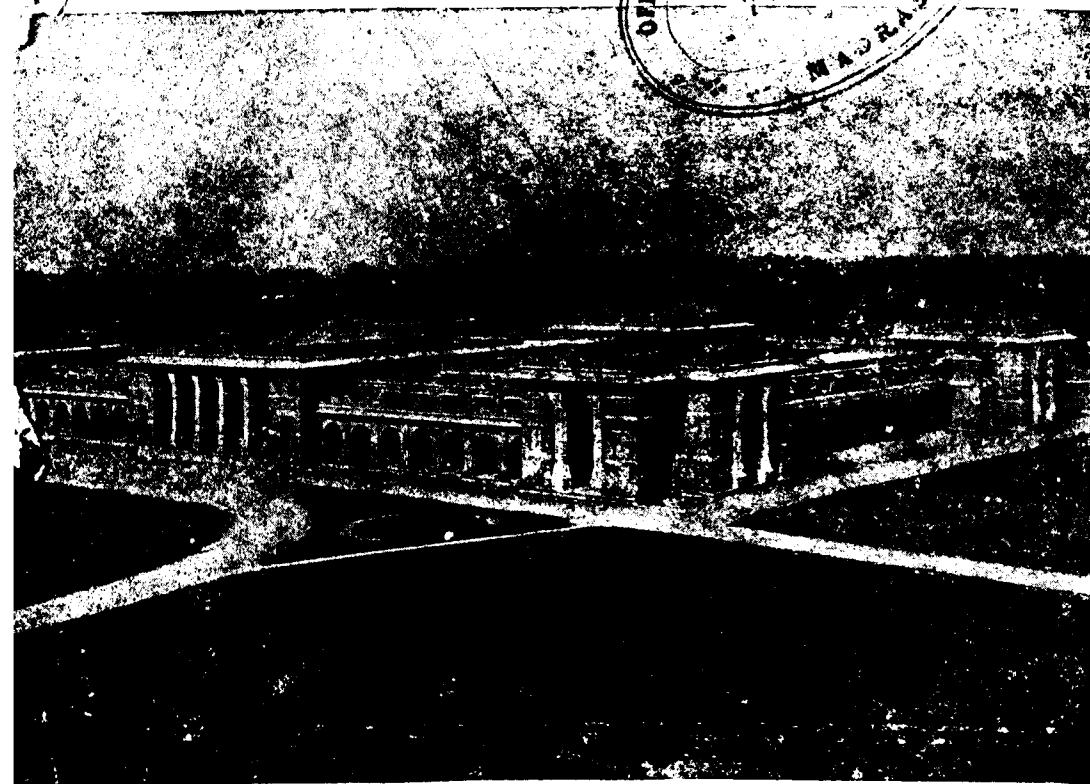
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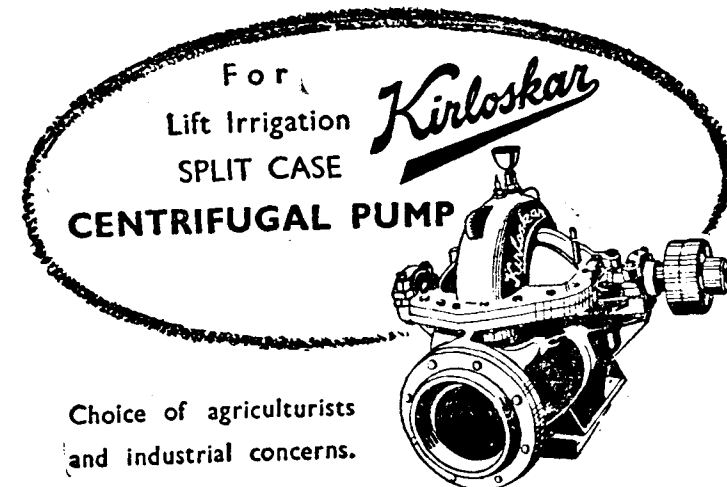
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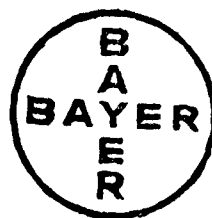
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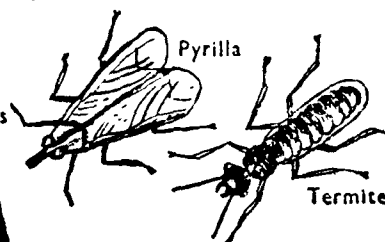
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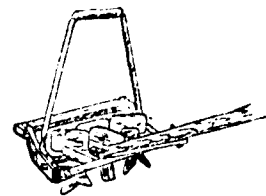
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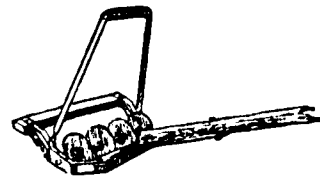
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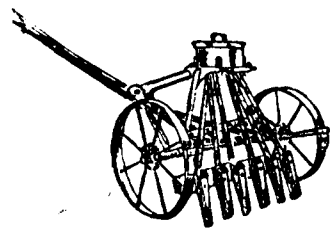
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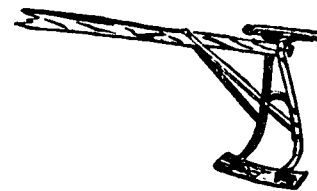
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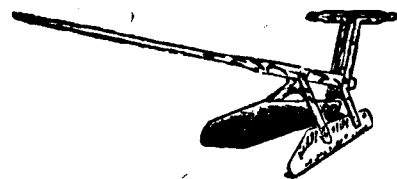
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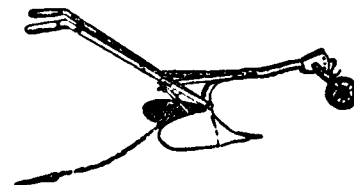
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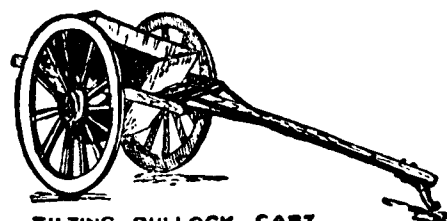
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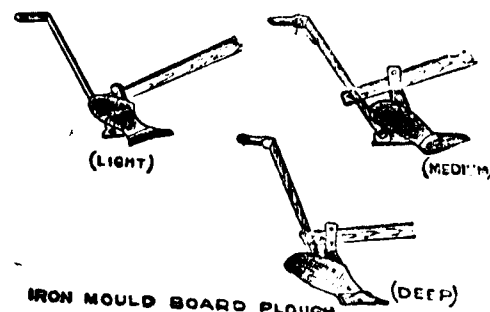
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Editorial

"What is your big idea?" is the question asked of the rank and file by the management of many a firm in the United States. Many useful suggestions for the improvement of the firm are thus culled out from the workers, resulting in enormous gains to the firm concerned. It is said that in a year 4,000 U. S. firms make a direct profit of 300 million dollars from the utilisation of the suggestions received from the employees. Today, this mode of tapping the lower rungs for ideas is well established and organised to a high degree in the States under the National Association Suggestions Scheme (NASS) and the suggestion system has come to stay in almost all enterprises of the United States. For, it is not always the top ranking men in any concern, be it Government or Private, that get the brain wave for the right thing. It is very often the smaller underlings that get the bell ringing in their brains for some top notch ideas and tapping this huge reservoir of creative ideas will always benefit not only the concern but also the country at large.

In India, except for a few concerns like the Ordinance Factories, the rank and file are never called upon to give ideas. Consequently, there is lack of interest and enthusiasm among the lower ranks. What is true of Industry is a hundred fold true in Agriculture. Many a Reform and Research Scheme is mooted at top levels without any suggestions being called for, from the actual tillers of the soil and the workers in the field. To draw out good constructive ideas from the lowest worker in the line, it is necessary to have the suggestion system well publicized and the worker made to understand that his ideas will get serious and impartial consideration. It is not, however, sufficient to

merely hang out a notice calling for suggestions, as this would not enthuse the worker to freely donate his big ideas. It is necessary to give an incentive by way of reward for really worthwhile ideas emanating from the lower ranks of workers. We have many Research Schemes, Extension Projects and Reforms planned out at higher levels and put to execution. If these commitments are chalked out after getting the suggestions and ideas from the rank and file of the workers in the particular field, the many short comings and later pitfalls could be avoided and the one Governmental objective, viz., *efficiency*, could be easily achieved. But, as pointed out already, worthwhile ideas will not be forthcoming unless the rank and file are assured of recognition with some award for the big ideas coming from them. These big ideas, as pointed by Virgil Moore of the Cynamide, are very often the simple and obvious, which the top ranks would have missed in their preoccupation with their multifarious duties.

Reorganisation of Agricultural Education in India

by

DR. T. M. PAUL,

Indian Dairy Research Institute, Bangalore

About 90 percent of the population of India is concentrated in the villages. Of this, over 80 percent is dependent on agriculture for its livelihood. So, about 75 percent of the total population of India is directly or indirectly living on agricultural operations. Besides, agriculture is the largest industry of the country and quite many of the other industries are dependent on agriculture. In spite of this paramount position agriculture occupies in the national economy of the country, little attention was paid to this industry till recently. During the days of foreign rule, agriculture was looked upon as a source of raw materials for the industries of the ruling country. That is how India had to be importing food even in normal times, in spite of its immense agricultural potential. Only after the beginning of the last war, when rice was not available in the exporting countries, attention was focussed on producing enough food within the country itself. Even after the war, world-food-shortage continued and internal supplies became more and more inadequate in India due to the continued increase in population, loss of agricultural land as a result of the partition of the country and the failure of monsoon during successive years. Even now, one cannot say that agriculture is given the place it deserves in our national life. However, it is gratifying to note that more and more people have come to realise the importance of agriculture to national well-being.

Much is being talked about the reorganisation of agriculture to enable the production of the entire food supplies needed in the country, within the country itself. The illiteracy and the ignorance of the ryots are the chief bottlenecks in increased agricultural production. The improved methods of production developed in our Research Institutions and taught in our agricultural colleges do not reach the actual tillers of the land who alone can put them into practice and effect any improvement in production. With this end in view various proposals are being made at different levels. Extension programmes, and community development programmes are being inaugurated in different centres of the country to improve the condition of the agriculturist. The improvement must be made at the lowest possible level—and this is possible only by reorganising agricultural education and popularising it in such a way that improved methods of agricultural practices will reach the doors of every farmer in India. With this object in view suggestions are made in this paper to reorganise the agricultural education to fit in with the needs of the country at the present moment.

Agriculture and animal husbandry are very much dependent on each other in India, so much so, one cannot be separated from the other. But this is not at all recognised by many people. Consequently agricultural colleges specialise in agriculture almost completely ignoring animal husbandry. The veterinary colleges which exist today impart instruction in the curative and preventive aspects of animal husbandry. The animal population of India is mainly composed of cows and buffaloes and hence dairy husbandry must be the centre theme of any training in animal husbandry. It is well known how much the welfare of our cows and buffaloes are dependent on agriculture and vice-versa. Therefore it is clear that land, agriculture, animal husbandry and dairy science cannot be separated from each other—one is complimentary to the other. Hence the need for any agricultural education to be well balanced in agriculture, animal husbandry and dairying. Any specialisation in one particular branch should be done after the degree stage only.

Just now, we have but few Agricultural Colleges giving instruction up to the degree standard. The minimum standard of admission is inter-science and the period of training is, three or four years, so much so, it takes nearly six years after matriculation for the training in agriculture. This is beyond the reach of the average agriculturist and hence the course has to be simplified if it is to become popular among the agricultural population. Institution of a diploma course of two years duration in agriculture and animal husbandry and dairying will be the only solution to meet the situation. These agricultural schools will be situated not in towns but in the rural areas. To start with, one school may be opened in each district. Lower secondary (either pass or failed) will be the minimum qualification for admission and the training will be in the local vernacular and concentrate equally on the practical aspects of agriculture, animal husbandry and dairying. Only children of agriculturists will be admitted to this course, so much so, they will be almost familiar with the current agricultural practices in the area. So, the training will concentrate on the improved methods of production in the three fields. No fees will be levied, but at the same time, production from the farms attached to each school will meet a portion of the cost of the training. After the two years of training, the diplomas will be awarded based more on the progress-report of each student than on any formal examination. These diploma holders will then mostly return to their farms in the villages. Some of them will be available for teaching agricultural subjects in all primary schools as per the basic education system or for extension work on the country side envisaged in the community projects. Even some of the lower jobs of the agricultural and animal husbandry departments will be open to them. In any case, these diploma holders are to form the back bone of all agricultural extension work in the country and without such an army of

trained workers in the agricultural and animal husbandry fields, it is not possible to improve the standard of agricultural production in the country.

A second stage in the reorganised scheme of agricultural education will be a degree course in agriculture laying equal emphasis on the theory and practice of agriculture, animal husbandry and dairying. Here, the minimum educational qualification for admission will be a pass in intermediate with Chemistry, Botany and Zoology. This course will extend to four years, and the degree will be awarded after a course of approved practical training. These colleges will also be situated in rural areas to give an actual agricultural bias to the training and also extensive farms will be available for practical training. Even here, the admission will be open to students with some aptitude for agriculture. These agricultural graduates will be required to fill the supervisory and lower gazetted posts of the agricultural departments.

A third stage in agricultural education will be the specialisation in any of the branches of agriculture, namely agricultural production, animal husbandry and dairying, after a four year degree course. Only one such post-graduate college will be needed in each province, where regular instruction will be given in the three different branches for two years. Simultaneously, each student will have to work on a problem and submit a thesis as part of his examination. On passing the examination, these post-graduate workers will be awarded M. Sc. (Agri.) degrees. These M. Sc., graduates will be experts in their own branches of specialisation and will be required to fill the superior posts of Agriculture department particularly research and teaching posts.

To put through this scheme of Agricultural education, it will be necessary to reorganise the agricultural department itself. Both the agricultural and animal husbandry departments will be combined under one Director of Agriculture with three joint Directors, each in charge of Agriculture Ani. Husbandry and Dairying. The reorganisation scheme of Agricultural education also will be placed in charge of the Director of Agriculture, so that all facilities for practical training will be available to the students. Of course the examinations at the 2nd and 3rd stages will be conducted under the supervision of the Universities.

The reorganisation of Agricultural education on the above lines will provide the necessary facilities for an agricultural extension service. In the reorganisation scheme to begin with, each district is to have an agricultural school with a farm attached. The farm will have all the three sections, agricultural production, animal husbandry and dairying. Side by side with the diploma course, short extension courses of 3 months' duration comprising all the three sections, or one month course in any section will be arranged for the benefit of the village farmers. During

there had been heavy rains and the residual potash would be inadequate. It was observed that application of potash fertilizers to nurseries at a convenient stage had a marked effect on seedlings growth.

Coconut nurseries are not generally manured as it is believed that the intrinsic qualities of the seedlings would be masked by extra nutrition due to manuring. However, nurseries raised in West-Coast where the rainfall is heavy need application of potash fertilisers to make available adequate quantity of potash for the satisfactory growth of the seedlings.

3. Intercultivation: Regular intercultivation (i. e. ploughing or digging with mammutty) is very necessary for coconut gardens as it has been proved at the Coconut Research station in Madras that it improves the yield of the trees to a remarkable extent. Conservation of soil moisture in the coconut soil is an important problem facing the coconut growers. Long periods of drought have been observed to affect the yield of coconut considerably. Studies made at the Central Coconut Research Station, Kasaragod have shown that the moisture content of the soil was more at all depths in the manured and intercultivated plot when compared to that of the "No manure, No cultivation" plot. It was also observed that the soil moisture went down to very low levels in the littoral sandy soil as the summer progressed. It is, therefore, very necessary to inter-cultivate the coconut gardens properly and regularly for increased production of coconuts. Recent experiments at the Coconut Research Station, Nileshwar have shown that by growing *Calapogonium mucunoides* as a green manure cum cover-crop in the coconut gardens the soil moisture is greatly conserved and the trees do not suffer much during the hot-weather period.

4. Manuring: Unlike in annual crops and other perennial trees the effect of manuring on the yield of the coconut is noticed only after a period of 2½ to 3 years since this period is required for the development of the nuts, from the primordial stage to full maturity. Therefore ordinary chemical methods to determine the requirements and choice of nutrients for application would take much time to yield results of practical utility. The technique of using Radio-active isotopes to study translocation of nutrients and the extent to which they are taken up and utilised by plants offers great scope for rapid estimation of the requirements of the coconut palm growing under varied conditions of climate and soil. Further the new method of spraying nutrients and micro-elements to induce better growth and correct deficiencies has opened a new field of investigation with regard to coconut. To study this aspect of nutrition, work on coconut has been taken up at the Central Coconut Research Station, Kayankulam. It was found that the thick cuticle nature of the coconut leaves does not help the full absorption of the nutrient sprayed and hence only softer and younger leaves will have to be treated in the

investigations. Better and quicker indications of the response to the treatments are expected by spraying the micro-nutrients on young seedlings.

Manurial experiments carried out in Ceylon have shown that Potash is a dominant requirement of the coconut palm. The husks and nut water from plots receiving potash show a content of this element significantly higher than those from plots receiving none. From the possibility of its use as a diagnostic, the nut-water potash has received particular attention. In the study of Potash accumulation in husk and nut-water carried out in Ceylon this method of potash estimation was adopted and it was found that the potash content of the nut-water increased linearly with the doses of potash applied. In recent times, tissue-test method has proved useful in the diagnosis of mineral element deficiencies in a variety of crop plants. At the Central Coconut Research Station, Kayankulam this method was tried in the case of coconut and it has been found very helpful in the estimation of major plant food ingredients and micro-nutrients contents in the leaves.

5. Pests and Diseases: (a) *Pests:* The most serious pests of the coconut palm are the Rhinoceros beetle, Red-palm weevil and Black-headed caterpillar. Though some effective methods of combating these pests have been recommended the unwieldy height of the trees and the large size of the plantations to be dealt with stand in the way of the control measures being adopted on an extensive scale by the coconut growers. Therefore quick-acting and practicable control methods would satisfy the growers to a great extent. The injection of Pyrocone E (1 per cent strength) into the crowns of infected palms by the gravitational method of Roach has been found very effective for the control of the Red-palm weevil pest. This method of control on account of its simple nature and deadly effect is becoming very popular among the coconut growers.

(b) *Diseases:* Among the diseases affecting the coconut palm the serious ones are Bud-rot, Stem-bleeding and Root-rot. Though the popular fungicide Bordeaux mixture has been found effective in the treatment of the major diseases of the coconut it is recommended for administration more as a prophylactic measure.

The new approach to plant disease control through internal immunisation and chemical cure has found success in the treatment of plants affected with vascular diseases causing wilts and bleeding and virus diseases. The possibility of curing the 'Root diseases' and the Leaf-rot disease of coconut by injecting chemicals has been explored at the Central Coconut Research Station, Kayankulam. Injection through cut ends of matured roots has been found very effective in coconut palms. Hence the chemical control methods offer great promise in the treatment of diseases like the Bud-rot, stem-bleeding and Root-rot of coconut.

Scientific advancement is quite essential for national progress. For an agricultural country like India it is much more necessary. The recent advances in scientific work stated above hold promise of giving rise to practical developments which would be of great interest to those engaged in coconut growing and the coconut industry in general.

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4. 'Coconut Cultivation' by C. M. John.

Studies on 'Anthracnose' of French Beans

by

A. VENKATA RAO

Mycology Section, Agricultural Research Institute, Coimbatore

Introduction: *Colletotrichum lindemuthianum* (Sacc. and Magn.) Bri. and Cav., which is responsible for the disease known as 'anthracnose' affecting french bean (*Phaseolus vulgaris* L.), Scarlet runner bean (*P. multiflorus* L.) Cowpea (*Vigna catjang* L.) and *Dolichos lablab* L.) enjoys wide distribution almost in all countries. But whether the disease on these hosts is due to the same fungus or to different races of it, or to distinct but related species has not been definitely established (Butler and Jones, 1949).

In this state 'anthracnose' of french bean is prevalent on the Nilgiris and the Palnis.

In India 'anthracnose' of *D. lablab* has been reported by Butler (1917). Subramaniam (1953) has described the same from Coimbatore and has identified the pathogen as *Colletotrichum lindemuthianum* (*Glomerella lindemuthianum*).

In order to determine whether the pathogens causing the two diseases in this State belong to the same species, investigations were undertaken and the results of these studies are presented in this paper.

Materials and Methods: The fungi were brought into pure culture from fresh specimens of infected host material obtained from the Nilgiris and Coimbatore respectively by the single spore isolation method. The agar media employed in the studies were prepared according to Riker and Riker (1936). The plants for inoculation studies were raised from selected, healthy seeds. Pods used for inoculation were surface sterilised and kept inside sterilised moist chamber. Inoculations on host plants were carried out by spraying spore suspension or by placing bits of culture on them. The inoculated plants were covered with alkathene bags or with bell jars to maintain high humidity. The isolate from french bean was maintained in the refrigerator at 60°F.

Experimental Results: The spores of the fungus from *Dolichos lablab* exhibited abundant germination even at the laboratory temperature in distilled water but the spores of the fungus from french bean (*P. vulgaris*) did not germinate in distilled water at laboratory temperature (82°F to 85°F). The germination of the spores from french bean was tried in various media under different temperature conditions and satisfactory germination was obtained only in french bean agar at 60°F. Even at this temperature it took 72 to 76 hours for the germ tubes to develop. The spores from *D. lablab*, germinated freely within three hours at laboratory temperature.

As a result of these studies it was found that for maintaining the culture of the french bean isolate, the culture plates and the culture tubes had to be kept inside the refrigerator at 60°F., while the cultures of the other isolate could be maintained at the laboratory temperature (82°—85°F). The former isolate made satisfactory growth only on french bean agar and not on oats or Richards' agar, while the isolate from *D. lablab* grew well on all these media. A comparative estimate of the growth and sporulation of the two isolates on french bean agar at 60°F and 82°F was made and the results are given below.

TABLE I.

Isolate	Diameter of growth in 9 days (m. m.)		Sporulation	
	60° F	82° F	60° F	82° F
Frenchbean isolate ..	31	10	Numerous acervuli present	Growth negligible
<i>Dolichos lablab</i> isolate ..	21	71	Sporulation scanty, visible after a week, Growth poor.	Numerous pink acervuli, sporulation commenced in 3 days.

It is evident from the data that the french bean isolate thrives under low temperature while the *D. lablab* isolate requires higher temperature for satisfactory growth and sporulation. This is in keeping with the natural distribution of the two isolates.

Pathogenicity: To determine the relative pathogenicity of the of the two isolates inoculations were carried out on the stem of *D. lablab* Horsegram (*D. biflorus*), Cowpea (*V. catjang*) and pods of french bean (*P. vulgaris*), *D. lablab* and cowpea. The inoculations were carried out in two series, one at the atmospheric temperature under green house condition while the other was made on hosts kept at 60°F. in the refrigerator. It was found that the french bean isolate infected only the pod of french bean in the series kept at 60°F. Positive infection was not obtained even on french bean pods kept at green house temperature. The isolate from *D. lablab* infected only the stem and pods of *D. lablab* in the series kept in the green house. There was no infection at 60°F.

Measurements of Conidia: The spores of the two isolates obtained from fresh host material were measured to find out whether any differences existed between them. No difference could be observed either in the shape of the spores or in their size and they exhibited similarity in spore characters. The following measurements were obtained:

French bean isolate — $16 \times 6\mu$ (12 to 25×3 to 6μ).

Dolichos lablab isolate — $17 \times 6\mu$ (12 to 22×3 to 6μ).

Discussion: The studies have shown that though there are no morphological differences between the isolates, considerable differences are exhibited in their pathogenicity and cultural characters. The isolates are found capable of infecting their own hosts only and appeared to be highly specialised in their parasitism. Many races are known to exist in *Colletotrichum lindemuthianum* exhibiting differences in their capacity to infect different varieties of french bean (Butler and Jones, 1949). The optimum and maximum for growth lie between 22 to 23°C. and 30 to 31°C. respectively, but records exist where the maximum is stated to be 33 to 35°C. Here again it is evident that different races exhibit differences in their temperature relations. The differences exhibited by the two isolates under study go to show that there exist in this species low temperature races and high temperature races each being confined to certain climatic conditions. Ramsay and Wiant (1941) state that humidities of about 95% at temperatures between 64°F. and 65°F. are favourable for germination of the spores and penetration on hosts by *C. lindemuthianum*. This is more or less in agreement with the results obtained with the french bean isolate. The other isolate is obviously favoured by higher temperature for germination, growth and infection.

It is considered that though there are differences in the pathogenicity and cultural characters they are found to be morphologically alike and therefore belong to the same species.

Summary: The fungus *C. lindemuthianum* isolated from french beans is observed to be a different strain from that affecting *D. lablab*. The french bean isolate failed to infect *D. lablab*, Cowpea and Horsegram and requires an optimum temperature of 15°C. for its development and infection.

Acknowledgement: I am grateful to Sri, T. S. Ramakrishnan, Retd. Mycologist and Sri. M. Kandaswamy Government Mycologist in-charge for their valuable guidance and encouragement given to me in carrying out these studies.

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Grapevine Diseases and their Control

by

T. S. RAMAKRISHNAN & N. V. SUNDARAM

Grapevine is cultivated in a number of districts in this state. Madura leads in the acreage and the vines are grown in a number of taluks of this district. Outside Madura district, grapevine cultivation is prevalent to a limited extent in Tirunelvely, Tiruchirapally, Coimbatore, Salem and S. Arcot districts. The total acreage in this state may not exceed 500 acres. The variety commonly cultivated is known as "*Pachai dhakshi*" in Tamil. Some growers however have introduced the seedless Australian varieties. 'Blackprince' and another purple fruited variety are also grown to some extent. This crop is highly remunerative but needs careful attention in pruning and in the control of the diseases which form the limiting factors in the successful production of the fruits. The chief diseases affecting the crop and the methods of controlling them are described in the following pages.

Downy mildew: This disease is caused by the fungus *Plasmopara viticola* (Berk. & Curt.) Berl. & de Toni, which is an obligate parasite. It has been recorded from all countries where grapevine is cultivated and is one of the most serious diseases attacking this crop. In this state also it has been noticed in all the districts where the vine is grown. It occurs during the rainy season and when there is heavy fall of dew. During the summer months however it is not prevalent. Under favourable weather conditions it spreads very rapidly and may destroy the entire crop in a short period.

The fungus infects the leaves causing yellowish irregular spots on the upper surface. On the corresponding lower surface a white downy growth made up of the conidiophores and conidia of the fungus develops. The fungus mycelium itself is internal and spreads inside the affected tissue. The name of the disease is derived from the appearance of the growth of the fungus on the surface. The conidia are disseminated easily by wind. The large number of conidia produced by this fungus is responsible for the rapid spread of this disease. These conidia germinate under humid conditions and cause fresh infection. Many of the leaves become infected and the disease spreads to the young shoots causing their eventual drying up. The affected portions of the leaves turn brown and defoliation occurs. In one week the disease may spread throughout the garden. Besides affecting the leaves and stem, young inflorescences and fruit bunches are also invaded resulting in their shrivelling and drying. When half ripe fruits are infected they shrivel up completely and all the berries in the bunch turn brown and leathery. Considerable loss of the crop is caused and in some seasons the entire crop may be destroyed. (Plate I, Figs. 1, 2, 3).

The oospores (perfect state) of this fungus have not been observed in this state. The survival of the disease from season to season is brought about by the persistence of the fungus in the vines, which are left unpruned or which are pruned at varying periods. Even in the vines which are pruned at the same time, the fungus persists as dormant mycelium in the buds or the shoots.

Control: The control of this disease depends on the strict observance of plant sanitation methods and protection of the vulnerable parts of the vines at critical periods. For this purpose a regular schedule of operations has to be followed. Some growers leave the vines which are infected without pruning while other vines nearby are pruned. Other growers stagger their pruning operations so that the vines in all stages of growth are found in the same garden. These are conducive to the continuance of the disease as the unpruned vines will form a ready source of infection to the new shoots that grow out of the pruned ones.

As soon as the vines are pruned it is advisable to wash the stem and branches with one per cent Bordeaux mixture so that the pathogen on the surface may be destroyed. All the prunings are to be destroyed and should not be allowed to remain in the garden. The new shoots that grow out will need protection and this can be achieved by spraying them with the same fungicide about 3 to 4 weeks after pruning. The young shoots may be adversely affected in some varieties by the use of one per cent Bordeaux mixture. In such cases it is desirable that the strength of the mixture is reduced to 3:3:50. A third spraying will be necessary before the opening of the flower buds. After the fruit set, the young bunches are again to be protected by spraying one per cent Bordeaux mixture. Depending upon the weather conditions one or more further sprayings may be necessary to protect the growing bunches. At Pattiveerampatty, in some seasons the vines have received as many as eighteen sprayings during one season. During the course of the trials conducted at Ganguvarpatty it was found that 'Cupravit ob 21' at the rate of 1 lb. in 25 gallons of water was also effective in controlling this disease. There is no need to add adhesives like soda and resin or casein to the fungicides as the rainfall in these areas is not heavy enough to wash away the fungicides. During the trials no adhesives were added to either Bordeaux mixture or Cupravit and the disease was completely kept in check. The addition of resin and soda as adhesive as practised by some of the growers in Madura district actually resulted in the infestation of the bunches by mealy bugs. It has been reported that vines which are not adequately supplied with nitrogenous manures are more readily affected by the downy mildew and therefore it appears that application of adequate quantities of nitrogenous manures in the beginning of the season will be useful in invigorating the vines and reducing the damage caused by this disease.

Powdery Mildew: This disease is also widespread being prevalent all over the world. It is caused by the fungus *Uncinula necator* (Schw.) Burr. This fungus produces a powdery white growth on both sides of the leaves and on young shoots. This is made up of the mycelium and the conidia of the fungus. The growth is external but haustoria are sent into the epidermal cells to obtain nourishment. As a result of infection, the leaves may turn pale and sometimes they curl up and are shed. Infection of the flowers results in their destruction and prevention of fruit set. The fungus infects the berries also enveloping them with a white powdery coating and causing them to crack and fall before they mature. Under humid conditions the cracked fruits are easily invaded by other saprophytic fungi which help in the destruction of these berries. Dark specks may develop on the rind of the berries at the infection spots when the disease is mild. This disease occurs more during the drier months when warm sultry conditions prevail and the sky is overcast. In some years it causes heavy damage. In America and Europe the fungus causing the disease has been known to produce the imperfect (conidial) state and the perfect (perithecial) state. The perithecia contain asci and ascospores and appear as dark brown dots in the mildew growth. They help in the survival of the fungus from year to year. But in this state the perfect state has not been observed so far. The fungus survives as dormant mycelium on the shoots or in the buds from one season to another. (Plate I, Figs. 4, 5).

Control: Powdery mildew is easily controlled by dusting finely powdered sulphur on the leaves and fruits. Since the disease is prevalent only during the drier season, dusting of sulphur will be necessary for the fruits developing during this period. Though Bordeaux mixture spray will be efficient in controlling the mildew on the leaves it has been the experience that for the protection of the bunches against this disease, sulphur is more effective. Further this fungicide controls also thrips damage to the fruits. Vines must not be over crowded and thinning of leaves may be helpful in improving ventilation and thus avoiding conditions favourable for the spread of the disease.

Anthraxnose: This disease is prevalent in Madura and Salem districts especially on the 'Pachai drakshi'. It is caused by the fungus *Elsinoe ampelina* Shear. The imperfect state of the fungus (*Sphaceloma ampelinum* de Bary—*Gloeosporium ampelophagum* (Pass.) Sacc. has been observed in this state. Depressed cankers are formed on the stem and twigs. The growth of the young infected twigs becomes arrested and they remain short, eventually drying up. Brown spots with dark coloured margin develop on the leaves. Severe damage is caused to the berries on which circular brown sunken spots with dark brown margin develop. Based on the appearance of the spots on the berries the disease is commonly known as 'bird's eye disease'. One or more spots

may form on each berry. The berries later shrivel and dry up. Entire vineyards may be damaged. The fructifications of the imperfect state of the fungus appear on the spots as minute raised dots. (Plate II, Figs. 3, 4, 5).

The pathogen survives in the cankers on the stem and causes fresh infection of the new shoots and berries. The damage caused by the disease is very severe in Krishnagiri where the growers do not usually adopt any control measures. Grapevine cultivation in this tract is dwindling on this account.

Control: It is very difficult to keep this disease in check unless the methods of control are adopted in a systematic manner. It has been stated earlier that the fungus survives in the cankers on the stem. All diseased twigs are to be removed. Some old cankers on the main stems may escape detection and may serve as sources of infection. These should be inactivated. For this purpose when the vines are pruned, the stem should be painted with a solution of ferrous sulphate in commercial sulphuric acid (5 pounds of ferrous sulphate, half pint of sulphuric acid in one gallon of water). This should be carefully handled. The prunings should be burnt or buried deep in the soil so that the fungal spores from these may not infect the new shoots. Further, the new shoots and the young bunches should be protected by repeated sprayings of one percent Bordeaux mixture at intervals of 2 to 3 weeks depending on the weather conditions.

Black rot: This disease has been observed in recent years in Madura district. It is severe on certain purple varieties and is less common on the seedless Australian or 'Pachai drakshai' varieties. It is caused by the fungus *Guignardia bidwellii* (Ell.) Viala & Rav. In Madura district, the infection is more on the berries. The symptoms appear usually when the berries are half mature. Circular spots develop on the berries and minute black dot-like pycnidia are formed in these areas. With great rapidity the disease spreads. The berries shrink in size and get darkened. Whole bunches become readily affected. (Plate II, Fig. 1, 2).

Control: This disease is prevalent in most of vine growing countries of the world. It was not recorded from this State till now and therefore must be considered to have been recently introduced into the country. Since the damage occurs on the maturing bunches it is necessary that these should be protected against infection from the time of fruit set. Bordeaux mixture has been found to be very efficient in controlling this disease. One or more sprayings on the young bunches will prevent infection. But this fungicide may leave deposits on the berries when sprayed on maturing bunches and thus reduce their

commercial value. Other copper fungicides like 'Cupravit ob 21' may be used with good effect. These do not leave any visible deposit and can always be used for spraying the bunches.

Rust: Rust of vine caused by *Phakopsora vitis* Syd. has been recorded only from Salem, Nilgiris and Coimbatore districts. It is usually confined to the variety 'Black prince'. Besides infecting the cultivated vines the same fungus has been observed on some of the wild relatives like *Vitis* sp. *Ampelocissus arnottiana* Planch and *Cissus* sp.

The fungus produces numerous orange coloured sori on the lower surface of the leaves. In severe cases of infection the entire leaf surface is covered by the sori. Defoliation also takes place. The uredial state alone has been observed in this state. The disease is common during the colder months of the year (November to February).

Control: Repeated dustings with finely powdered sulphur have resulted in keeping the disease under check. Since the rust is confined to one variety only it will be necessary to adopt this treatment to that variety alone.

Brown Leaf Spot: This is a minor disease caused by *Cercospora viticola* (Ces.) Sacc. and is prevalent usually in neglected vineyards during the months of July to December. Dark brown angular spots are formed on the leaves and young shoots. The clusters of conidiophores and conidia appear as black dots on the spots. In some instances the young shoots dry up as a result of the infection. High humidity favours the spread of the disease. The perfect stage of the pathogen has been observed in America and is named as *Mycosphaerella personata* Higgins. This has not however been recorded in this state.

Control: Proper manuring will result in the vigorous growth of the vines and such vines are not usually infected. The protective spraying with copper fungicides recommended for the control of the other diseases will prevent this disease also. As a matter of fact the disease has not been observed in vineyards receiving the normal spray schedule.

General: It has been the experience in this state that one or more of the above mentioned diseases affect the vines at the same time and therefore a comprehensive method of treatment will have to be adopted in controlling them all. Based on the results obtained in the different districts the following schedule has been drawn up for adoption in the areas where anthracnose and mildews are prevalent at the same time.

1. **On pruning:** Swab the stem with the solution of ferrous sulphate in sulphuric acid. This need not be done in areas where anthracnose is not prevalent but may be substituted by Bordeaux mixture

wash. The cut ends of the vines are to be protected by painting with Bordeaux paste.

2. **Two to three weeks later:** Spray 3:3:50 Bordeaux mixture or Cupravit ob 21. Complete coverage of the leaves and shoots should be aimed at. Unprotected areas will serve as places of entry of the pathogen. Some varieties of grapes are scorched by the use of one percent Bordeaux mixture at this stage. Therefore a weaker mixture (3:3:50) is recommended for use at this stage.

3. **Before flower opening:** Spray Bordeaux mixture one percent (5:5:50) or Cupravit ob 21. In case the weather is dry, sulphur dusting may be carried out. Never spray or dust when the flowers are open.

4. **After fruit set:** Spray one percent Bordeaux mixture or Cupravit ob 21.

5. **On young bunches:** Dust sulphur if the weather is dry. Under humid conditions spray Bordeaux mixture or Cupravit ob 21. One dusting with sulphur on very young bunches is always beneficial.

The necessity for further sprayings will depend upon the weather conditions. If humid weather persists or heavy dews or rains are prevalent or forecasted further spraying of the bunches and shoots will be necessary.

All prunings of diseased materials should be carefully collected and destroyed either by burning or by deep burial in the soil.

Sometimes yellowish mottling of the leaves is observed. This is a sign of lack of availability of zinc salts to the vines. It may be rectified by mixing 1 to 2 lb. of zinc sulphate in 50 gallons of Bordeaux mixture or other copper fungicides used for spraying the foliage. Bordeaux mixture spray in the later stages when the bunches are maturing may leave stains on the fruits and thus affect their market value. Later sprayings may be carried out with Cupravit ob 21 which does not leave a visible stain on the fruits.

The diseases are usually spread to new plantations through the dormant mycelium in the cuttings selected from diseased gardens. Therefore care should be taken to select the cuttings from healthy gardens.

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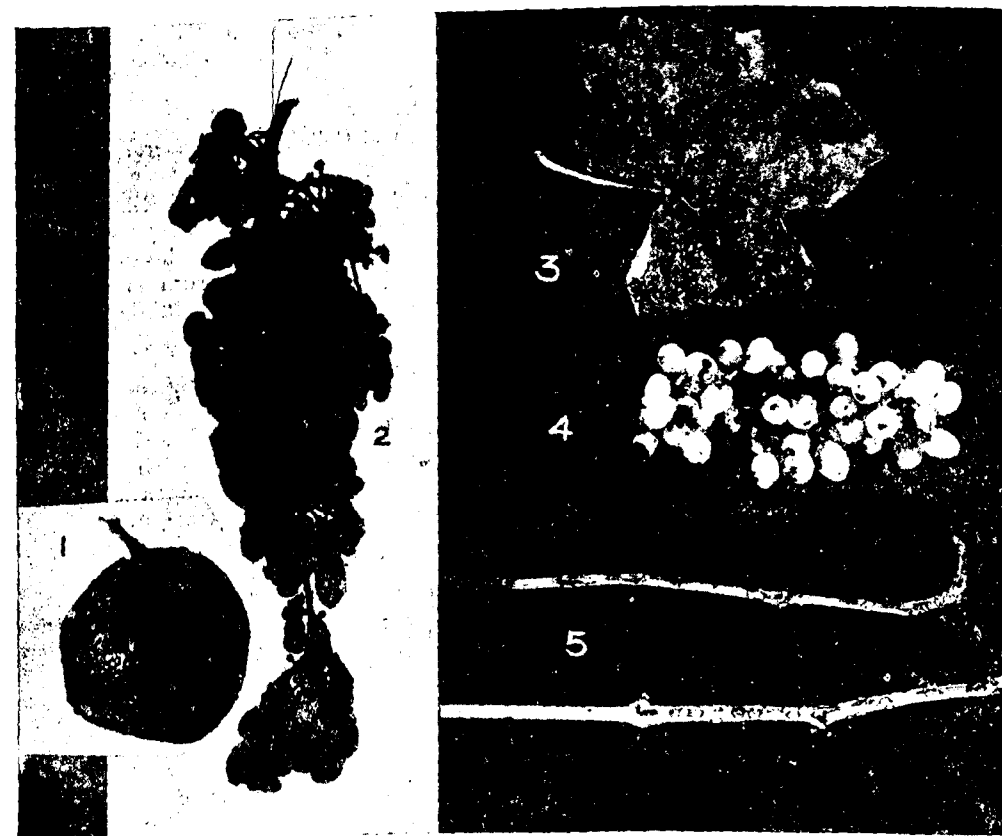
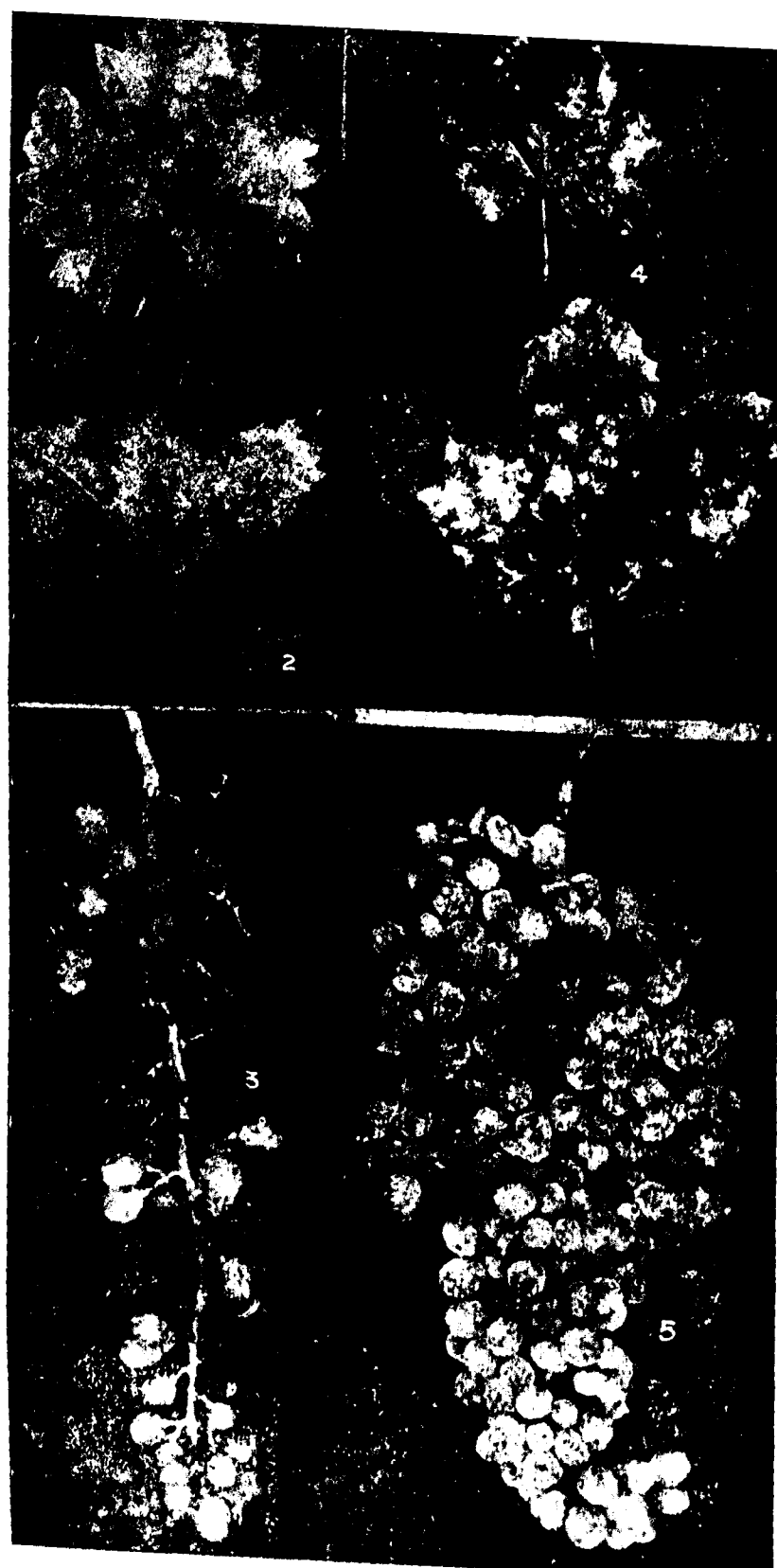


PLATE II

EXPLANATION OF PLATES

PLATE I. FIGS. 1 — 3: *Downy mildew*: (1) Upper surface of an infected leaf, (2) lower surface of an infected leaf showing the downy growth of the fungus, and (3) an infected bunch.

FIGS. 4 & 5: *Powdery mildew*: (4) Infected leaves, and (5) an infected bunch.

PLATE II. FIGS. 1 & 2: *Black rot*: (1) An individual infected berry showing the pycnidia (enlarged), and (2) an infected bunch.

FIGS. 3 — 5: *Anthracnose*: (3) An infected leaf showing the spots, (4) an infected bunch, and (5) severely affected canes.

A Retrospect

by

W. ODONGO OMAMO,

(Scholar from Kenya, studying at the Agricultural College, Coimbatore)

Four years have elapsed since the birds and butterflies of Bharat and the twinkling stars of the East welcomed me and quickened my pace to tread upon the holy lands that have borne and witnessed the great heroes of peace. I wondered at the lands that have from time immemorial, fed mankind with milk and honey—the sacred lands of Rama and Sita.

In person, have I witnessed the Punjabi Farmer toiling in the processing of his wheat at the height of summer when the shade temperature touches 118°F. Singularly have I been rewarded with the exemplary tenacity of the South-Indian ryot, who armed with the sickle, the mammatti, the handhoe and the country plough manages with the help of cows, bullocks and buffaloes to tickle the motherland to laugh with the harvest. The illustrious farmers of Tanjore, Malabar, South Kanara and Coimbatore, for example, and the selfless tenants and mazdoors as a whole, cannot but flood my heart with the melodious tune of the farmers of yore, who sang thus:—

"A little land to till,
A little barn to fill,
A little girl to marry,
Give me, give me,"

Yes that has been the India of my sojourn during the course of my studies here.

But now when I cast my eyes across the Arabian Sea and spot out the petty farmers of Kenya, eking out existence in a land that is second to none in offering possibilities for Agricultural development, when I now put on the "glasses" and look at the great River Valley Projects of India and then focus on the numerous untamed rivers of Kenya, chuckling and roaring, rolling and tumbling and girdling the countryside with threads of silver; when I recollected with fear, the teaming insect pests and fungal diseases that inflict material losses to the farmers year after year, and when I view the economy of Kenya and detect the important role Agriculture has to play in the economic uplift of the country, I feel it my duty to recommend to technicians, who take pride in the betterment of Agriculture the world over, to cast towards the realisation and enhancement of Agricultural Production in Kenya. May I for one use my influence with our College to appeal in particular to the Agricultural workers of South India, to try earnestly to cross over and witness the enchanted valleys, scrublands, savannahs and highlands of Kenya, to cross over and bathe in the fresh waters of the great Victoria Lake and smile with the perpetual snows of Mount Kenya and Mount Kilimanjaro, to cross over and diffuse into the Multiracial Society of ours, to cross over and ennoble Agriculture, nay, to cross over and serve humanity.

Research Note.

An Abnormal Fruit of Apple (*Pyrus malus*)

The genus *Pyrus* is characterised by the terminal clusters or corymbs of flowers which are epigynous, pentamerous and with syncarpous ovaries. The apple (*Pyrus malus*) has also pentamerous, pinkish flowers which are always borne in terminal clusters.



FIG I

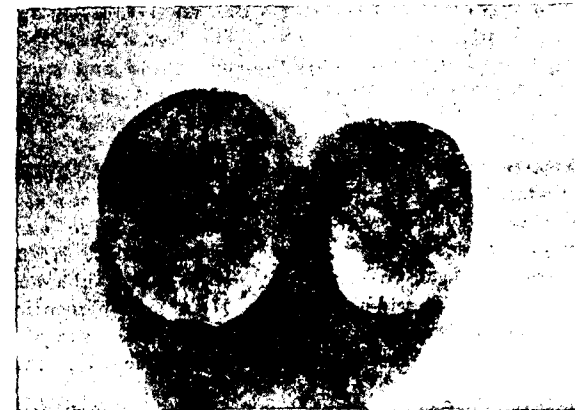


FIG II

In one of the varieties of apple, viz., Winterstein, an abnormal fruit in which two fruits had fused together, was noticed. (Fig. I) One of the fused portions was slightly smaller than the other. The fruits had fused together even in the early stages as evidenced by the presence of a thick stalk which is a fusion of the pedicels of two flowers. The examination of the cross sections of these fused fruits revealed five segments each representing the five celled nature of ovary in tact (Fig. II) showing further evidence that this a clear case of fusion of two individual flowers at the very early stages itself and that it is not as a result of the freakish development of the carpels of single flower.

Such abnormalities has not been noted in apple as far as the author is aware. No definite causes could be put forward for this occurrence.

Raj Bhavan, Ootacamund,
January, 1955.

V. SAMPATH.

GLEANINGS

Making Eggs last longer: Lime water Treatment: Villagers engaged in the egg trade suffer heavy losses, especially in the hot weather, due to the eggs going bad in transit. This happens because of the development of the embryo inside them. Eggs will not go bad as quickly if they are treated with lime water, if has been found at the Indian Veterinary Research Institute, Izzatnagar. Lime water is prepared by mixing freshly slaked lime with plenty of water diluting it to form a thin white wash. Stirring it frequently for two or three days and then pour off the thin milk of lime suspension. Eggs are kept completely emersed in earthen-ware or similar containers holding the thin liquid. The excess lime which settles down to the bottom will serve to keep up the strength of the solution. Water is added as it is lost by evaporation from time to time and the eggs are kept completely submerged. By this method eggs will remain good in Northern India for up to four months in the winter and up to about ten days in the summer, depending upon the intensity of the heat. The shell pores are sealed in eggs stored for a day in lime water. This improves keeping quality.

[ICAR Farm News Release No. 24]

Tobacco seed need not be wasted: Profitable utilization by farmers: Research has found many uses for tobacco seed which is generally allowed to waste. India annually produces about 5,000 tons of this seed. Among some of the new uses, Research has shown that if ground into fine paste a good cattle feed can be prepared out of tobacco seed. The feed does not contain nicotine or any other harmful substance. Tobacco seed oil, like the seed, can be used for culinary purposes and as a semi-dry oil for paints and varnishes. The oil is better than linseed oil because it does not turn yellowish on keeping. The oil burns readily, giving a mild and smokeless light. It also is a deterrent, to a small extent, to white ants. The oil cake is cheaper than other cakes. It is good as a feed for cattle and horses or for manuring sugarcane or rice. Like the seed, tobacco dust and waste have been shown to be useful in other ways. The dust when applied to the tobacco crop over a basal dose of groundnut cake increases yield and makes the crop mature early. Applying the stem dust to the field increases the organic matter in the soil.

[ICAR Farm News Release No. 25]

Planning Potato: Right size of Planting Material: Experiments at the Indian Agricultural Research Institute, New Delhi, show that the bigger the size of the potato tuber used in planting, the lower is the percentage of large-sized tubers produced. This behaviour of the potato can be used to profit. If, for example, the crop is being grown for seed purposes, where big-sized tubers are not required, seed tubers of a bigger size should be planted. If a greater percentage of big-sized tubers is desired in the produce, seed tubers of a comparatively smaller size should be planted.

[ICAR Farm News Release No. 28]

Best Results with Hatching: Points in selection of Eggs: Poultry keepers will have to pay sufficient attention to the selection of eggs for hatching, if they want the best chickens. For improved breeds, setting eggs should not be more than two ounces in weight each. The eggs should be of a good regular oval shape. Eggs of an abnormal size or shape, too pointed or round, or otherwise not symmetrical should be avoided. A simple test to find out whether the eggs selected are sound would be to tap two eggs together. If any egg is weak or has a cracked shell, it will produce a dull sound. Dirty eggs should be avoided for hatching. If a dirty egg is otherwise sound, it should be cleaned with a knife or stiff brush and not by washing. Eight to ten eggs are a convenient number for setting under Dosi hens. Fresh eggs should always be used and they should be stored in a cool

and somewhat moist atmosphere. In the winter or in the hills, eggs can be stored for seven to ten days and in the plains for three or four days.

[ICAR Farm News Release No. 27]

Select your own seed: Better seed leads to higher maize yield: Maize, like other crops, yields better if selected seed is used for sowing. Experience in maize cultivation on research farms shows that selection of seed is best done when the crop is still in the field. Large sized, well filled cobs should be selected from plants bearing more than one good cob. Only healthy plants growing under normal conditions, and not such as those growing near water channels or on the borders. Cobs should be selected from plants bearing them at a height of three to four feet above the ground. If cobs are borne higher, plants are liable to lodge, and if too low, wild animals will damage them. In unirrigated areas, plants with narrow leaves should be preferred while for irrigated lands board-leaves be selected. After the cobs are selected, they must be thoroughly dried in the sun before storing. Shelling at the time of sowing should be done by hand, and not by beating them with sticks.

[ICAR Farm News Release No. 29]

Oil and Fodder from Safflower: As much as a ton of oil seed per acre has been harvested from safflower crops. Apart from the commercial value of the oil, the residue of the seed is useful stock food, rich in proteins, and the plant itself can also be used as fodder for sheep and cattle. So far no serious pests have been known to attack the plant in Australia, and it also has a greater drought resistance than most other economic plants.

Better Pastures for Cattle: A feature of the increasing interest in Australia was that graziers were incorporating legumes in their pastures. By including legumes the carrying capacity could be increased by two-thirds. Flinders grass had shown a remarkable response after it had been lightly cultivated. Up to three tons of Flinders grass hay had been harvested from the stands compared with the usual 15 cwt. On irrigated areas in the Burdekin district, carrying capacity had been doubled and it was possible to grow and fatten double the quantity of cattle and to put bloom on them in from two to three months.

Seaweed as stock food: Seaweeds common to the Australian coast could become a valuable stock feed, the seaweeds compare well with land plants as a source of nutriment for they contain a high proportion of carbohydrate, though their protein is less easily used than animal protein. They are valuable sources of minerals and vitamins, an important contribution to the animal diet, and pigs, sheep and horses can benefit from the inclusion of seaweed meal (approximately 10 to 20 per cent) in their food. Poultry food trials have been encouraging, but more than 10 per cent of the meal upsets the mineral metabolism of the birds. Trials in Scotland suggested that cows find seaweed meal rather unpalatable, but when it was accepted there was a positive response in the fat content of the milk.

In Australia the giant brown seaweed *Macrosystis pyrifera* should be particularly suitable for harvesting commercially. In Tasmanian waters it is estimated that, on the basis of three harvests a year, a minimum of from 35,000 to 44,000 tons of air-dried weed could be obtained from the 30,000 acres of sea-beds already surveyed.

[Australian Agri. Newsletter No. 461]

Maize needs heavy manuring: Placing of Fertilizers gives better yields: Maize needs heavy manuring to yield well. If the land is moderately fertile, 250 to 300 maunds of farmyard manure should be ploughed in three to four weeks before sowing the seed. Good results are obtained when 100 to 150 lb. of ammonium sulphate is applied as top dressing when plants are nearly a foot high. If farmyard manure is in short supply, use a mixture of one maund of ammonium sulphate

and one maund of triple superphosphate for every 50 maunds of the manure in shortage. This mixture is best applied about two to two and half inches below the seed row at the time of sowing. This can be done by tying a metal tube (*para*) behind the country plough, and dropping the fertilizer uniformly through the tube. Experiments have shown that this method gives better results than when fertilizers are broadcast the usual way. [ICAR Farm News Release No. 31]

Marble Disease Kills Cardamom: Experience points to effective control measures: Farmers growing cardamom are familiar with the marble or *Katte* disease which is very destructive. When the disease appears continuous streaks running from the midrib to the margin of the leaf are seen. In older plants, the disease reduces the shoots producing the fruits and the tillers so that within a year the crop becomes useless. Experience shows that the best way of eradicating the disease is to completely destroy all old and diseased plants, rogue out diseased plants from the plantation at regular intervals and transplant healthy seedlings raised under disease-free conditions. This, however, it is pointed out, can be done successfully only if all farmers extend their full co-operation in the work.

[ICAR Farm News Release No. 32]

Flat sowing has advantages: Simpler way of Planting Potatoes: The common practice of sowing potato in ridges is laborious and expensive. Flat sowing gives as good results as ridge sowing. This is done by opening the furrows with a country plough or with a horse hoe if fertilizers are to be applied, and then two planking to cover the seed. Right spacing and straight furrows are, however, essential for intercultivation. Hoeings can be done cheap with horse hoe or bullock cultivator. Hilling or earthing up can also be done in the same way. Earthing up, however, should be done at the right stage of the crop. Done too early it will bury young plants and done too late, it will damage shoots which have grown too long. For this operation, working a horse hoe first and a ridge plough next have given good results.

[ICAR Farm News Release No. 33]

Pest-Free Orange Crop: Systematic removal of Affected twigs recommended: Farmers growing mandarin oranges sometimes meet with the orange borer trouble. The pest decreases yields to a great extent. Elaborate experiments conducted in Malabar (Madras State) where the pest was assuming importance showed that a systematic removal of wilted twigs by means of a long pole with a forked end kept the pest under control. As the beetle is found throughout the rainy months of June and July the removal of the wilted twigs should commence by July and continue till August-September. If this initial treatment is not done, the pest thrives. The borer attack can be seen by the throwing out of chewed up fibrous material through the holes bored by it in December-January. At this stage it has been found that pumping in small quantities of petrol with a syringe or oil can into the borer-holes and blocking them with clay or earth is sufficient to kill the beetle. The treatment, however, must be done at least thrice to kill the pest completely. Both the methods are cheap and can be easily undertaken by orange growers.

[ICAR Farm News Release No. 34]

Use of Streptomycin dust to control Fire Blight: Peter A. Ark: Plant disease reporter Vol. 37 (7) July, 1953: Pears are affected by the Bacteria *Erwinia amylovora* during and subsequent to the blossom phase. For a number of years both spraying and dusting with copper containing materials during blossom time has been employed with great deal of success. But successful control depends upon proper timing. However, in some situations, use of copper to control fire

blight results in a considerable russetting of fruit. In a search for new chemicals to control the bacterial disease of plants various antibiotics were tested. The high degree of plant tolerance for streptomycin encouraged the use of this antibiotic in fire blight work. Preliminary tests showed that the blossoms were not injured by concentration ranging from 30 to 400 ppm. Streptomycin gave good performance not only in blight control but also in causing not fruit russetting. The latter quality of the streptomycin makes it a desirable substitute for copper if subsequent tests under varied orchard conditions show considerable results.

[N. V. S.]

CROP AND TRADE REPORTS

Crop-Sugarcane-Third Forecast Report-1954-'55-Madras State: The area under sugarcane in the Madras State upto 25th December 1954 is estimated at 108,900 acres (95,160 acres under planted crop and 13,740 acres under ratoon crop). Compared with the area of 106,800 acres (93,260 acres under planted crop and 13,540 acres under ratoon crop) estimated for the corresponding period of last year, this is an increase of 2.0 per cent. Compared with the average area of 104,710 acres for the five years ending with 1953-'54, the present estimate is an increase of 4.0 per cent. An increase in area is estimated in the districts of South Arcot, North Arcot, Salem, Malabar and South Kanara and a decrease in area in the district of Ramanathapuram. The area estimated is the same as that of last year in all the other districts of the State except the Nilgiris where the acreage under the crop is little or negligible. The harvest of the crop has commenced. The yield per acre is estimated to be slightly below normal in all the districts of the State.

The seasonal factor for the State as a whole works out to 95 per cent of the normal as against 97 per cent of the normal estimated for the previous year. On this basis the total yield works out to 2,830,350 tons of cane, the gur equivalent of which is 309,550 tons as against 2,853,100 tons of cane with a gur equivalent of 313,270 tons estimated for the corresponding period of previous year and an average production of 2,581,040 tons of cane with a gur equivalent of 283,290 tons representing a decrease of 1.2 per cent and an increase of 0.3 per cent respectively. The average wholesale price of jaggery per maund of 82.27 lb or 3200 tolas at important market centres on 29-1-55 was Rs. 14-11-0 in Mangalore, Rs. 12-5-0 in Cuddalore, Rs. 10-3-0 in Tiruchirappalli, Rs. 9-15-0 in Erode, Rs. 9-0-0 in Vellore, Rs. 8-13-0 in Coimbatore and Rs. 7-9-0 in Salem. Compared with the prices which prevailed in the corresponding period of the previous year, these prices show a decrease of 46.4 per cent in Coimbatore, 45.5 per cent in Vellore, 42.4 per cent in Salem, 38.1 per cent in Erode, 37.7 per cent in Cuddalore, 37.5 per cent in Mangalore and 30.3 per cent in Tiruchirappalli.

COLLEGE NEWS AND NOTES

The students gave a farewell party to Sri C. Rajasekhara Mudaliar, Systematic Botanist and Professor of Botany, on 5-2-1955 on the eve of his retirement.

The final year B. Sc. (Ag.) students went on an educational tour between 11-2-1955 and 28-2-1955. They visited Bangalore, Mandya, Mysore, Madras, Palayakottai and Tirupur.

The Wardens and students of the College Hostel celebrated the Hostel Day on 12-3-1955. Sri P. K. Nambiar, I. A. S., Collector of Coimbatore presided over the function. Srimathi Gowri Nambiar distributed the prizes.

Sri William Odango Omamo gave a good will party to the staff and students of the College on the eve of his departure to Africa soon.

Weather Review — For the month of February, 1955.

RAINFALL DATA (IN INCHES)

Division	Station	Total rainfall for the month	Departure from normal	Total since 1st January	Division	Station	Total for the month	Departure from normal	Total since 1st January
North	Madras (Meenambakkam)	0.0	-0.4	4.6	South	Madurai	0.0	-0.5	0.3
	Tirur-kuppam*	0.0	-0.2	4.9		Pamban	0.7	-0.2	5.9
	Vellore	0.0	-0.3	1.8		Koilkatti*	0.0	-1.3	2.5
	Gudiyatham*	0.0	-£ ₁	1.8		Palayam-cottai	0.0	-1.2	1.9
						Amba-samudram*	0.0	-1.7	4.9
East Coast	Palur*	0.0	-0.3	2.6	West Coast	Trivandrum	0.3	-0.2	0.9
	Tindivanam*	0.0	-0.3	0.5		Fort Cochin	0.9	+0.1	1.0
	Cuddalore	0.0	-0.9	1.9		Pattambi*	0.0	-0.8	0.0
	Nagapattinam	0.8	-£ ₂	3.5		Kozhikode	0.2	-0.5	0.4
	Aduturai*	0.5	-0.3	1.5		Taliparamba*	0.0	-0.2	0.0
Central	Pattukottai*	0.0	-1.0	3.2		Wynaad*	0.0	-0.7	0.0
	Salem	0.1	-0.3	0.1		Nileshwar*	0.0	-0.1	0.0
	Coimbatore (A. M. O.)*	Tr.	-0.2	0.3		Pilicode*	0.0	-0.1	0.0
	Coimbatore	0.0	-0.4	0.6		Mangalore	0.0	-0.2	0.0
	Tiruchirappalli	0.2	-0.1	1.0		Kankanady*	0.0	-0.1	0.0
					Hills	Kodaikanal	0.0	-1.5	2.4
						Coonoor*	0.5	-2.1	4.9
						Ootacamund*	0.0	-0.5	0.9
						Nanjanad*	0.0	-0.6	0.7

- Note:—1. * Meteorological Stations of the Madras Agric. Dept.
 2. £₁ = Actual deviation is 0.02".
 3. Tr. = Trace (0.01" to 0.04")
 4. £₂ = Actual deviation is 0.03".

The month began with a dry weather which lasted for two days. On 3—2—1955 localised showers were received at Minicoy and on the next day fairly widespread showers were received in Travancore Cochin. Except for half-an inch of rain at Minicoy on 5—2—1955 the weather continued to be dry upto 12—2—1955. On 13—2—1955 Nagapattinam received quarter inch of rain. Though light, showers were fairly wide-apread in South Tamilnad, Malabar and South Kanara and also at a few places in North Tamilnad. The weather became dry again and remained so till 21—2—1955. On 22—2—1955 Pamban received quarter inch of rain. Cochin recorded half-an-inch of rain on 24—2—1955 and light showers were received practically throughout Travancore-Cochoin on the next day. In the last three days of the month the weather was practically dry throughout the State.

Summer conditions set in over the entire country on 26—2—1955.

The note-worthy rainfalls and the zonal rainfall in inches are furnished hereunder:

Note-worthy Rainfalls			Zonal Rainfall			
Date	Name of Place	Rain-fall	Name of Zone	Av. rainfall for Dec.	Dep. from normal	Remarks
4/2/55	Alleppey	1.5	North	Nil	-0.2	Below normal
14/2/55	Madras (Nungambakkam)	1.0	East Coast	0.2	-0.5	do.
			Central	0.1	-0.3	do.
			South	0.1	-1.0	Far Below normal
			West Coast	0.2	-0.3	Below normal
			Hills	0.1	-1.2	Far Below normal

Agricultural Meteorology Section,
 Lawley Road P. O.,
 Coimbatore, 11—3—1955.

C. B. M. & M. V. J.

BOOK REVIEW

APROZ (*Estudo Botânico*) by Joao de Carvalho E. Vasconcellos. Ministry of Economics - Lisbon, 1953.

In the present work the writer treats rice organography as an identification basis for varieties (cultivated forms), referring to the characters of seed, root, tillering, stem, leaf, vegetative organs' pigmentation, peduncle, panicle, pedicel, spikelet, glume, lemma and palea, stigma and caryopsis.

Aspects of plant physiology, from nutrition and metabolism to growth and development, including reproduction and maturity, are referred to afterwards. Immunity and resistance to diseases are also examined.

The author also studies the origin of the rice and systematics of *Oryza sativa* L. considering the following subspecies: *sativa*, *japonica* Kato, *brevindica* (Porteres) Vasc. and *brevia* Gustchin.

Keys for classification of botanical varieties are also supplied in this book.

At last, are described the varieties (cultivated forms) cultivated in Portugal, and those found as impurities in rice fields.

A table, at the end of the work, shows the relative importance of the different forms existing in Portugal.

[A. M. K.]

DEPARTMENTAL NOTIFICATIONS
Gazetted Service — Postings and Transfers

Names and Present post	Posted as
Krishnamurthy, R., Agronomist, Satyamangalam,	Asst. Cotton Exten. Officer, Coimbatore.
Krishnamurthy, P. N., Asst. Cotton Exten. Officer, Madurai,	Asst. Cotton Specialist, Coimbatore.
Kesava Iyengar, N., Asst. Cotton Exten. Officer, Coimbatore,	Cotton Specialist, Coimbatore.
Mohamad Abbas, On leave.	Spl. D. A. O., Crop Sampling, Madras.
Ponnaya, B. W. X., Supdt. A. R. S., Koilpatty,	Asst. Millets Specialist, Coimbatore.
Ramabhadran, G., Asst. in Millets, Coimbatore,	Supdt. A. R. S., Koilpatty.
Shanmugasundaram, A., Asst. in Paddy, Coimbatore,	Supdt. A. R. S., Palur.
Thomas, K. C., Asst. Marketing Officer, Madras,	Asst. Marketing Officer, Coimbatore.

Upper Subordinate — Postings and Transfers

Names and present post	Posted as
Arumugham, S. V., P. P. A., Coimbatore,	A. D., Virudachalam.
Anantaraman, P. V., Asst. in Millets, Coimbatore,	Paddy Asst. Coimbatore.
Azimuddin, Spl. A. D., Nilakottai,	P. A., to D. A. O., Vellore.
Balogopalan, A., Ent. Asst. Kasargode,	A. D., Gingee.
Baskaran Nambiar, K., Paddy Asst. Pattambi,	A. D., Madurai.
Chinnamani, S., Asst. in Plant Physiology, Coimbatore,	Cotton Asst. Coimbatore.
Chandrasekharan, P., Asst. in Paddy, Coimbatore,	Asst. in Cyto-Genetics, Coimbatore.
Chockalingam, C. D., Exten. Officer, Kadambathur,	A. D., Saidapet.
Fernandez, A.	A. D., Madurantakam.
Gopalakrishnan, K. Paddy Asst. Mangalore,	A. D., Ramapuram, Coimbatore.
Gopalan, O. S. Asst. Pollachi,	O. S. Development, Asst. Trichy.
Iyamperumal, S., Certification Inspector, Pollachi,	Certification Inspector, Srivilliputhoor.
Jayaraja, R., P. P. A., Pattukottai,	A. D., Gramasevaks Training Centre, Pattukottai
Jayaseelan, A. D., Mandakulathur,	A. D., Madanam.
Kaliappan, R., P. P. A., Myco.,	F. M., A. R. S., Bhavanisagar.
Kalyanaraman, V. M., Quality Inspector, Tirupur,	Ent. Asst. Coimbatore.
Kamalaksha Naik, Mangalore,	Chemistry Asst. Coimbatore.
Krishnamurthy, P. S., A. D., Uthukottai,	Ext. Officer, Kadambathur.
Kamalanathan, S., Certification Inspector, Gobi,	Certification Inspector, Rajapalayam.

Names and Present Post	Posted as
Loganathan, N. S., O. S., Asst. Tindivanam,	O. S., Asst. Pollachi.
Mohd. Sultan Mohideen,	A. D., Mailam.
Manamohan Lal, S., A. D., Mettupalayam,	Paddy Asst. Palur.
Mahadevan Pillai, K., Cotton Asst. Koilpatty,	A. D., Trichendur.
Masilamani, S., A. D., Coonoor,	Soil Conservation Asst. Kothamangalam.
Muddappa Gowda, P., A. D., Ramapuram,	O. S., Asst. Nileswhar.
Nagarajan, V.,	A. D., Kanjeevaram.
Natarjan, L. R., Ent. Asst. Coimbatore,	P. P. A., Myco., Ootacamund.
Oblichetty, T. V., A. D., Cheyyur,	Sugarcane Asst. Gudiyattam.
Premsekher, S., Asst. in Potato,	Asst. in Millets, Coimbatore.
Ramanathan, N., Paddy Asst. Palur,	A. D., Cuddalore.
Rangaswami, S., Cotton Asst. Palur,	A. D., Tiruvadanai.
Ramalingam, M., Sugarcane Asst. Gudiyattam,	A. D., Cheyyur.
Ramanujam, K.,	Myco Asst. Coimbatore.
Ramachandran, S., P. A., to D. A. O., Vellore,	Ext. Officer, in Agri. Sankarankoil.
Radhakrishnan, T. V., Udamalpet,	Certification Inspector, Sankarankoil.
Srinivasamurthy, M., Cotton Asst. Periakulam,	A. D., Tindivanam.
Sampath, V., Garden Overseer, Ooty,	Fruit Asst. Coonoor.
Subbiah, K. K., Ent. Asst. Coimbatore,	A. D., Mettupalayam.
Subramaniam, C. P., Madukarai,	P. P. A., Myco., Coimbatore.
Sundaraj, M. S., Fruit Asst. Coonoor,	A. D., Coonoor.
Srinivasan, M. P., Ent. Asst. Tarakad,	Ent. Asst. Kasargode.
Shanmugam, C. T., O. S. Dev., Asst. Coimbatore,	F. M., A. R. S., Bhavanisagar.
Swaminathan, A. D., Trichy,	A. D., Bhavanisagar.
Shanmuga Vinayagam, C., Ext. Officer, Sankarankoil,	A. D., Grama Sevaks Training Centre, Kallupatty.
Sethuraman, V., Certification Inspector, Tirupur,	Certification Inspector, Rajapalayam.
Thyagarajan, S. R., Myco. Asst. Coimbatore,	Paddy Asst. Coimbatore.
Vital, S. M.,	Ent. Asst. Coimbatore.
Venkataraman, K.,	Millets and Pulses, Asst. Coimbatore.
Viswanathan, P. S., A. D., Tiruvadanai,	Plant Physiology Asst. Coimbatore.

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Marketing Committee Chronicle

The Role of the Exporting Firms in South Arcot District in the Purchase of Groundnut Seeds before and after the World War No. II

by

SRI K. S. MENON, B. A.,

Assistant Secretary, South Arcot Market Committee, Cuddalore

The Chief Exporting Firms in South Arcot District are Messrs. Rallis India, The East Asiatic Company (India) Ltd., and Louis Dreyfus Company Ltd., They have their buying organisation spread over the principal assembling centres of the District. They purchase groundnut kernels both on ready and on contract basis. Before the War as also in its initial stages they were purchasing nearly 90% of the marketable surplus, which was in turn handled, manipulated and exported from the Port of Cuddalore Old Town. The quantum of seeds purchased and subsequently exported from Cuddalore Port in the year 1939 as also in the succeeding years upto 1945 during the War period is given below. The quantity dealt in trade annually in South Arcot District in this period would reveal the glaring fact that these firms had virtually a monopoly in the purchase of groundnuts which was exported to Foreign Countries. The following are the tables for the year 1939 to 1945.

Year	Quantity actually marketed in the District (in Tons)	Quantity purchased by the Firm (in Tons)	Quantity Exported outside India from Cuddalore O. T. Port (in Tons)
1939	90500	74800	75700
1940	64500	58050	79211
1941	89776	80798	65601
1942	66130	52000	35770
1943	86844	71600	80000 *
			* To Madras for shipment.
1944	87600	49200	48000
1945	72900	50658	40508

The Export was made largely to United Kingdom during the above period on account of War. The Ministry of Food at London were the sole purchasers of groundnuts upto the year 1946. These companies have their head offices in Europe with local agencies at Madras and other states with buying sub Agencies spread all over the producing areas and have been handling major portion of the country's export trade. The Union Government with a view to encouraging Indian dealers introduced the quota system for export of seeds and oil by which a certain percentage of export quota was set apart for the new comers for distribution. But much business could not be done by the Indian Exporters for want of trade facilities and organised brokers in foreign countries where these commodities are in demand. These companies have not only an advantage over the Indian Exporters in their buying organisation but have also large capital to invest in the trade with the result that they were virtually having a monopoly in the Groundnut Market both in the fixation of prices and in the matter of buying the entire output in the district. Besides they have always the advantage of deriving profits accruing out of price fluctuations which this crop is often subjected to, because the firms have the financial strength to hold on the accumulated stocks for months together when the prices are not favourable to them. Their day to day buying prices were the ruling market rates based on which alone the other trade interests operated in the market because the accumulated stocks of the traders had in turn to be sold ultimately to the companies. The Sub Agencies numbering about 22 of the three Exporting Firms were established in all the assembling centres of the District before and also for a few years during war till 1945. They purchase groundnuts according to instructions from their head office at Madras which usually is the controlling office. The goods are purchased on basis of visual examination and direct bargaining and these transactions are called ready or spot purchases. They also purchase goods on contract basis from the traders either for immediate delivery or for delivery within a stipulated time usually not more than a month. The contract purchases might be on Agency Pass or Port Pass Basis. By Agency Pass it is meant that the sellers have to deliver the contracted goods at the Sub Agency's godown subject to conditions of contract and take payment after settlement in full, by Port Pass it is meant that the sellers consign the goods to the sub agency at a specified Port and hand over the Railway Receipt to the buying Sub Agent who advances 90% of the value of the goods. The goods are thereafter analysed at the Port and if they are upto the specification in the contract form, the balance value of 10% is paid to the sellers by the Sub Agency. If the goods tendered are found to be below specification of the contracted terms, deduction of sums calculated in lieu of the allowances towards quality and standard are made from the balance of 10% value to be paid to the seller at the time the final settlement bill is made.

But after the advent of the World War No. II and with the capital investment of Indian traders, many oil mills have come to stay in South Arcot District. The gradual increase in the internal demand of oil for edible and industrial purposes, of cake for manuring and cattle feed in the country had also contributed further fillip to expand the crushing industry all over the State especially in only type South Arcot which was having only one oil mill, about 25 hand presses and about 4 to 5 thousand country chekkus in 1939 as against 67 Expellers, 56 Rotaries 15 hand presses and about 1,000 country chekkus engaged in the crushing of groundnuts today. The Exporting Firms who were hitherto purchasing nearly 90% of the produce marketed annually in South Arcot through their Sub Agencies have only a limited number of nine buying agencies at present with only a portion of the marketable surplus as purchase to their credit. The following figures of spot and contract purchases of the three firms for a few years after 1946 would reveal the less important role the foreign exporters have been playing in the matter of purchases of groundnut in the District.

Year	Spot Purchases in Tons	Contract Purchases in Tons
1946	5,704	10,007
1947	5,797	11,170
1948	7,440	1,325
1949	18,435	1,977
1950	11,972	3,392
1951	11,488	906
1952	8,567	221
1953	8,833	4

They are not exporting seeds at present from the Cuddalore O. T. Port; nor have their prices any bearing on the day to-day ruling market rates. They have established oil mills at two important assembling centres, where the goods purchased at various sub Agencies within the District as also of the Sub Agencies outside the District in North Arcot, Salem, and Tanjore etc., are transferred and stocked for crushing. Besides they also engage some of the oil mills in the District during season time for crushing on hire basis.

A comparative statement of the off take of the different trade interests including the three Exporting Firms from the Regulated Markets of the Committee for the years 1948 to 1953 would reveal the fact that a thorough change in the pattern of trade in South Arcot has been brought about by the development of crushing internally. The change is perceptible mainly because of the keen competition offered by

the Indian traders both in the matter of buying and crushing. The minimum overhead charges on establishment for buying the produce, the moderate capital required for the trade, the availability of groundnut seeds almost throughout the year, the easy accessibility to Madras for selling the manufactured oil and the ever increasing demand of cake both internally and externally contributed to the growth of the oil crushing industry in this district, displacing the all powerful Exporting Firms, monopolising the distribution of groundnuts till now. The following tabular statement would demonstrate the relative importance of the Exporting Firms and other trade interests in South Arcot in the matter of buying groundnut.

Year.	Total Quantity dealt in Regulated Markets.	Total Quantity purchased by the Firms.	Total Quantity purchased by other traders including Chekku owners & Oil Mill owners.	Total Quantity purchased by traders outside the Dt. eventually for crushing.
1948	31383	3675	15624	12084
1949	48353	11007	18523	12823
1950	48922	8821	25093	15008
1951	49456	6335	27312	15109
1952	41660	6234	24683	10743
1953	40545	6936	27205	7354
Total for 6 years	260319	42058	138440	79812
Average % purchase by each category of traders as against the total quantity handled.				
	16%	53.4%	30.6%	

It will be thus seen that the Exporting Firms who were purchasing nearly 90% of the marketable surplus formerly are now purchasing only about 16% of the total quantity marketed annually. Their presence have no bearing on the present day market which is ruled entirely by the keen competition exhibited from time to time among oil mill owners whose activities in turn are controlled by the demand of oil at Madras or other places and the supply of seeds in South Arcot.

MARKET NOTES AND PRICES

1. The range of market prices for the month of February 1955:—

For the week ending	Koka Rs.	Choll Rs.	Malabar supari (Arecaunt) Rs.	Mangalore supari (Arecaunt) Rs.	Copra per candy of 660 lbs. Rs.	Coconuts per 1000 nuts Rs.
3—2—1955	65 to 115	150 to 183	115 to 128	122 to 144	250 to 275	R. 180 to 185 D. 180 to 255
10—2—1955	60 to 105	150 to 180	96 to 116	115 to 138	255 to 280	R. 155 to 175 D. 175 to 240
17—2—1955	65 to 110	155 to 182	110 to 125	120 to 145	270 to 300	R. 155 to 175 D. 175 to 240
24—2—1955	65 to 110	No stock	115 to 130	130 to 151	270 to 295	R. 155 to 175 D. 175 to 240

R. = Raw.

D. = Dry.

2. The estimated stocks held and exports ("SUPARI") :—

Opening Balance Cwt.	Receipts Cwt.	Exports Cwt.	Closing Balance Cwt.
4,722	35,500	31,113	9,109

The price of "Supari" was firm during the month expect for a slight fall during the second week of the month. The price of copra which was low towards the beginning of the month improved steadily during the month. Coconut prices declined by about Rs. 15/- per 1000.

Mangalore,
7—3—1955.

Secretary,
South Kanara Market Committee.



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THE MADRAS AGRICULTURAL STUDENTS' UNION.

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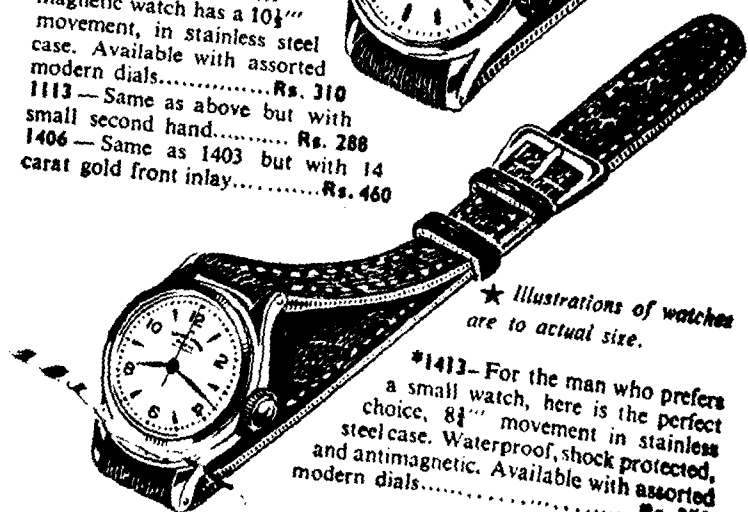
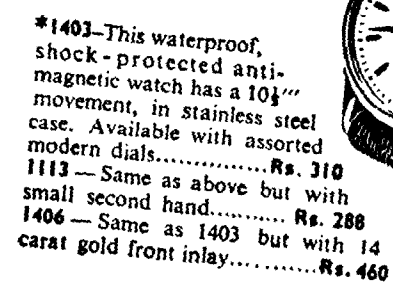
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