

lettuce, and of other vegetables. It also has the effect of removing moss and earth-worms from lawns which suggests its use on the greens of golf courses. Presumably one of the effects of this powerful oxidising agent is to convert organic nitrogen to nitrates in the soil as well as to supply small amounts of manganese sometimes deficient in the soil. D. H. K. (*Scientific American*, October 1937).

Adlay (*Coix Lachryma—Jobi Linn*) is a grain capable of supplementing rice, with the same delectability. It lends itself for the preparation of the various foods just like rice. It is more wholesome than wheat or rice with its greater fat and protein contents.

Adlay is dibbled—2 to 3 seeds in each hole spaced 2 to 2½ feet apart in high lands. The seed rate is 6–10 lbs. per acre. The crop tillers well, covers the ground and is cut when mature, in 4–5 months, and yields 1000 to 1900 Madras Measures of grain an acre. A ratoon crop can be taken, when conditions are favourable. It is remarkably free from diseases, but subject to parrot damage. (*The Tropical Agriculturist*, Vol. LXXXIX, No. 3, September 1937).

Crop and Trade Reports.

Paddy—1937-38—Intermediate Monthly Report. The harvest of first crop paddy has either concluded or is concluding in parts of the Central districts, the South and the West Coast. The yield is expected to be normal in Tanjore and slightly below normal in the other districts. The condition of the standing crop is generally fair.

The wholesale price of paddy per imperial maund of 82½ lb. as reported from important markets on 8th November 1937 was Rs. 3–0–0 in Madura, Rs. 2–12–0 in Chittoor and Virudhunagar, Rs. 2–10–0 in Vellore and Trichinopoly, Rs. 2–8–0 in Vizianagaram, Kumbakonam and Tinnevely, Rs. 2–7–0 in Masulipatam, Rs. 2–6–0 in Bezwada and Guntur, Rs. 2–5–0 in Ellore and Hindupur, Rs. 2–4–0 in Cocanada, Rajahmundry, Anantapur and Cuddalore, Rs. 2–1–0 in Conjeevaram and Rs. 1–15–0 in Negapatam. When compared with the prices published in the last report, i. e., those which prevailed on 4th October 1937, the prices are stationary in Bezwada, Masulipatam, Guntur, Cuddalore, Vellore and Negapatam, reveal a rise of about 38 per cent. in Chittoor, 14 per cent. in Kumbakonam and Madura, 8 per cent. in Trichinopoly, 7 per cent. in Virudhunagar, 6 per cent. in Hindupur and 5 per cent. in Vizianagaram, and a fall of about 5 per cent. in Tinnevely and 3 per cent. in Cocanada, Rajahmundry, Ellore and Conjeevaram.

Sugarcane—1937—Intermediate report. The condition of the sugarcane crop is generally satisfactory throughout the province and the yield is expected to be normal if the season continues to be favourable.

The wholesale price of jaggery per imperial maund of 82½ lb. as reported from important markets on 8th November 1937 was Rs. 5–8–0 in Adoni, Rs. 4–12–0 in Mangalore, Rs. 4–10–0 in Erode, Rs. 4–6–0 in Trichinopoly, Rs. 4–2–0 in Salem, Rs. 3–15–0 in Cuddalore, Rs. 3–14–0 in Coimbatore, Rs. 3–10–0 in Rajahmundry, Rs. 3–7–0 in Chittoor, Rs. 3–5–0 in Vellore, Rs. 3–0–0 in Vizagapatam, Rs. 2–13–0 in Cocanada, Rs. 2–6–0 in Bellary and Rs. 2–5–0 in Vizianagaram. When compared with the prices published in the last report i. e., those which prevailed on 4th October 1937, these prices reveal a rise of 12 per cent. in Chittoor and 4 per cent. in Vizagapatam and a fall of 16 per cent. in Vizianagaram, 15 per cent. in Cocanada, 8 per cent. in Rajahmundry, 7 per cent. in Trichinopoly, 6 per cent. in Coimbatore and 3 per cent. in Bellary, the prices remaining stationary in the other centres.

Groundnut—1937—Intermediate Report. The condition of the winter crop of groundnut is satisfactory in East Godavari, West Godavari, Chingleput, Coimbatore, Trichinopoly, Madura, Ramnad, Tinnevely and Malabar. Elsewhere the crop has been affected by the hairy caterpillar in parts of Bellary, South Arcot, Salem and Tanjore and by drought in the remaining districts.

The wholesale price of groundnut (shelled) per imperial maund of 82½ lbs. as reported from important markets on 8th November 1937 was Rs. 5-4-0 in Vizagapatam, Rs. 5-0-0 in Cuddalore, Rs. 4-8-0 in Vizianagaram, Rs. 4-5-0 in Erode, Rs. 3-15-0 in Cuddapah and Vellore, Rs. 3-14-0 in Coimbatore, Rs. 3-13-0 in Adoni, Rs. 3-12-0 in Nandyal and Bellary and Rs. 3-11-0 in Hindupur. When compared with the prices published in the last report, i. e., those which prevailed on 4th October 1937, these prices reveal a fall of about 14 per cent. in Vizianagaram, and Nandyal, 13 per cent. in Cuddapah, 10 per cent. in Bellary, 9 per cent. in Cuddalore, 7 per cent. in Erode, 6 per cent. in Vellore, 5 per cent. in Adoni and one per cent. in Vizagapatam.

Gingelly—1937-38—Intermediate monthly report. The gingelly crop has been affected to some extent by drought in parts of Bellary and Anantapur. The yield is expected to be normal outside these districts.

The wholesale price of gingelly per imperial maund of 82½ lbs. as reported from important markets on 8th November 1937 was Rs. 6-15-0 in Trichinopoly, Rs. 6-8-0 in Cocanada, and Tinnevely, Rs. 6-7-0 in Cuddalore, Rs. 6-6-0 in Salem, Rs. 6-5-0 in Ellore, Rs. 6-4-0 in Tuticorin, Rs. 5-12-0 in Vizianagaram, Rs. 5-9-0 in Rajahmundry and Rs. 5-8-0 in Vizagapatam. When compared with the prices published in the last report, i. e., those which prevailed on 4th October 1937, these prices reveal a rise of about eleven per cent. in Salem, two per cent. in Vizianagaram and Tinnevely and one per cent. in Vizagapatam and Tuticorin and a fall of about five per cent. in Rajahmundry and two per cent. in Ellore, the prices remaining stationary in the other centres.

Cotton—1937-38—Intermediate monthly report. In parts of the Central districts and the South the sowings of cotton are still in progress. The area under the crop is expected to be slightly above normal in the districts of Salem and Coimbatore and generally normal in the other districts. The condition of the young crop is generally fair.

In the Deccan, the sowings of *hingari* or late cotton have concluded and are expected to be above normal in the Bellary district where cotton was sown in the place of korra in parts. The yield from *mungari* or early cotton is expected to be generally below normal. The germination of the *hingari* crop is satisfactory.

The local cotton trade is not generally active at this time of the year. The wholesale price of cotton lint per imperial maund of 82½ lb. as reported from important markets on 8th November 1937 was about Rs. 18-15-0 for Cocanadas, Rs. 13-13-0 for Westerns (*mungari* crop), Rs. 16-4-0 for Westerns (*Jawari* crop), Rs. 22-12-0 for Cambodia, Rs. 25-5-0 for Coimbatore—Karunganni, Rs. 18-14-0 for Tinnevely—Karunganni, Rs. 17-8-0 for Tinnevelies and Rs. 21-4-0 for Nadam cotton. When compared with the prices published in the last report, i. e., those which prevailed on 4th October 1937, the prices reveal a fall of about 18 per cent. in the case of Westerns (*mungari* crop), 14 per cent. in the case of Westerns (*Jawari* crop), 12 per cent. in the case of Tinnevely—Karunganni 10 per cent. in the case of Cambodia and Tinnevelies, 6 per cent. in the case of Coimbatore—Karunganni and one per cent. in the case of Nadam, the price of Cocanadas remaining stationary. (*Director of Industries, Madras.*)

Cotton Raw, in the Madras Presidency. The receipts of loose cotton at presses and spinning mills in the Madras Presidency from 1st February 1937 to 12th November 1937 amounted to 490,599 bales of 400 lb, lint as against an estimate of 533,100 bales of the total crop of 1936-37. The receipts in the corresponding period of the previous year were 582,532 bales. 394,431 bales mainly of pressed cotton were received at spinning mills and 200,620 bales were exported by sea while 95,885 bales were imported by sea mainly from Karachi and Bombay.

(Director of Agriculture, Madras).

Association of Economic Biologists, Coimbatore.

Two meetings of the Association were held on 25th October 1937 and 15th November 1937 respectively. The following papers were presented at the meetings:—

Coconut Breeding. By Dr. J. S. Patel, M. Sc., Ph. D. At the Agricultural Research Station, Kasaragod, it is found that on an average of 12 years, 13 per cent of the trees yielded 21 per cent of the total crop and 7 per cent of the trees produced only 2 per cent. The characteristics of these 13 per cent. eco-types of the palms are: (1) presence of relatively a larger number of leaves in the crown, which is not so much due to the higher production of leaves as the greater longevity of the leaf, (2) reduction in response to cultural, manurial and seasonal conditions.

Apart from the variations in the yield of nuts, these eco-types vary in the production of female flowers, the setting, the size of the nut and the thickness of the meat. In order to determine whether this variation is inherited, and to what extent it is possible to combine these characters, crosses have been made between the eco-types exhibiting these characters. Suitable selfed and naturally pollinated material forms the control.

About 30 per cent. of the population is not regular in the production of nuts. Crosses have also been made between regular and irregular bearers.

It is well known that the dwarf type of the palm commences to yield earlier than the ordinary tall type. The dwarf type and the tall eco-types have been crossed.

It was found that a larger proportion of crossed nuts germinated earlier than the selfed and naturally pollinated nuts, and among the crosses those with the dwarf male as one of the parents germinated most rapidly.

On the whole it is found that variability with regard to the characters like the period for emergence of successive leaves, and the height and the girth of the seedling, are more in the F_1 s than in the selfed first generation. Of the progeny of the twenty tall type of parents, tree No. 1/121 and 11/107 are superior in respect of the above mentioned three characters and also in respect of early separation of leaflets. It appears that the progenies of parents producing a very large number of female flowers are better than the progenies of trees yielding exceptionally well. The development of the F_1 s of dwarf \times tall crosses is outstanding.

Studies on the White Moth Borer of Sugarcane in S. India. By M. C. Cherian, B. A. B Sc., D. I. C. and C. K. Subramanian. The White moth borer (*Scirpophaga*) is reported from different countries such as Congo, Shanghai, Formosa, Borneo, Java, Ceylon, Burma, India etc. It has been studied to some extent in North India while information on this pest under South Indian conditions is rather scanty. The results of the studies of this borer have shown that, though not a major pest as *Diatraea sticticrasis*, it is not so unimportant as once considered.

Life history. The moths are sluggish creatures and do not live for more than 3 to 4 days. Under Coimbatore conditions the pest takes 54–74 days to complete its life cycle; the egg, larval and pupal (including prepupal) periods being 6–10, 34–42 and 14–22 days respectively.

Symptoms of damage. The symptoms of damage are many of which the mining of the mid-ribs, cross-holes on the leaves, dead-hearts of various sizes, peculiar exit holes for the emergence of moths and bunchy top of the mature canes are the more important.

Extent of damage. Regarding the extent of damage, it may be stated that the pest attacks both young shoots as well as mature and immature canes. Though not a major pest as *D. sticticrasis* this borer also is capable of inflicting some injury to the cane. Counts of infestation in a few fields in Coimbatore are given. The pest has been noted from many districts of this presidency.

Species of *Scirpophaga* in S. India. Previous workers have stated that there are two species of *Scirpophaga*, viz. *S. monostigma* (black spotted) and *S. auriflua* (without spots). The authors have shown that both the spotless and the spotted forms are derived from the progeny of either. Detailed studies of the genitalia of the moths are in progress.

Natural enemies. Considerable progress has been made in the study of the natural enemies of the pest. In addition to the egg parasite, *Telemous* sp. seven larval parasites have been collected and valuable information gathered on four of these.

Remedial measures. Handpicking of adult moths, collection of eggmasses, removal of affected plants, etc., are suggested. The egg parasite of *Diatraea* moths, *Trichogramma minutum*, does not appear to parasitise *Scirpophaga* eggmasses in nature. Earthing up of cane shoots said to be successful in Mysore is being tried in the Central Farm.

The Colour of Black Soils—the Influence of Organic Matter. By P. Venkataramiah and C. Raghavendrachar. Various hypotheses have been put forward to explain the dark colour of black soils, i. e., (i) presence of large quantities of organic matter, (ii) their being derived from dark coloured rocks, the basalts, (iii) presence of titaniferous magnetite in the sandy fraction, (iv) the presence of an iron-organic colloidal matter; but none of these have successfully explained the dark colour. The authors in a previous paper have shown that the black soils have a high $\text{SiO}_2/\text{R}_2\text{O}_3$ molar ratio and Ca and Mg in the silicate complex of the clay fraction which prevents the oxidation of iron; while in the red soils with a low molar ratio of $\text{SiO}_2/\text{R}_2\text{O}_3$ and a low Ca and Mg content, the iron is capable of being oxidised to give the red colour, though both types of soils have about the same iron content.

Examining a number of black soil profiles, it was noticed that they had a zone of black soil at the top and a light coloured zone in the lower depths and while the silica sesquioxide molar ratio and the Ca and Mg contents of both zones were about equal, the organic matter content (estimated by digesting soil with 5% NaOH) of the upper dark layers was higher than that of the lower layers. When treated with H_2O_2 , the dark colour of the upper zone did not disappear, while when the soil was treated with N/5 HCl, and washed free from chlorides, and then treated with H_2O_2 , the dark colour of the upper zone disappeared and the soil assumed the same light colour as that of the lower zone. During the oxidation the CO_2 evolved was estimated by absorption in soda lime.

In a laterite profile (Taliparamba, North Malabar,) similar differences in depth of colour of the upper and lower zones were observed, and similar treatment with H_2O_2 , resulted in discharge of the colour of the upper zone soil. The

upper zone of a laterite profile had an organic matter content 2.5 times that of an upper black soil zone.

The dark colour of two surface soils of black soil is thus probably due to the association of organic matter with a clay having a high $\text{SiO}_2/\text{R}_2\text{O}_3$ ratio and a Ca and Mg silicate complex which gives a darker colour to an already grey soil and in the case of the laterite soil the presence of organic matter gives a darker shade to a red soil.

Absorption of soil moisture during germination of cotton seed. By T. V. Ranga-swami, B. Sc., Ag. Germination plays an important role in economic crop production. Quantity of soil moisture present at the time of and subsequent to sowing is one of the chief causes that affect germination. The control of moisture during germination is of paramount importance in cotton. "This done, out-of-season growth also may prove successful within certain limits."

The present note deals with absorption of soil moisture during germination by different varieties of cotton seeds. It was found that the rate of absorption depends upon the moisture saturation in the soil and also on the nature of the seed (whether acid treated or normal). Varietal variations were also noticed. In the absorption, two phases, viz. a mechanical or prewelling process followed by physiological absorption were observed. Invariably a 'lull period' existed between the two phases of absorption. The growth of the radicle was closely associated with higher absorption of moisture. Response to this metabolic activity was greater under lower saturations than under higher saturations. In some cases higher saturations of moisture were found to be not utilized and in others they were even harmful for normal activity. Incidentally it was also demonstrated that water enters the embryo through the seed coat besides through the micropyle during germination.

College News and Notes.

Students' Club. "Students should take an active part in politics" was the subject of an interesting debate which took place on 11-11-'37 with the Principal in the chair. Messrs. K. Mahabala Shetty and V. Srinivasan were the mover and the opposer respectively. After a discussion in which many students took part the motion was put to vote and carried by a majority.

Cricket. The students of the Agricultural College had a fixture with the officers on 31-10-'37. Contrary to the popular expectation, the students gained a smashing victory. The officers put on a modest total of 117 runs, the principal contributor being C. Ramaswami (75). Dinker Rao and Kothandaraman on the students' side captured 4 wickets each for the loss of 20 and 28 runs respectively. The students replied with 159 for 5. Kothandaraman having retired with his 60 and Mukundan remaining unbeaten with his 55.

The Inter-collegiate tournament began well with the Agricultural College meeting the local—Government College on the 13th November, ending in brilliant victory for the former. The Agricultural College batted first and declared at 202 for the loss of 8 wickets. K. K. R. Menon was brilliant with his 45 closely followed by Kothandaraman with his 37. Rama Iyengar was unbeaten with his 35 runs. P. S. Srinivasan claimed 5 wickets for 68 runs. The Government College was then dismissed for a paltry 72 runs, the distinguishing batsman being K. Subramaniam who scored 38 runs. Dinker Rao was very successful with the ball, taking 5 wickets at the cost of 20 runs. Kothandaraman followed him by claiming 4 wickets for 27 runs.