



Dr. P. S. Deshmukh
Founder President

KRISHAK SAMACHAR

Vol. 16 No. 7

JULY, 1972

Multiple Cropping



Mizoram State Krishak Samaj formed

Mizoram Farmers' Union Executive Committee at its meeting resolved the Union to be known as MIZORAM FARMERS' FORUM (MIZORAM KRISHAK SAMAJ).

The Mizoram Krishak Samaj General Assembly was held on 16th March, 1972 and elected the following persons as Office Bearers of the Mizoram Krishak Samaj:

1. Mr. D. Hnunliana,
Chairman
2. Mr. K. Thangzuala,
Vice-Chairman,
3. Mr. J. Pazawna,
Secretary,
4. Mr. F. Lawmkima,
Asstt. Secretary,
5. Mr. Lalarliana,
Financial Secretary,
6. Mr. Zangena,
Treasurer.

The Executive Committee of Mizoram Krishak Samaj decided to publish a monthly Farmer Bulletin named 'FARMERS FORUM' consisting of eight pages in local language under the Editorship of Mr. H. K. Bawichhuaka.

The Mizoram Krishak Samaj General Assembly at its meeting held on 16th March, 1972 Passed the following resolutions:

1. Government may be moved to buy all the marketable Farms' Products of the Mizoram Farmers at the rate agreed upon by the Mizoram Krishak Samaj and the Government.
2. Government may be requested to make long term and low interest loan facilities available to the farmers in Mizoram through Banks.

3. Government be moved to built warehouses at important trading centre directly linked with Mizoram and to arrange sales of the products from those warehouses.
4. Government may be requested to prepare all Agricultural Development Schemes in consultation with the Mizoram Farmers' Forum.
5. Government may be moved to produce and to distribute improved agricultural seeds to all the poor farmers in the villages on return system.
6. Government may be moved to make arrangement for settlement of land to farmers to enable them to mortgage their lands for securing bank and other loans.

7. Development Blocks activities which have been suspended since the out break of disturbance in Mizoram be revived immediately.
8. The Government Be moved to open a broad based agriculture research Centres with special emphasis on jhum cultivation.
9. The Government be moved to take measures to open facilities for starting Agro-based industries to interested parties at important Centres immediately.

Mr. D. Hnunliana, Mr. K. Thangzuala and some others visited Thingdawal, eight miles from Aijal on 8th June, 1972 and at a Public meeting enrolled 50 members of the Bharat Krishak Samaj.

Free Farmers Service Programme by Escorts Ltd.

From January 1968, Escorts initiated a Free Farmer Service Programme to help farmers help themselves. The services include :

- (1) Land Planning and Development, (2) Field Visits by Escorts Agronomists, (3) Extension Lectures in Blocks with Audio-visual Aids, (4) Demonstrations in Cultivators' Fields, (5) Adoption of Model Farmers, (6) Conducting Field Days and Crop Yield Competitions, (7) Screening Movies on Agriculture, (8) Providing information on availability of Agricultural Inputs and Farm Machinery, (9) Encouraging and Helping Village

Leaders to organise Young Farmers' Clubs in all States, and (10) Guidance in maintaining Farm Records.

In view of the encouraging response from farmers and for making Extension Education more effective, Escorts have adopted a Group-Approach of helping Indian farmers. Since development rests largely on communication of new ideas, Farmers' Clubs have been started all over India, so that Indian farming community being to organise itself. In these Clubs, qualified Extension Agronomists of Escorts organise meetings and explain modern techniques of farming. Escorts also publishes 'Farm Extension Bulletin'.

Higher Returns Through Multiple Cropping in the National Demonstration

By L.L. SOMANI

Directorate of Extension Education, University of Udaipur, Udaipur (Rajasthan)

The nation has planned to achieve 5% rate of growth in agricultural production. This is feasible only when we get maximum output from our existing resources in land, labour and water. The country is fortunate enough in having been blessed with agro-climatic conditions providing adequate sunshine, which is a vital factor for a quick and continued plant growth. The other vital factor i.e. water is limiting factor in 80% area under plough. This enhances our dependence on the remaining 20% land which is the only potential area to fall back upon, involving intense crop cultivation. This has led us to the concept of "Multiple cropping" meaning intensive land use to take 2, 3 or more crops a year from the same piece of land in a quick succession. It makes optimum use of all the natural resources including land, moisture, sun-shine and labour, serving additionally as a potential means to provide job opportunities in rural area.

first rank demonstrations have been named as National Demonstrations.

Through these demonstrations the scientists motivate the farmers to fully exploit the existing resources at their disposal making use of the latest proven research results.

Mini Universities on Farmer's Fields

These demonstrations have primarily been conceived as a national level activity and the I.C.A.R. has called upon the scientists working at various research centres of different agricultural institutes and Universities to perpetuate their activities right upto fields for which these are intended to serve. Researchers involved in the whole range of Agricultural production process teach the farm families the new agro-technology including soil conservation, water-management, fertility

replenishment, crop raising, plant protection, optimum labour use and economic marketing. Thus in a coordinated manner, all the important faculties of agriculture are at work on the farmers fields, making each demonstration plot a mini-University campus amidst the rural localities.

The Message Goes Home

The scientists of Udaipur University brought home the idea of multiple cropping in twelve remote villages through the National Demonstrations in the southern districts of Rajasthan. It was a first ever attempt for these farmers of Udaipur and Chittor regions to take three crops, each with an impressive yield, on the same plot within an year.

The following schedule was followed for each of the three demonstrations :-

TABLE 1

Cultivations schedule of Relay cropping (1970-71)

Crops	Maize	Wheat	Moong
Sowing	Last week of June	End of November	II week of April
Harvesting	I week of October	I week of April	End of June
Duration (App.)	100 days.	120 days	70 days
Seed rate	20 kg/ha	100 kg/ha	20 kg/ha
Variety	Ganga-3	Sonalika	P. Baisakhi
Spacing	55 × 25 cms.	20 × 8 to 10 cms.	30 × 15 cms.

National Demonstrations

The scientists have been called upon to demonstrate with their own hand to the rural masses that the new concept of multiple cropping is workable also on the farmer's field. The scientists have to demonstrate the new agro-technology to the masses in the rural field-settings, so that they develop a confidence that the new concept multiple cropping is workable also on the farmer fields, so that the farmer can take maximised crop production through each field every year, and acquire the skills to put it into practice. Such

Maize the first crop of the rotation was followed by wheat as the second crop in succession, followed by moong, the third and last crop to complete the crop rotation.

Material Inputs Invested

Economic crop production demands that the farmers resources are not wasted in the form of excessive fertilisers use. Therefore, soils were analysed and fertilisers were applied on the basis of the test reports as given in Table 2.

Organic matter in the form of F.Y.M. at 10 Tons per hectare was applied. About 600 mm rain was received in these area. The farmers had pump sets, therefore, irrigation was no problem. Maize has to be irrigated only once during the dry spell. Wheat required total seven irrigations. Moong had to be given extra care in hot summer days with four irrigations in all.

No weedicide could be recommended for weed control as the farmer had enough time and labour to give effective inter culture in all the three crops, each one getting two inter-culture operations.

Plant protection was one of the most important aspect of making this campaign a success. Schedule of plant protection given in Table-3 has been keenly followed in each of the twelve demonstration :-

Yields

The adoption of aforesaid package of practices by twelve farmers from different villages under National Demonstration gave them outturn as follows qtls/ha :-

These National Demonstration farmers got an increase ranging from 436% to 669% over the State averages of yields of Maize, Wheat and Moong, by adopting the multi-

TABLE 2
Nutrients in Kg/ha

Crops	N		P ₂ O ₅ (Basal)	K ₂ O (Basal)
	BASAL	TOPDRESS I		
Maize	40	40	60	40
Wheat	40	40	60	50
Moong	20	—	40	—

TABLE 3
Plant Protection Schedule/ha for Relay cropping

1	2	3	4	5
Crop	Pesticide	Application Rate	Time of Application	Remarks
Maize	1. Aldrin 5% dust	35 Kg.	Soil treatment before sowing	Prevention of termites & White grubs. To guard against borers hoppers and pyrilla. To prevent aphids Helminthosporium control. Prevention of seed borne diseases
	2. Thiodan 35 E.C.	1000 ml	At 20 & 40 days of crop.	
	3. Melathion 50 E.C.	1000 ml	At 65 days	
	4. Zineb	1.50 Kg.	After sowing	
Wheat	1. Agrosan G.N.	250 gms.	Seed treatment	To prevent occurrence of soil insects. To control Borers and shoot-fly. Preventive measure against rusts & smuit
	2. Aldrin 5% dust	33 Kg.	Soil treatment	
	3. Endrin 20 E.C.	750 ml	30 days after sowing	
	4. Zineb	1250 gm.	At 45 & 75 days after sowing	
Moong	1. Agrosan G.N.	25 mgs.	Seed treatment	To prevent seed borne diseases. To prevent aphids, borers and blight.
	2. Melathion 50 E.C.	1000 ml.	At 40 days after sowing	
	Zineb	1000 gms.		

ple cropping pattern of intensive agriculture. This brings out the magnitude of the scope for increasing agricultural production through scientific agriculture.

Input-Output Relationship

From farmers point of view, a large amount of investment is involved in adopting the package of improved practices, but their main interest is to obtain maximum return for their investments in agricultural production process.

It is clear from the Table-4 that by taking one maize crop a year (as most farmers do) gives a net profit of Rs. 387.30 per hectare. Some affluent farmers are taking two crops a year, Maize and wheat under irrigated conditions. If they adopt all the recommended improved practices, they may hope to gain a net profit of Rs. 2746.05 hectare and by taking third moong crop on the last lap of this cropping pattern they stand to obtain a total net profit of Rs. 3209,30 hectare. Thus multiple cropping under irrigated condition provides substantial return.

It is thus evident that multiple cropping besides being a patent method of increasing production and productivity per unit area per unit time, is also a means of absorbing the men power by keeping the farmer busy all the year round, breaking the centuries old traditional cropping rhythm and having something or the other to market round the year.

YEILDS OF REALY CROPS

Crops.	Maximum.	Minimum.	Average.	State Average.	% increase over State Average
Maize	40.00	30.00	35.60	5.32	669.16
Wheat	50.00	35.00	44.25	10.14	436.39
Moong	8.87	4.90	6.77	1.25	541.60

TABLE 4

Input-output relationship in multiple cropping Rs. per hectare.

Particulars	Maize	Wheat	Moong
INPUT VALUE			
Total cash expenditure	692.50	595.00	193.00
Human Labour	695.00	207.00	127.00
Animal Power	175.00	227.00	108.00
Total cost of production	1562.50	1029.00	428.00
OUTPUT VALUE			
Main product 1 yield (Qtls/ha)	35.60	44.25	6.77
2 value (Rs/ha)	1780.00	3318.75	846.25
By Product 1 yield (Qtls/ha)	56.00	69.00	15.00
2 value (Rs/ha)	169.80	69.00	45.00
Gross Returns (Rs.)	1949.80	3387.75	891.25
Net return/hactare	387.30	2358.75	463.25

Appeal to the Members

All the members of Bharat Krishak Samaj are requested to organise local meetings in their respective areas and collect the major agricultural local problems of the farmers of their area. They are also requested to prepare the cost of cultivation by the farmers in their areas.

The matter should be sent to the Secretary of Bharat Krishak Samaj. On the basis of this basic material a comprehensive report of the Agricultural problems facing the farmers in the country will be prepared and presented to the Agriculture Commission set up by the Government of India for necessary consideration and redressing the grievances.

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Pests of Sugarcane and their Control

By B.S. RAJKUMAR and DR. M.N. BORLE

India occupies an important position among the sugar producing countries of the world and has the largest area under sugarcane cultivation. It is cultivated over an area of about 5 million acres in the Indian union of which Maharashtra State alone occupies about 3.5 million acres.

In spite of the large area under this crop the yields are far from satisfactory owing to the severe infestation of several pests. The studies on the number of pests associated with sugarcane crop in India show that about 125 insects and non-insects species have been recorded to infest the crop, of which only 20 are recorded in the state of Maharashtra. Amongst them borers, Pyrilla, grass hoppers, mealy bugs, scale insects, termites and rats are considered to be of a major importance.

1. BORERS : There are about dozen Lepidopterous borers which infest sugarcane in different parts of the country. Of these, top shoot borer (*scirpophaga nivella*. F.) and stem or shoot borer (*Chilo traea infuscatellus*. S.) are of common occurrence in Maharashtra.

Top shoot borer is very serious pest and is capable of attacking sugarcane at a later stage. Newly hatched larva first enters the midrib of the leaf and bore down words in the top shoot. As a result of such feeding the Central shoot dries up and later on gives rise to characteristic bunchy top due to the development of side shoots.

On the other hand, the attack of stem borer begins when the crop is young and caterpillars enter the

plants from side at ground level by making hole in the stalk and bore either down words or up-wards causing dead hearts which can be easily pulled out.

These borers being internal feeders, are extremely difficult to control. However if preventive and curative measures are followed carefully, the losses due to these borers can be checked to great extent.

Mechanical cultural methods of control such as collection and destruction of egg masses, removal of dead hearts, early earthing up of ~~cases~~, changing the planting time to November or December in case of plant cane and in August or September for Adsali cane, digging out clumps instead of cutting at ground level of planting of sets in deep trenches have been found to be quite promising against these borers.

As regards to chemical control of borers, spraying with 0.3% D.D.T. 3 time on 4, 6 and 9 weeks old crop has been reported to be quite effective. Similarly application of insecticides like 0.05% endrin, 0.25% B.H.C. or 0.5% toxaphene has also given satisfactory results against these pests.

2. PYRILLA (*Pyrilla* sp.) :—It is major pest of cane all over the country and breeds throughout the year, but is at its peak from April to August.

Both nymphs and adults suck the cell sap from the leaves which as a result loose turgidity, begins to wither or get ultimately dried up. Due to the feeding of these insects

sucrose percentage of juice is adversely effected. Besides sucking sap, these insects secrete honeydew on the leaf surfaces on which black Fungus (*Capnodium* sp.) develops. As a result photosynthesis is adversely affected and in turn the yield is also reduced.

This pest can be controlled effectively by dusting the crop with 5% B.H.C. @ 30 to 40 lbs. and 50 to 60 lbs./acre in the pre and post monsoon periods respectively. Application of 0.25% B.H.C. or D.D.T. or 0.05 % endrin in the form of sprays also gives good control of the pest.

3. GRASSHOPPERS (*Hieroglyphus banian* Fb) :—This pest is noticed all over the State occasionally assumes serious form. Nymphs and adults feed on the leaves and completely defoliate the plants leaving only midribs behind in the case of severe infestation.

As regards to the control of grass hoppers, the cultural practices like scrapping of bunds or ploughing the field is found to be useful as it helps in destroying the egg masses of the pest laid in the soil and thus prevent the further spread of the pest.

Spraying with 0.2% B.H.C. or 0.05 Aldrin or heptachlor controls the pest to a great extent. Also dusting the crop with 5% B.H.C. alrdin or heptachlor @ 20-25 lbs. per acre gives satisfactory results.

4. MEALY BUGS (*Saccharicoccus sacchari* (KL) :—It is one of the important pests of cane but sporadic in occurrence. Both nymphs and adults remain under leaf sheath, suck the sap, reduce the

sucrose content of can and weaken the plant. Excretion of honeydew encourages the development of black sooty mould which affect photosynthesis. Mealy bugs are also reported as 'Vactors' of mottling and spike diseases of sugarcane.

This pest can be brought under check by selecting the setts free from the infestation of mealy bugs. Treating the setts or spraying the affected crop with 1% fish oil rosin soap is found to be useful. Treatment with 0.03% parathion and 0.1% malathion are reported to be quite effective against this pest.

5. TERMITES Or white ants (*Term spp.*):—These are polyphagous and social insects with a polymorphic forms. Only workers are injurious to crops. Workers feed on the planted setts near the end bud or from the cut ends and adversely affect sprouting. Occasionally they attack root system as a result the plant succumbs to death.

Location of termitoria and destruction of the queen along with the workers is one of the most effective method of termite control. Fumigation of termitoria with cyanogas, ethylene dibromide or methyl bromide is also found to be effective. Dipping the cane setts in 0.2% B.H.C. or D.D.T. plastering the cut ends with D.D.T. paste before planting is reported to protect the setts from termite attack. Soil application of 5% B.H.C. or Chlordane or Aldrin at the rate of 20—40 lbs./acre at the time of planting also helps in checking the infestation. Besides these pests, there are few minor pests which sometimes assume serious damage:—

6. WHITE FLIES (*Aleurlobus Barodensis* M.) The pests causes

severe losses to cane under water-logged conditions. Nymphs and adults suck the sap from the leaves as a result leaves turn yellow and even dry if infestation is very serious.

The pest can be controlled effectively by the treatment of 0.05% parathion or 0.1% Malathion.

7. SCALE INSECTS (*Aspidiotus glomeratus* G.) Recently this pest is assuming a serious form. Both crawlers and adults suck the cell sap from the cane stalk as a result the infested canes become shrivelled; the internodes are shortened and sucrose percentage of juice is reduced.

8. WHITE GRUB (*Holotrichia spp.*):—The grubs feed on the tender roots and root hairs as a result the affected plant becomes yellow and dry up.

The grubs can be controlled by soil application of insecticides like B.H.C., aldrin, heptachlor and chlordane at 3 to 5 lbs. per acre.

NON INSECT PESTS OF SUGARCANE

1. MITE (*Oligonychus indicus* (*Hirst*)):—Due to the sucking habit of this pest, initially faint yellow patches are seen on the leaves which later turn reddish and in case of severe infestation the leaves dry up.

Mites can be controlled by dusting or spraying sulphur, lime sulphur or any acaricide.

2. RAT (*Ratus ratus*):—They feed directly on the plant parts while their burrows in soil lead the crop to lodge.

Trapping the rats in rat traps is found useful in checking their menace. Flooding the field either

to force them out and then killing or to drown them is also practised. Rat can also be killed by the use of poison baits containing barium carbonate in bajra flour (20%) or zinc phosphide in Wheat flour (5 to 6%).

(Contd. from page 15)

the current marketing season were generally higher and jowar, bajra and maize lower than those of the corresponding period last year.

The APC also pointed out that production behaviour and market arrivals had affected prices. Coarse grains prices for the period immediately following the 1971-72 harvest were generally higher than those in the 1970-71 season. Increases in prices ranged from 12 to 20 per cent.

The Commission said that even though the rise in the price of rice was relatively moderate and uneven, market of kharif cereals were comfortably above the corresponding minimum support prices. This being the situation, there was hardly any occasion for making support purchases this year.

Regarding coarse grains, APC stressed that the more important problem is one of making support effective at the level of the extant minimum prices.

The Commission has suggested that higher support prices would induce the farmers to boost rice production.

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is a
useful medium
for
advertising

Pannel Recommendations

10 to 18 acre ceiling for irrigated land

The nine-member Committee on Land Reforms appointed by the Congress Leaders' Conference has recommended an additional 15 per cent of land within the 10-18 acre range of ceiling for land irrigated by private sources.

The 22-page report of the committee released today 5th July, 1972 says that to the extent private irrigation has been provided by private investment and initiative, allowance should be made by giving an advantage of 2.5 acre "If for the land irrigated from Government sources the ceiling is 10 acres the corresponding ceiling for the land irrigated by a private source will be 11.5 acres.

However, "under no circumstances" any land falling within this category of irrigated land will have a ceiling of more than 18 acres.

Dwelling on various other aspects of the issue, the committee has disallowed any arbitrary fixing of ceiling in the 10-18 acre range and ruled that the best category of land in State with assured irrigation and capable of yielding at least two crops a year should have a "ceiling of 10 acres". This ceiling may increase up to 18 acres taking into account the fertility of the soil and other conditions. In the case of land having assured irrigation for only one crop in a year, the ceiling should not exceed 27 acres. For all other types of land, the outer limit will be 54 acres.

Acre defined

In the case of owners with holdings consisting of different types of

land the total holding, after converting the irrigated or better category of land into the lowest category should not exceed 54 acres.

In view of desert conditions existing on a wide scale in Rajasthan, the committee has recognised that the State has got some special problem regarding the fixation of ceiling under this head. The State Government has been advised to discuss this issue with the Ministry of Agriculture and take appropriate decisions.

On the questions of what constitutes an "acre" the committee is of the opinion that the ceiling should be fixed in terms of "physical acres" and not in terms as the "so-called standard acre".

Fully endorsing the basic thinking of the Central Land Reforms Committee, the nine member Congress Committee points out that the relative worth of land in different holding and acres will have to be assessed with reference to the fertility of soil, availability of water facilities for drainage, access to road and such relevant factors. The scheme of ceilings will have to lay down the principles on which an equivalence for various types and categories of land is to be worked out.

Referring to the phrase "perennially irrigated land, capable of growing two crops adopted by the Central Land Reforms Committee the Congress panel feels that it is liable to varying interpretations. "We are not sure" whether there is in fact such perennially irrigated

land within the literal meaning of "perennial". The question therefore, is not whether water is available for irrigation to a given plot of land all through the year but whether there is assured irrigation for growing two crops or one crop.

In respect of the unit to which the law should apply, the committee has favoured a "family of five consisting of husband, wife or three children, whether major or minor. In making this suggestion, the committee has agreed with the suggestion of the workinggroup of the National commission on Agriculture that to the extent the actual number of members in a family is less than five, the ceiling should be reduced by a fifth per person. However, a minimum of two-thirds of the prescribed family ceiling may be allowed irrespective of the size of the family.

Similarly, where the family consists of more than five members one-fifth of the ceiling may be added for each additional member subject to an overall maximum of double the ceiling is applied in respect of the combined property, the two will have rights in the ceiling property in proportion to the original ownership of land by each before the application of the ceiling. For purposes of ceiling, no basis of personal laws applicable to the family whether it be Mitakshra, Dayabhanga, Muslim or Christian,

On the question of redistribution of surplus land, the committee has given first priority to the landless agricultural population, particularly the Harijans, the tribals and backward communities. As a rule 50

per cent of the surplus land available in a State should be set apart for members of the Scheduled Castes and Scheduled Tribes and other notified tribes. Within a given class of people, priority may be given to those landless persons who in some capacity or the other are already cultivating given portions of land that is declared surplus. Similarly the interests of existing tenants should not be distributed in the process implementing the ceiling legislation.

The committee has expressed its strong reservations in respect of the ceiling laws earlier adopted in various States. In analysing the impact of such legislation on the pattern of land ownership and cultivation, it says, that one is struck by the loopholes and escape clauses that were built into the laws on "one consideration or the other". All this has considerably diluted the effectiveness of the ceiling laws. These lacunae have provided to the more influential and the rich the means and the opportunity to evade the law.

In such an appraisal, the committee has noted the tardiness of implementation of the provisions such as they were by the administrative machinery in the States. There have been a whole series of exemptions benami transfers and partitioning of holdings or the substitution of crops which have proved so effective as camouflage weapons at the disposal of the more privileged minority to frustrate the rightful needs and hopes of the deprived majority. A substantial part of whatever emerged as surplus was often found to be uncultivable. Progress in the distribution of such

surplus land has also been by and large poor.

The high-powered committee consisted of Mr. Fakhruddin Ali Ahmad, Mr. C. Subramaniam, Mr. H.R. Gokhale, Mr. V.P. Naik, Mr. Barkatullah Khan, Mr. Dev Raj Urs, Mr. K. Karunakaran and Dr. Rajendra Kumari Bajpai. The Committee appointed on May, 11 last at the Congress Leaders Conference here held four meetings on May, 13, 14, and 30 and June 26. Paying tribute to the Working group on land reforms constituted by the National Commission on Agriculture the committee has said : "We have drawn heavily on its suggestions." The report will be placed before the Congress Working Committee tomorrow for its adoption.

Annual Convention of Punjab Krishak Samaj

The Punjab Krishak Samaj is holding its Annual Convention on 26th August, 1972 at Patiala under the Presidentship of Col. Sir Buta Singh. The Organising Secretary Mr. Jagjit Singh reports the farmers attending the convention will discuss recent controversial measures proposed under the Land Reforms, memorandum to be submitted to the Commission Agricultural Wealth and Income-tax and other problems facing farmers.

Institute of Farm and Science Journalism

31 Netaji Subhash Marg, Delhi-6

The six months farm and science journalism course will commence from August, 72 to Feb. 73. Regular and correspondence coaching will be conducted by the eminent experts and foreign trained scholars. Regular classes fee will be Rs. 245/- and correspondence fee Rs. 210/-. It will be charged in two instalments. The course will cover rural advertising, rural mass communication, science writings, industrial public relations and feature writing, production of technical journals and co-operation journalism. Classes will be held at 31, Subhash Marg, Delhi 6. The course is jointly sponsored and recognised by IFJA, B.K.S., Co-operative Union and Bharatiya Vigyan Patrika Samiti (all national level journalistic and academic institutions). Successful candidates will be given diploma and associateship of the Institute. They will be able to find positions in various Govt. semi-Govt., Public undertakings and private establishments in the editorial, publicity, public relations and advertising and marketing units according to their merit and competence. For more details contact, Principal, Institute of Farm and Science Journalism, Subhash Marg 31, (Delhi Coop. Union premises) Delhi 6.

Telephonic contacts : 273092, 631160, 74054, from 10 am to 7 pm.

Pests of Bajra and their Control

BY S.K. PAL

Central Arid Zone Research Institute, Jodhpur (Rajasthan)

Bajra is one of the most important millet crops, grown all over the country except Assam, Kerala and Nagaland. The States of Maharashtra, Rajasthan, Uttar Pradesh and Punjab are main producing States of *Bajra*. Although this crop is relatively less damaged by insect pests as compared to other allied crops viz. *Maize* and *Jowar*. But due to introduction of improved hybrid varieties, it seems that new pest problems assume serious proportions necessitating their control. In this article, a brief account of insect pests of *bajra* crop, their identification, nature of damage and control measures have been described. The insect pests which commonly attack this crop are grouped as follows :

1. Leaf feeding insect pests :- grass hoppers, red hairy caterpillars, leaf weevil etc.

2. Boring insect pests :- jowar borer, *Chilo zonellus* and *Atherigona indica*.

3. Sucking insect pests :- Aphids, *Pyrilla*, ear head bug, blister beetles.

4. Root feeding insect pests :- White ants and white grubs.

1. Leaf feeding insect pests

(i) *Kharif* grasshopper *Hieroglyphus* spp.)

The adults are yellowish green in colour, measuring about 1.5" to 2" in length. There is only one generation in a year and the pest is most active from July to October. The adults and nymphs feed on the leaves and defoliate them. This also attack paddy, til, moong, sugarcane,

cotton, bhindi, groundnut and fodder grasses.

(ii) Surface grasshopper (*Chrotogonus* spp.)

The adults are of dull brown colour resembling that of a ploughed field and adults are seen usually jumping from place to place. This is injurious to all young *kharif* crops during June to July.

(iii) Deccan wingless grasshopper (*Colemania Sphenariodes* Bol.)

The grass hopper is 3.5 to 5 cm. long, bluish green in colour with pink and yellow stripes and is always wingless. They eat the leaves and tender portions of the crops.

Control measures for grasshoppers :

1. Plough fields and bunds between December to May.
2. Apply BHC or Aldrin dust 8 to 10 kg/acre.
3. Spray aldrin, dieldrin or endrin @ 0.03 to 0.04%.

(iv) Kutra or Red hairy caterpillar (*Amsacta Moorei* But.)

Full grown caterpillars are about 5 cm. Adult moth is strongly built with white wings having black spots. There are black bands and dots on the abdomen. At night the moths are strongly attracted to artificial light. The hairy caterpillars also attack urd, moong, cowpea, Daincha, Cotton, Sesamum, Castor, Tobacco and Sunhemp etc. besides maize, jowar and *Bajra*. Control measure :

1. Deep ploughing 10 to 20 cm. during December to May.
2. Moths are nocturnal so light

trap should be employed for catching them. Eggs are also conspicuous masses which can be hand picked.

3. Dusting with BHC 10% or Folidol 2% @ 8-10 kg/acre.

4. Put up border strips of 3' to 5' of sunhemp as trap crop around main crop and dust sunhemp.

(v) Leaf Weevil (*Myloccerus* spp.)

Adults eat tissues of leaves and make holes on the leaves. There are more than one species involved in attacking the *kharif* crops.

Control measure :

1. Spray with 0.1 per cent BHC suspension.

(vi) Army worm (*Pseudaletia unipuncta* Haw)

The larval of army worm are smooth pale yellow stripes are on the sides of body. The larval are nocturnal.

Control measure :

1. The pest can effectively be controlled by dusting 5% BHC or Sevin @ 10 kg/acre.

(vii) Lucerne caterpillar (*Laphygma exigva* Hb.)

Adult moth is dark brown, medium sized and lays eggs on lower portion of young plants. The caterpillars feed on the leaves at day time during July to August along with army worm kutra.

Control measure :

1. Collect and destroy eggs and caterpillars.

2. Cover spray of BHC @ 0.15 per cent is effective.

2. Stem borers

(i) Jowar stem borer (*Chilo zone. llus* Swin.)

The moth is yellowish grey in colour and of medium size 25 to 30 mm with a wing span. The fore wings are pale straw colour and hind wings are whiter. The full grown caterpillar is dirty greyish in colour with black head.

It measures about 1" in length. Adult moth is nocturnal in habit. The caterpillars cause 'dead hearts' by boring into stem. Attacked plants remain stunted or die. This attacks jowar and maize and is a major pest on them. It can also breed and develop on *bajra* and other grasses.

Control measure :

1. Ratooning should be avoided
2. After harvesting, fields should be ploughed and stubbles burnt away.
3. All 'dead hearts' should be pulled out.
4. Light traps should be employed for catching moths.
5. Placing of granules of contact insecticide viz. endrin 2% in the central whorl of the plant.

(ii) Pink borer (*Sesamia inferna* Wlk.)

The adult moth is pale brown in colour, clothed thickly with yellowish brown scales over the abdomen. The eggs are laid in clusters inside leaf sheath. Larvae bore into stem often destroying central shoot and 'Dead hearts' are formed. In south India, it is serious on Ragi while in north it attacks maize and rice in *Kharif* or wheat in rabi.

Control measure :

Same as in the case of *Chilo zonellus*.

(iii) Sorghum shoot fly, (*Atherigona indica* M.)

The adult fly resembles a house-fly but it is smaller in size and has dark spots on the abdomen. The fly infests jowar, maize, millets and grasses in *kharif* and wheat in rabi found more in the irrigated crop.

Control measure :

Application of 10% phorate granules at the time of sowing was found effective.

3. Sucking insect pests

1) Aphids, (*Rhopalosiphum maidis* Fitch).

The aphids attack leaves, sheaths and ears and suck sap and make the plant weak. The aphid is polyphagous insect infesting many crops.

Control measure :

Spray the crop with 0.2 per cent BHC or dust 10% BHC.

(ii) Blister beetles, (*Epicauta (Lytta) tenuicollis* Pall.)

The beetles feeds on the pollens of flowers of the crops. The beetle also damage the tassels and cobs of maize.

Control measure :

1. Adult beetle can be collected by nets and then killed.
2. Dusting of 10% BHC @ 24 to 36 kg/ha kills the adult beetles.

(iii) Sugarcaneleaf hopper (*Pyrilla perpusilla* Wlk.)

The *Pyrilla* is pale straw coloured leaf hopper about 5 mm in size. It is also found on wheat, barley and other jowar, *bajra*, maize. Although it is a serious pest of sugarcane. Both adults and nymphs suck the sap from the underside of the leaves covering the shoots with sweat sticky secretions.

Control measure :

1. Dusting with BHC 10% or 0.2% BHC spray.
2. Collection of adults by means of hand nets and destruction of eggs is also effective.

(iv) Jowar ear head bug (*Calocoris augustatus* Letch.)

The adults are small (8 mm long) active, pale green in colour. Both nymphs and adults infest the crop. It is more serious in south India. It sucks the tender parts of the plant and feed on the grains in the milky stage.

Control measure :

1. The bugs can be controlled by 5% BHC dust.

Besides these suckind pests, thrips, jassids and other beetles such as *Rhinyptia meridionalis* and *Oxyctonia albopunctata* also damage *bajra* by feeding on the grain in the milky stage. These may be controlled as in the case of earhead bug.

4. Root feeding insect pests

(i) White ants (*Odontotermes*)-(spp.) and (*Microtermes* spp.)

White ants are major pests under unirrigated condition. They are polyphagous pests. The white ants attack the root system of the plant due to this injury the plants begin to dry.

Control measure :

Application of 5% BHC or Aldrin dust @ 20 kg per hectare at the time of sowing is effective.

(ii) White grubs (*Holotrichia insularis* Br.) and *H. consanguinea* BR.)

The grubs are fleshy dingy white in colour, head brown and the body curved in an arch and apical segment is large and smooth. The beetle grubs are serious pests of almost all *kharif* crops and vegetable etc. in different states of country. The grubs damage the root system and 40 to 60% plants are destroyed and resowing is necessitated.

Control measure :

1. Destruction of grubs at the time of ploughing.
2. Application of Lindane or solvirex granules at the time of sowing of *bajra* in severely infested pockets.

F A R M N E W S

World Dry-farming Research Unit Near Hyderabad

The \$ 20-million project for International Dry-Farming Research launched by the Food and Agricultural Organisation (FAO) in collaboration with 27 countries will be located at Ramachandra Puram, few miles from Hyderabad. The project will annually spend Rs. 4 crores apart from the initial investment of Rs. 14 crores. It will conduct research in jowar, ragi and pulses.

Bill to Cover Kerala Land Reforms Acts Passed

The Parliament has passed the Constitution (Thirty Second) Amendment Bill seeking to project two Kerala Land Reforms (Amendments) Act of 1969 and 1971 from being challenged in the court by including them in the Ninth Schedule of the Constitution. These Acts themselves were designed to overcome practical difficulties in implementing the Kerala Land Reforms Act of 1963.

Fertiliser Consumption in 1971-72

According to the Union Agriculture Ministry's report, consumption of fertilisers has risen in 1971-72 by about 20 per cent to the level of 26.01 lakh tonnes of nutrients as compared to 21.77 lakh tonnes in the previous year. The consumption of N at 17.59 lakh tonnes has marked a rise of 18 per cent. P_2O_5 at 5.47 lakh tonnes is higher by 18 per cent and K_2O at 2.95 lakh tonnes by 29 per cent.

Plan to Develop Agro-industries

A crash plan for development of agro-industries specially in rural areas has been formulated by the Centre. A provision of Rs. 150 crores for this purpose has been made in the next two years of the Fourth Plan. The Government thinks that rural development is not synonymous with agricultural development. Agro-industries, particularly in the small sector would give partial employment to the rural people and it would also give encouragement to utilisation of many agricultural wastes for useful purposes.

Private Irrigation Costlier

Two recent studies conducted by the Irrigation Commission and the Indian Institute of Management, Ahmedabad, have revealed, that the cost of irrigation per acre of land from private sources is much higher than the cost of irrigation from Government sources.

This makes out a strong case for higher ceiling limit for lands having private irrigation and capable of growing two crops a year.

The Institute has calculated that in Uttar Pradesh the cost of eight irrigations required for maturing wheat in an acre of land is Rs. 72 if the water comes from private electric tube-wells. For maturing rice in an acre of land requiring at least 20 irrigations, the cost goes up to Rs. 180. The cost is still higher for growing wheat if water comes from private diesel tube-wells. It works out to Rs. 128 for wheat and Rs. 320 for rice.

In contrast to this, the cost of irrigation from Government sources, as calculated by the Irrigation Commission in Uttar Pradesh, is between Rs. 4 and Rs. 14 for rice and between Rs. 4 and 12 for wheat.

According to the Commission, the per acre irrigation cost for rice is the lowest in Orissa ranging from Rs. 1 to Rs. 8 while it is highest in Gujarat State where it varies from Rs. 18 to Rs. 25. The cost of irrigating an acre of land for wheat is highest in Gujarat and lowest in Uttar Pradesh.

Plan For Sunflower Development

The Union Government has launched a Rs. 92-lakh crash programme for development of sunflower in Andhra Pradesh, Tamil Nadu and Mysore, as a step towards achieving self-reliance in oilseeds production.

The programme envisages bringing of 350,000 hectares under sunflower cultivation by 1973-74 end, of which 160,000 hectares would be brought by the end of this financial year.

Under the programme, 80,000 hectares in Tamil Nadu and 40,000 hectares each in Andhra Pradesh and Mysore would be brought under sunflower this year at an estimated cost of Rs. 60 lakhs. The scheme forms part of the development schemes being taken up in the country to increase the production of oilseeds to 10.5 million tonnes by 1974.

About 350,000 tonnes of sunflower was expected to be produced

by 1974. This would yield 122,000 tonnes of oil valued at Rs. 36.8 crores. The oil would be used for the manufacture of vanaspati and the oil cake would be used as cattle-feed.

The Russian varieties of sunflower which is a short duration crops of 90-100 days. Since sunflower could be cultivated throughout the year in the Southern States, could be developed by introducing it in multiple cropping patterns without displacing other crops. Sunflower had 45-50 per cent of oil, of which 35 per cent would be extracted commercially. Sunflower oil, because of its non-cholesterol (not allowing blood to clot) and anti-cholesterol properties is considered to be a high quality edible oil. As a result, chances of heat complications would be much less in a person using sunflower regularly than using other oils. With proper techniques of cultivation, yield up to two tonnes per hectare could be obtained with the Russian varieties.

The Union Government has decided to supply sunflower seeds free of cost, as an incentive to farmers to take to this new variety of oilseeds. It would supply mini-kits, each bag containing five kg of seeds properly treated with fungicides (which would be enough for half an hectare). This would cost the Government Rs. 18.

Input Price Rise Will Discourage Farmers

Ludhiana : "If the prices of modern technological inputs are allowed to rise further, a cost-price squeeze will develop which will make agriculture a much less paying proposition."

This conclusion is drawn by Dr A.S, Kahlon, Dean, College of Basic

sciences, and Mr H.S. Kahal Assistant Professor Economic Department of Punjab Agricultural University, in a study of input prices in Punjab agriculture.

A detailed study of the behaviour of the prices of tractors, electric motors, diesel engines, pumps, oils, fertilisers, insecticides and labour charges, has been made by the experts.

The report says that the price of the Massey Ferguson tractor increased from Rs. 21,563 in 1967 to Rs. 27,901, a rise of 29.4 per cent. In case of International B-275, the price went up by 23.59 per cent from Rs. 21,610 to Rs. 26,707 over the same period. Price of Hindustan diesel tractor which was sold at Rs. 16,281 increased to Rs.25,567 in 1972 a rise of 57.04 per cent. The maximum rise was witnessed in the case of Zetor 2011 where the price went up by 73.55 per cent from Rs. 14,262 to Rs. 24,850.

The report adds that the market for tractors has become a sellers' market. This is responsible for the black-market prices charged for tractors by the dealers and their collaborators. It reveals that the actual price paid by the farmers was much higher than the price fixed owing to excess demand for tractors. The difference in the black market price paid by the farmers was about Rs. 10,000 compared to the list prices of the certain good quality tractors. The list prices of the tractors had gone up between 23.59 per cent and 73.85 per cent during the period under study.

The report says that of the various sources of irrigation, electric motors and diesel engines are getting very popular in the State. Prices of all the motors have gone up. The prices of diesel engines also went up

in the case of standard diesel engines like 'Kirloskar'.

The report points out that prices of oil also went up during this period and the price of diesel oil which was sold at 85 paise per litre in 1967, increased to 91 paise in 1972 a rise of 5.83 per cent. The price of mobile oil was Rs. 2 per litre in 1967. It increased to Rs. 5.52 in 1972- a rise of 35.38 per cent.

The report says that high yielding varieties of crops are more responsive to fertilisers and this is the reason for step rise in the consumption of fertilisers in the earlier years of green revolution. Prices of almost all the fertilisers have gone up between 11.24 per cent, 14.17 per cent over the period under study. The minimum rise came in the case of superphosphate and maximum rise of 14.19 per cent was there in the case of urea.

Studying the impact of Government taxes and duties on the price structure of farm inputs, the report points out that farm input prices have experienced steep rise because of multiple taxation. Levy of excise duty, import duty, Central and State sales taxes, now form a sizable part of the prices of various inputs.

Demand For Tractors Falls

The demand for tractors is understood to have suffered a precipitate decline throughout the country as a result of the move to impose a ceiling on land.

Even in Punjab, Haryana and Andhra, where tractors were being sold in the black-market at a premium ranging between Rs. 5,000 and Rs. 10,000 depending on make and horse power, only a few buyers are to be found and they too only

in regular market.

In view of this, the Union Government is considering a proposal to withdraw the compulsory deposit of Rs. 3,000 as earnest money for the purchase of a tractor.

Meanwhile, the indigenous tractor manufacturers are pressing their demand for a blanket ban on the import of tractors. They argue that the existing capacity of the five tractor manufacturing units is sufficient to meet the current demand. They are the five new units which have been licensed will be sufficient to meet the future demand. In addition, 16 parties have been issued letters of intent.

There is also a move to concentrate on the manufacture of small tractors instead on the big one, as at present, in view of the likely radical change in the rural landscape following the land ceiling laws.

A New Fruit Plucker

Messrs. Navlodyan, 681, Shivajinagar, Ratnagiri, Maharashtra State, have developed a new fruit plucker, which is awaiting a patent.

The manufacturers claim the following advantages for the gadget:-

1. Magnitude of jerk at the time of pull is reduced resulting in easy operation.
2. The fruits intended to pluck and adjusted in the net are positively cut by moving blades.
3. Cut at a desired point of a twig leaving some portion of the twig with the fruit can be obtained. This helps to maintain quality of fruits.
4. As sharp and moving blades do the work of cutting the twig, the pull required for the purpose

is comparatively smaller than in conventional method.

5. There is no possibility of escaping some fruits from the plucker when they are once adjusted in the net for being plucked.
6. Efficiency of the operator in his work is increased.

How To Prepare For The Plucking Job

Take out the "Fruit Plucker" from the plastic cover. You will find it provided with a net fixed to the ring. Insert one handle preferably of bamboo in open end of the inner tube. With a view to avoid sliding of the handle fix one or two nails (these are also supplied in a paper packet kept in the net) in the handle through the holes, provided. Here your new plucker is ready for operation. Start the work as usual and feel the work better.

Price

The invented "Fruit plucker" is priced at Rs. 18. If the plucker is not available locally you can directly contact the distributors for your requirement.

Green Revolution Study Plan

Social and economic implications of the green revolution in the five wheat-growing States of Punjab, Uttar Pradesh, Rajasthan, Madhya Pradesh and Haryana will be studied by the Government during the next one year.

These studies, which will form part of a global United Nations-aided project, are aimed at finding out how the Government-sponsored high-yielding varieties programme has transformed agriculture, its impact on the lives and livelihood of different classes of rural population and customary and new social institutions. Special efforts will be

to assess the effects of the new agricultural strategy on levels of livelihood and income distribution and to identify groups which are the main beneficiaries.

Prof V.M. Dandekar, Director, Gokhale Institute of Politics and Economics, Poona, has been nominated as the Country Director for guiding these studies and consolidating the results in India. Dr Andre Beteille, a Delhi University sociologist, will be his adviser.

These studies will be conducted specially in Muzaffarnagar district of Uttar Pradesh by the B.R. College Agri; in Ferozpur district of Punjab by the Punjab Agricultural University, Ludhiana; in Kota district of Rajasthan by the A.E.R. Centre, Vallabha Vidhanagar; in Tikamgarh district of Madhya Pradesh by the A.E.R. Centre of Jabalpur; and in Karnal district of Haryana by the A.E.R. Centre of Delhi.

Whether the direct benefits of the high-yielding varieties programme are flowing to a particular class of people or to all the sections of the society uniformly, and whether there are any changes in farm structure, farm size, farm organisation, tenural relationships, credit availability, demand for labour, migration wages, marketing and changes in the institutional set up will also be studied. Secondly, efforts will be made to assess the influence of the high-yielding varieties programme on the general, social and economic patterns.

In each of the five districts, four villages will be chosen for the purpose of the study. Information on some general items will be collected for the village as a whole from village records or from the households and some other specific items through sample studies covering 25

families from each village of 200 families.

The final report on the results of these studies is expected to be available by June, 1973.

Cattle Development Programmes

According to the Central Statistical Organisation estimate, the contribution of Agriculture, including Animal Husbandry Forestry and Fisheries, constitutes 44.5 per cent of the net 1970-71 National product valued at Rs. 18,755 crores. The contribution of the Animal Husbandry Sector alone is estimated to be about 6.5 per cent.

Out of the total annual exports of Rs. 1409 crores in 1969-70, the exports of Agricultural Commodities amount to Rs. 483 crores or 34.3 per cent. Of this, the Animal Husbandry Sector contributed about Rs. 66 crores i.e. roughly 4.7 per cent. These were mostly hides, skins and fur skins, undressed, animal crude materials, wool and other animal hairs, meat and preparations.

According to the livestock Census of 1966, the bovine population of the country was 229 millions (179 millions of cattle and 53 millions of buffaloes) which form nearly 20 per cent of the total bovine population of the world.

The development of livestock on scientific and economic lines has been emphasised under the Fourth Plan and a number of production oriented programmes are being implemented to increase milk production through various cattle development and animal health cover programmes. Under the Fourth Plan, in addition to the Rs. 141.68 crores provided for the Dairy Development, an outlay of Rs. 94.

59 crores was provided for different development programmes in the Animal Husbandry Sector.

The production of milk has increased from 20 million tonnes in 1965-66 to 22.50 million tonnes in 1972-72, which gives a growth rate of about 2 per cent a year. This is, however, much below the rate of growth of demand for livestock products which is increasing at the rate of about 5.5 to 6.4 per cent a year.

In our country, the average milk yield of a cow in a year is only 157 kg and of buffalo 504 kg. As against this, the average milk production per cow is 4154 kg in U.S.A., 3950 kg in U.K., 3902 kg in Denmark, 3650 kg in Switzerland and 2794 kg in New Zealand. There is, thus, ample scope for improving the milk yields of our animals by improving the genetic make of our cattle.

Up to the Fourth Plan, the improvement in the productivity of the animal was mainly through selective breeding and grading up of cows and buffaloes. The scientific panel on Animal Husbandry set up by the Ministry of Agriculture recommended that cross-breeding using exotic dairy breeds with averages over 4,000 kgs of milk production could quickly raise average milk production of the indigenous cattle to about 2,500 kgs per lactation in the first generation of the progeny from a few hundred per lactation at present.

Accordingly cross-breeding was introduced initially in a few selected areas. Exotic cattle of Jersey & Friesian breeds were imported from Australia and U.S.A. for distribution among different States. Cross-breeding programmes were also taken up with foreign collaboration. An Indo-Danish Project was set up

in Mysore for the production of Red Dane cattle for cross-breedng purposes. Similarly, an Indo-Swiss project was taken up near Munnar in Kerala for establishing a purebred brown Swiss cattle farm for cross-breeding work. This Project has been extended to Patiala and Sangrur districts. Another Pure-Bred Brown Swiss Cattle Farm is also being established at Kopergaon in Ahmednagar district of Maharashtra. The Indo-German Project in Mandi, Himachal Pradesh, is making significant impact on development of cattle in the region. Negotiations are under way for setting up a Jersey Cattle Breeding Farm at Hissar (Haryana) in collaboration with the Government of Australia where an Indo-Australian Sheep Farm is already running successfully.

A quick breakthrough in milk production can be achieved only if a massive cross-breeding programme with exotic germ plasm can be taken up simultaneously in different areas, through adoption of the technique and use of frozen semen of recognised exotic dairy breeds on indigenous cattle. A Frozen Semen Bank was, therefore, set up at Hessargha (Bangalore) for production of frozen semen for supply to State Governments.

A large programme estimated to cost Rs. 1.07 crores has been drawn up for the establishment of four Central Projects for Intensive Cross-breeding of cattle with imported frozen semen at Karnal, Amritsar, Bhopal and Bangalore. There is a possibility of FAO and Danish collaboration in two of these projects. Each of these Projects will provide 1,25,000 dozes of semen through 50 Artificial Insemination Units. When fully established each of these Projects would produce

10,000 crossbred progeny every year of which 5,000 would be females resulting in an increase in milk yield of about 20,000 litres per day over the corresponding number of indigenous cattle.

For production of bulls of superior transmitting ability, a Co-ordinate Cattle Breeding Programme is also being implemented. Under this programme, six new Central Cattle Breeding Farms are being established. An existing Jersey Cattle Breeding Farm at Hessarghatta is being expanded. The new farms sanctioned at Suratgarh (Rajasthan) for Tharparkar Breed, Ankaleshwar (Gujarat) for Surti buffaloes, Chiplima (Orissa) for Red Sindhi breed are expected to be completed by the end of the Fourth Five-Year Plan. Work on the two new farms sanctioned recently one for Murrah Buffaloes at Alamadhi (Tamil Nadu) and the other for Jersey Cattle at Koraput (Orissa) is expected to be taken up soon. A Centrally sponsored Progeny Testing Programme has been sanctioned for the production of progeny tested superior bulls at the different State Farms.

For popularising the cultivation of high yielding indigenous fodder crops, improvement of grasslands, conservation of seasonal surplus forage etc., seven Regional Forage Demonstration Stations one each at Hissar (Haryana), Kalyani (West Bengal), Dhamrod (Gujarat), Alamadhi (Tamil Nadu), Seehema (Jammu & Kashmir), Suratgarh (Rajasthan) and Mamidipally (Andhra Pradesh) are being established under the Fourth Five-Year Plan. One of the major handicaps in fodder development was non-availability of high quality fodder seeds and the National Seeds Corporation have been requested to meet the fodder

seed requirement of Berseem and Lucerne of these farms and also of the State Farms.

In the context of massive cross-breeding programme, importance of efficient health cover for the cross-bred progeny has assumed special significance. Lack of proper marketing of livestock products has retarded the growth of animal production. Much emphasis has to be laid on the marketing and remunerative prices for live-stock products to step up production.

The Cooperative are playing an increasingly important role in Dairy Development in the country. Of the 123 plants, 34 are in the Cooperative Sector. In many States, Cooperatives constitute a major source of supply of milk to the Dairy Plants. State Federation of Dairy Cooperatives are functioning in certain States like Maharashtra and Uttar Pradesh to coordinate and facilitate the working of the Dairy Cooperatives in the States. A National Federation of Dairy Cooperative has also been set up.

Agricultural Research

Genes Grafted to Tomato Plant Cells

Sydney: Australian scientists have broken the barrier separating animals and plants by transplating a group of genes from a bacterium into the cells of a tomato plant, it was reported here.

Three scientists of the School of Biological Sciences of the Australian National University in Canberra announced that the transplant had given the calls of the tomato plant the gene is memory of an animal.

The transplant had given the plant cells entirely new characteristics.

The genetic information transmitted will make it possible for plants to take nitrogen directly from the air rather than from fertilisers.

Plants might also be induced by such transplants to produce protein of the type needed to help overcome the world's food shortage.

The scientists claimed this was the first gene transplant from a bacterium to a plant ever undertaken in the world.

Farm Legislation

Land Reforms Act and Fundamental Rights

Calcutta: On an exparte application under Article 226 of the Constitution on behalf of Mr. Anchal Bhusan Bose and others of Raiganj challenging the validity of the West Bengal Land Reforms (Amendment) Act, 1972 (Act XII of 1972) and the Constitution (24th Amendment) Act, 1971 and the Constitution (25th Amendment) Act, 1971 so far those related to the amendment of Fundamental Rights, Mr. Justice S.K. Dutta of Calcutta High Court issued a rule nisi upon the State of West Bengal, the Union of India and others to show cause why a declaration should not be made to the effect that provisions of the West Bengal Land Reforms (Amendment) Act, 1972 (Act XII of 1972) were void and ultra vires and that Parliament had no power to amend the provisions of fundamental rights of the Constitution and as such the provisions of the Constitution (24th and 25th Amendment) Acts so far as those made further inroads into fundamental rights of the Constitution

and also why a writ in the nature of mandamus should not be issued commanding them not to enforce those Acts.

His lordship passed an interim order of injunction restraining the State Government, Union of India and others from enforcing the provisions of the West Bengal Land Reforms (Amendment) Act, 1972 (Act XII of 1972 so far as the petitioners were concerned for a period of one month with liberty to apply for extension of the period. Leave under Order 1, rule 8 of the Code of Civil Procedure was also granted.

It was contended that the Act was not protected by Article 31A 31B of the Constitution and it was open to challenge on the grounds of infringement of fundamental rights and unreasonableness. The State Government had no power to fix the ceiling area for a family of raiyats. The "family" had been given an artificial definition.

APC Recommends Higher Paddy Price

New Delhi : The Agricultural Prices Commission has recommended a uniform higher minimum support price for standard varieties of paddy around Rs. 48 per quintal throughout the country for the kharif cereals for the 1972-73 season.

This represents an increase of Rs. two per quintal over the price for the corresponding season last year.

The Commission has recommended maintaining the status quo in the prices of coarse grains like jowar, bajra, maize and ragi at Rs. 45 per quintal.

Explaining the reasons for a higher minimum support price, APC, in its latest report, pointed out that the 1971-72 kharif season was characterised by drought, floods and cyclones and as a consequence, production of kharif cereals, particularly coarse grains, was adversely affected.

APC has argued that while deciding the minimum support price for the 1972-73 kharif cereals, the vital factor to be taken into account is the likely improvement in production resulting from the successful experiments with the high-yielding varieties of rice and coarse grains.

The APC said that with the expected improvement in production and given a spell of favourable weather in the coming year, there is need for support operations in respect of kharif cereals.

The Commission pointed out that last year a market rise in the production of coarse grains had necessitated support purchases. Besides this, the experience with the administered prices of wheat underlines the need for keeping alive the distinction between minimum support and procurement prices.

In this context, APC stressed that the two prices—minimum support and procurement prices—must not be mixed up. The support prices are announced at the working time and the procurement prices at the time of arrival of grains in markets.

Subsidy

The Commission has criticised that while rice and coarse grains consumers pay a price, which includes the costs of distribution and margins, consumers of wheat, a superior cereal, pay a heavily-subsidised price. This adversely affects

the purchasers of rice and coarse grains which are generally consumed by poorer people.

APC has said since the prices of various inputs used for paddy cultivation have gone up, there is a case for a moderate upward revision or adjustment in the minimum support price of paddy.

Prices of fertilisers have gone up by four per cent. Recent trends suggest that agricultural wages may have risen in some States, but in spite of all this, the production cost of paddy is not likely to be more than four per cent.

In the case of coarse grains, the use of purchased inputs like fertilisers is only confined to the high-yielding varieties. But increases in per hectare yields more than compensates the additional expenditure incurred in raising these varieties.

APC points out that in recent months the prices of insecticides, diesel oil, lubricants and agricultural implements has remained stationary, while marginal increases occurred in electricity charges and cement prices.

The Commission has stressed the need for timely collection of precise data in the cost of production of kharif cereals. Since the available data is inadequate, it is essential that data for the cost of production of principal crops should be made available before deciding the support prices and procurement prices.

APC feels that according to present indications, rice output may be somewhat higher than that of 1971-72 and maize, bajra and jowar outputs significantly lower.

Market arrivals of paddy during

(Contd. on page 5)

New Members of Bharat Krishak Samaj

(From April, 1972 to May, 1972)

- 12072—Rattan Lal Bhan,
Gogji Bagh, Srinagar,
Kashmir.
- 12073—E. N. Choksay,
At/Post/Tal : Ramtek,
Distt: Nagpur, (MHR)
- 12074—Nilkanth Mitharamji Pawar,
V. & Post : Ichapur, Tal, Khandwa,
Distt: Burhanpur, (M.P.)
- 12075—Sonaji Krishan Pawar,
V. & Post : Ichapur, Tal : Burhanpur,
Distt : Khandwa, (M.P.)
- 12076—Janardanrao Eaknath Pawar,
V. & Post : Ichapur, Tal : Burhanpur
Distt : Khandwa, (M.P.)
- 12077—Uttamchand Chunilal Jain,
V. & Post : Ichapur, Tal : Burhanpur,
Distt : Khandwa, (M.P.)
- 12078—Bhagwantrao Bagirao Deshmukh,
V. & Post : Ichapur. Tal : Burhanpur,
Distt : Khandwa, (M.P.)
- 12079—Sh. Devidass Narayanrao Patil,
V. & Post : Ichapur, Tal : Burhanpur,
Distt : Khandwa, (M.P.)
- 12080—Sh. Bhawa Singh Bhiku Singh Rajput,
V. & Post : Ichapur, Tal : Burhanpur,
Distt : Khandwa, (M.P.)
- 12081—Sh. Ishwar Lal Brij Lal Choudhury,
V : Sanwara, Tal & Post : Burhanpur,
Distt : Khandwa, (M.P.)
- 12082—Sh. Tanwant Singh Harnam Singh Keer,
C/o. Amrit Singh & Sons, Mandi Burhanpur,
Distt : Khandwa, (M.P.)
- 12083—Sh. Baburao Rajaram Patil,
V. & Post : Dopara, Tal : Burhanpur
Distt : Khandwa, (M.P.)
- 12084—Sh. K. Narsinha Reddy,
H. No. 1-6. V. & Post & Tal : Miryalguda,
Distt : Nalgonda, (A.P.)
- 12085—Sh. Trijugi Narain Misra, Chairman.
Town Area Committee, Beniganj,
Distt : Hardoi, (U.P.)
- 12086—Sh. Jagat Narain Dixit,
V : Koliya Khurd, Post : Godanli,
Distt : Jalaun, (U.P.)
- 12087—Sh. Chitram Shankar Patil,
At/Post : Chadvel Korde, Tal : Sakri,
Distt : Dhulia, (MHR)
- 12088—Sh. Shankarsing Narayansing Gunavate,
At & Post : Kalamber, (Gandhi Nagar),
Tal : Khandhar, Distt : Nanded, (MHR)
- 12089—Sh. Anandrao Krishanrao Deshmukh,
Kedia Plots, Javahar Peth, Road,
At/Post/Tal/Distt : Akola, (MHR)
- 12090—Sh. Govardhan Janardan Khotare,
At & Post : Shirsoli, Tal : Akot,
Distt : Akola, (MHR)
- 12091—Sh. Bandu Sadashivwani,
Javahar Road, At/Post/Tal : Parola,
Distt : Jalgaon, (MHR)
- 12092—Sh. Nandkishor Ramachandra Sharma,
New Market, At/Post : Jalna,
Distt : Aurangabad, (MHR)
- 12093—Sh. Sharad Anant Kulkarni, C/o.
Anant Auto Dealers, Visanji Nagar,
Distt : Jalgaon, (MHR)
- 12094—Sh. Ekanath Shivaji Mahajan,
At & Post : Desnur, Tal : Raver,
Distt: Jalgaon, (MHR)
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At & Post : Desnur, Tal : Raver,
Distt : Jalgaon, (MHR)
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Distt : Jalgaon, (MHR)
- 12097—Sh. Namdeo Mango Lasnure,
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Distt : Jalgaon, (MHR)

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Distt : Jalgaon, (MHR)
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V. & Post : Pedapanki, Tal : Bobbli,
Distt : Srikukulam, (A.P.)
- 12101—Sh. Chelikani Venkatrao,
V. & Post/Tal : Bobbli,
Distt : Srikukulam, (A.P.)
- 12102—Sh. Sidda Narayan Swami,
V./Post/Tal : Bobbli,
Distt : Srikukulam, (A.P.)
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V & Post : Bhoma-Bazidpur, Teh : Fazilka,
Distt : Ferozepur, (Punjab)
- 12107—Sh. Ch. Shiv Kumar Bishnoi,
V. & Post : Bhoma Bazidpur, Tal : Fazilka,
Distt : Ferozepur, (Punjab)
- 12108—Sh Jagjit Singh Mann,
137-Lal Bagh Street,
Patiala, (Punjab)
- 12109—Sh. Lagamgonda Yodagonda Patil,
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Vice-President : Shri V. Madusudhan Reddy.
Secretary : Shri S. Janardhan Reddy.
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