

THE MINISTER OF HUMAN RESOURCE DEVELOPMENT (SHRI MADHAVRAO SCINDIA) : (a) In all 56 projects, each of one year's duration, are under implementation under the revamped RFLP scheme from 1994-95 in the States of Sikkim, J & K, Assam, Arunachal Pradesh, Manipur, Meghalaya, Nagaland, Mizoram to cover about 4.10 lakhs non-literates in the age group 15-35 years. Under each project 100 centres are allowed and each centre can enrol 25-30 non-literates. Since the projects were sanctioned late in 1994-95 and commenced subsequently, these are under various stages of implementation. The number of persons actually made literate can be assessed only on completion of the project span.

(b) RFLP is extended only to such areas and terrains where the campaign approach would be difficult to implement. At present the scheme is restricted to the States of Sikkim, J & K, North Eastern States, and border districts of Rajasthan and Dadra Nagar Haveli. It is only in these States/UTs that RFLP can be implemented, and only in such areas where these States decide that such proposals can be considered. As such, there is no definite plan to cover any particular areas.

(English)

#### Expenditure on Agricultural Research

\*225. SHRI RAJENDRA AGNIHOTRI : Will the Minister of AGRICULTURE be pleased to state :

(a) the percentage of total outlay as well as Gross Domestic Product spent on the agricultural research during each of the Five Year Plans;

(b) the main thrust of agricultural research during the Seventh and Eighth Five Year Plans; and

(c) the main achievements of research in the Agricultural Sector during the Seventh and Eighth Plans?

MINISTER OF AGRICULTURE (SHRI BALRAM JAKHAR) : (a) Department of Agricultural Research and Education came in plan ambit only since Fourth Plan. The percentage of total outlay and percentage of GDP spent on agricultural research by G.O.I. from Fourth Plan onwards is given in the enclosed Statement-I.

(b) Information is given in the enclosed Statement-II.

(c) Information is given in the enclosed Statements-III and IV.

#### STATEMENT-I

*Investment in Agricultural Research as percent of Total Outlay as well as Gross Domestic Product during Plan Periods*

Plan	DARE/ICAR's outlay as % of total Plan outlay (Public Sector)	DARE/ICAR's outlay as % of GDP at current prices
1	2	3
IV Plan (1969-74)	0.535	0.035

1	2	3
V Plan (1974-78)	0.391	0.046
VI Plan (1980-85)	0.349	0.037
VII Plan (1985-90)	0.236	0.026
VIII Plan (1992-97)	0.299	0.034

#### STATEMENT-II

*Main Thrust Areas of Research in Agricultural Sector in VII Plan*

- Conservation and exploitation of germplasm resources of plants, animals, fisheries to broaden genetic base for improvement. Enhancing production through evolving new varieties/strains of crops and animals, incorporating multiple resistance against pests and diseases, saline and alkaline soil, drought, floods etc.

- Improving nutrient management system through biological nitrogen fixation, input-use efficiency and weed control. Complete inventory of natural resources using remote sensing and other advanced techniques.

- Improving dry farming technology, with emphasis on developing suitable crop weather relationship including tree and livestock as an essential component under different agro-climatic situations and on-farm water conservation and management.

- Energy management in agriculture; Post harvest technology with emphasis on-farm storage, processing and marketing of agricultural produce.

- Improving information and communication systems; Fostering excellence in research and educational programmes; Human resources development with special emphasis on weaker sections.

*Main Thrust Areas of Research in Agricultural Sector in the VIII Plan*

- Improve production potential of crops by developing varieties with multi-resistance and high productivity under low, medium, and high input conditions through the use of biotechnology and conventional technologies.

- Achieve self sufficiency in oilseed production.

- Increase productivity of horticultural crops and exploit export potential.

- Develop integrated farming system for sustainable agriculture.

- Increase biomass production for fuel, fodder and small timber.

- Energy management in Agriculture and exploitation of non-conventional energy sources.

- Use of embryo transfer technology for quick genetic improvement of livestock and genetic engineering to fight animal diseases.

- Improving fish production in brackish water, cold water and fresh water aquaculture systems.

### STATEMENT-III

#### *Main Achievement of Research in Agricultural Sector in the VII Plan*

The Council implemented 170 plan schemes in the VII plan. Of these 149 were carried over from VI Plan while 21 were the new starts. The major achievements in VII Plan by sectors are given below :

#### *I. Crop Science*

- Germplasm collection, conservation and exchange.
- Setting up of National Gene Bank.

- Development of superfast early maturing, drought tolerant varieties of rice, disease resistant varieties of wheat, hybrids and components of maize, early maturing pearl millet, promising varieties of small millets, early maturing and disease resistant mungbean, chickpea, pigeonpea etc. As a result of research, a number of high yielding varieties/hybrids in various crops including 120 in cereals, 64 in oilseeds, 48 in pulses, 28 in commercial crops were released and identified.

- Multiple disease resistant fodder sorghum, Dinanath gram and high yielding berseem variety. Development of interspecific hybrid in desi cotton, disease resistant and drought tolerant groundnut variety, new castor and sunflower hybrid, double purpose linseed varieties, IPM strategies to control major pests in rice, cotton, pulses and sugarcane.

- Stress on biological control of crop pests, particularly in cotton, tobacco, coconut, sugarcane, aquatic weeds.

- Monitoring of pesticide residues in agricultural products.

- Establishment of Italian honey bee in States of Punjab, Haryana, Himachal Pradesh and Bihar.

- Increase in breeder seeds of oilseeds, pulses, cereals and coarse cereals. A breeder seed production of 19575 q. of oilseeds, 10900 q of pulses, 18830 q. of cereals and 917 q. of coarse cereals was achieved.

- Biotechnology for crop improvement in rapeseed and applications in other crops.

#### *II. Horticulture*

- Two promising mango hybrids, several grape hybrids, disease resistant ber varieties, improved pomegranate varieties, new varieties of papaya and tissue culture technique for date palm multiplication.

- 119 improved and disease resistant varieties in

16 vegetable crops, development of agro-technologies for vegetables and fruits, breeder seed production in vegetables, new edible mushrooms, 27 varieties of potato, plant protection schedule, forecasting system for late blight of potato, seven varieties of tuber crops, seven high yielding varieties in coconut, nine improved cultivars of cashew, one cultivar each in ginger, linseed, cumin, fenugreek etc., high production technologies for cardamom, pepper, 46 varieties of rose, 29 of gladiolus, 3 of carnation, a few of chrysanthemum and 2 hybrids of orchids, post harvest technology for horticultural crops to add value, avoid waste etc.

#### *III. Soil, Agronomy and Agroforestry*

- Preparation of resource inventory, soil map, soil survey, cropping system management in different agroclimatic zones, characterisation and use of weather parameters for crop planning, weed management techniques, varieties to suit diara lands, prominent tree species and agroforestry system, agri-horticultural and silvipastoral system for NEH region, cultural biological and mechanical measures for management of degraded lands, on-farm water management techniques, use of drip, sprinkler methods of irrigation to high value crops, methods to control runoffs in high rainfall areas, conjunctive use of water, micronutrient management and development of efficient biofertilizers.

#### *IV. Agricultural Engineering*

Development, testing and prototype production of several farm equipments, post harvest engineering technology, application of plastics in agriculture, energy efficient management, use of wind power, solar power, biogas technology, high capacity low-lift propeller pumps, improvements in water lifts, technologies to regenerate failed and sick tube wells and groundwater modelling.

#### *V. Animal Science*

Animal genetics and resource conservation, development of high yielding strains of cattle, sheep, goat, germplasm exchange, large number of reproduction technologies, improvement of nutritive value of existing feeds through chemical and biological processes, use of non-conventional feed resources, development of newer milk processing techniques, of meat product development, animal fibre evaluation, diversification of product utilisation, production testing and use of fine immunobiologicals in poultry, large scale cell culture for production of vaccine, livestock farming systems in different agro-regions etc.

#### *VI. Fisheries*

Making aquaculture a bankable rural industry, increasing yield of ponds, increase in prawn farming and mariculture technology on pearl oyster, edible oyster, new designs of fishing crafts and gear, improvement of post-harvest technology, imparting fisheries training and education, development of low

input, higher yield technologies, development of small scale hatchery technology for production of prawn seed, integrated rice-cum-fish culture, technologies for breeding and culture of cold water fisheries, resource assessment surveys, post harvest technology for fish handling, processing, preservation, by products and quality control, preparation of manual for fish genetics resources, artificial induction of permanent sex reversal without change of genotype, upgrading Central Institute of Fisheries Education, Bombay into a "Deemed University" etc.

#### VII. Agricultural Economics and Statistics

Establishment of National Centre on Agricultural Economics and Policy Research and planning for studies on agricultural policy analysis in various agroclimatic regions and socio-economic situations of the country, development of methodology in various areas of application of statistics to researches in sample surveys, design of experiments, forecasting of crop yields etc., design for plant and animal husbandry, methodology for estimation of crop yields, training courses in computer applications in agriculture etc.

#### VIII. National Agricultural Research Project and Agricultural Extension

The State Agricultural University System has been strengthened by staff and infrastructure on many of the 120 agroclimatic zones with zonal research system, effective linkage between research and extension, national demonstration programmes on the latest crop production technologies with special emphasis on pulses, oilseeds besides cereals covering most of the agroclimatic zones of the country, adoption of farm families under Lab-to-Land Programme for introduction of low-cost package of agricultural and allied technologies, establishment of 20 new KVKs, on-farm and operational research projects on pesticides use, problems soils resource management in watersheds and scheduled castes and tribes.

#### IX. Agricultural Education

Assistance in the development of State Agricultural Universities, plan to establish a Central University in NEH region, Centres of Advance Studies through UNDP assistance, improving quality of education through creation of professional chairs, professors of eminence, university level books, best teacher awards, merit-cum-means scholarship, summer institutes etc.

#### X. Publication and Information

Publication of 182 titles in priority areas of agricultural research, technology bulletins, publication of "Indian National Agricultural Bibliography", computerization of Agricultural Research Information Centre, Special issues of Indian farming, Kheti etc., participation in exhibitions and fairs in different parts of the country etc.

### STATEMENT-IV

#### Main Achievements of Research in Agricultural Sector in VIII Plan

##### I. Crop Science

- A National Gene Bank equipped with long/medium term storage facilities commissioned.
- Storage of 1,45,000 accessions in National Gene Bank.
- Widening of Genetic base in crops through application of Bio-technology.
- Release of four varieties of hybrid rice, India's first single cross hybrid of maize, first rabi hybrid of sorghum, two hybrids of bajra, two in sunflower, first hybrid of rapeseed, two new hybrids of castor, two hybrids of pigeonpea, three medium staple cotton hybrids for north west India, seven new pulse variety, new forage crops varieties in sorghum, bajra and maize.
- Promotion of bio-control agents and pesticides of plant origin like neem for plant protection.
- Establishment of a new research centre on DNA finger printing and bio-technology centre for Crop Science.

- Production of breeder seed to adequately meet the demand of Department of Agriculture.

##### II. Horticulture

- Release of 4 promising mango hybrids, 6 varieties of grapes, 2 varieties of guava, 2 varieties in brinjal, four in onion, hybrids in cabbage, cauliflower, brinjal high yielding strains of mushroom, three potato hybrids, several varieties and two hybrids of rose, 1 hybrid of gladiolus for export, four varieties of cashew, improved varieties of spices, a new variety of "asgand", spearmint, pipati, lemon grass, betelvine etc.
- Standardisation of 23 improved agro-techniques in production technology.

##### III. Soil Agronomy and Agro-forestry

- Development of water quality guidelines and the technology for the use of brackish water in agriculture.
- Soil resource maps for 11 States have been prepared on 1:250,000 scale - others are under printing.
- Agro-ecological Region Map of India on 1:4:5 million scale has been prepared. Soil degradation of map of India has been prepared.
- Area of micro-nutrients deficiency in the country limiting crop production have been delineated.
- A bullock driven CRIDA drill plough has been developed, which assists in efficient placement of seeds and fertilizers.
- A seed-cum-fertilizer drill for uniform and proper

placement of seed and fertilizer, which is cost saving as well as can be fabricated using locally available materials, has been developed.

#### IV. Agricultural Engineering

- Development of improved farm implements, hand tools and equipments which include animal drawn blade harrow, sprayer for tall crops, groundnut pod stripper, multi-crop thresher etc.

- Post-harvest techniques/equipment/processes are developed which include fruit harvesting device, flour separator, foot operated cotton ginning machine etc.

- Evolution of techniques for using renewable energy sources which include rice husk based gasifiers, solar dryers, bio-gas run engines etc.

#### V. Animal Science

- Development of a sera bank for generating antisera against erythrocytic antigen of cattle.

- Establishment of semen freezing laboratory at the Project Directorate on Cattle, Meerut.

- A new genotype of sheep "Keri" developed.

- Improvement in 10 white leg horn strains of poultry.

- A germplasm bank with "Murrah" and "Nili Ravi" Bulls has been established.

- Use of Embryo Transfer Technology for quick genetic improvement.

#### VI. Fisheries

- Use of marine remote sensing information for Scientific Management of capture fisheries and fishery forecasting.

- Development of package of technologies for carp culture, multiple spawning of carps, freshwater prawn culture, fresh water pearl production, integrated aquaculture with crop and animals etc.

- Technologies for breeding, seed production and culture of cold water fishes like "trout" and "Masheer".

- Development of mariculture technology and pearl oyster and pearl production.

- Designing of fabrication and commercialization of 4-blade and fuel efficient fishing craft.

- Development and commercialisation of absorbable surgical sutures from fish guts.

#### VII. Agricultural Economics and Statistics

- Establishment of a new research centre on Agricultural Economics and Policy Research.

- New designs for planning and analysis of agricultural experiments.

#### VIII. Support Services

- Establishment of 75 new KVKs for on-farm testing, vocational training and front-line demonstration on important crops.

- Under the National Agricultural Research Project, 120 Zonal Stations with 343 Centres have been established/strengthened.

- Launching of World Bank aided Agricultural Human Resource Development Project.

- Launching of Institute-Village Linkage programme for Technology assessment, refinement and transfer.

- Several reforms for better work-culture at ICAR Headquarters.

#### Giant Fresh Water Prawns

\*226. SHRI RAM KAPSE : Will the Minister of AGRICULTURE be pleased to state :

(a) whether the scientists of the Central Institute of Fresh Water Agriculture, Bhubaneswar and Central Inland Fisheries Research Institute, Barrackpore have pointed out that the problem of environment fouling caused by large scale Prawn Farming in the coastal areas can be controlled by encouraging trade circles to rear the 'eco-friendly' Giant Freshwater Prawns known as 'Scampi';

(b) if so, the details thereof; and

(c) the action proposed to be taken by the Government in this regard?

THE MINISTER OF AGRICULTURE (SHRI BALRAM JAKHAR) : (a) No, Sir.

(b) and (c). Questions do not arise in view of (a) above.

#### Marketing Facility for Fruits

\*227. SHRI LAETA UMBREY : Will the Minister of AGRICULTURE be pleased to state :

(a) whether the fruits and vegetables are produced in large quantities in the North-Eastern States particularly in the Arunachal Pradesh;

(b) whether the producers are being exploited by the Dalals due to absence of the marketing facilities;

(c) if so, the details thereof;

(d) the steps being taken/proposed to be taken to provide marketing facilities to the producers in the States; and

(e) the role played by the TRIFED in the State so far?

THE MINISTER OF AGRICULTURE (SHRI BALRAM JAKHAR) : (a) No, Sir.