SIXTY-FIFTH REPORT

PUBLIC ACCOUNTS COMMITTEE
(2007-2008)

(FOURTEENTH LOK SABHA)

MANAGEMENT OF PROJECTS RELATING TO UTILISATION AND CONSERVATION OF SOIL AND WATER UNDERTAKEN BY INSTITUTES OF ICAR

[ACTION TAKEN ON 40TH REPORT OF PUBLIC ACCOUNTS COMMITTEE]

(14th Lok Sabha)

MINISTRY OF AGRICULTURE
(DEPARTMENT OF AGRICULTURAL RESEARCH AND EDUCATION)

Presented to Lok Sabha on .....

Laid in Rajya Sabha on .....

LOK SABHA SECRETARIAT
NEW DELHI

January, 2008/*Pausa,* 1929 *(Saka)*

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CONTENTS

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INTRODUCTION

I, the Chairman, Public Accounts Committee, as authorized by the Committee, do present this Sixth-fifth Report on action taken by Government on the recommendations of the Public Accounts Committee contained in their 40th Report (14th Lok Sabha) on "Management of projects relating to Utilisation and Conservation of Soil and Water undertaken by Institutes of ICAR".

2. This Report was considered and adopted by the Public Accounts Committee at their sitting held on 9th January, 2008. Minutes of the sitting form Part II of the Report.

3. For facility of reference and convenience, the Recommendations and Observations of the Committee have been printed in thick type in the body of the Report.

4. The Committee place on record their appreciation of the assistance rendered to them in the matter by the Office of the Comptroller and Auditor-General of India.

5. The Committee also place on record their appreciation for the invaluable assistance rendered to them by the officials of Lok Sabha Secretariat attached with the Committee.

NEW DELHI;
17 *January*, 2008
27 *Pausa*, 1929 (*Saka*)

PROF. VIJAY KUMAR MALHOTRA,
Chairman,
Public Accounts Committee.

CHAPTER I

REPORT

This Report of the Committee deals with the action taken by the Government on the Recommendations/Observations of the Committee contained in their Fortieth Report (Fourteenth Lok Sabha) on "Management of projects relating to Utilisation and Conservation of Soil and Water undertaken by Institutes of ICAR."

2. In their Fortieth Report presented to Lok Sabha on 9th March, 2007 the Committee had dealt with various issues relating to management of the projects undertaken by the five Institutes of Indian Council of Agricultural Research (ICAR) to utilize and conserve Soil and Water with reference to the milestones and achievements of objectives and benefits that were to be derived from them. The Report contained eight Recommendations/Observations.

3. The Action Taken Notes have been received from the Ministry of Agriculture (Department of Agricultural Research and Education) in respect of all the eight Recommendations/Observations and these have been categorised as under:—

(i) Recommendations/Observations which have been accepted by the Government.

Recommendation Sl. Nos. 1, 2, 4, 5, 6 and 7 (Para Nos. 81, 82, 84, 85, 86 and 87)

Total : 6
Chapter-II

(ii) Recommendation/Observation which the Committee do not desire to pursue in view of the replies received from the Government.

-Nil-

NIL
Chapter-III

(iii) Recommendation/Observation in respect of which replies of Government have not been accepted by the Committee and which require reiteration;

-Nil-

NIL
Chapter-IV

(iv) Recommendations/Observations in respect of which Government have furnished interim replies.

Recommendation Sl. Nos. 3 and 8 (Para Nos. 83 and 88)

Total: 2
Chapter-V

Important Recommendations/Observations contained in the 40th Report of PAC (14th Lok Sabha)

4. The gist of the important Recommendations/Observations made by the Committee in their 40th Report of the subject are as follows:

* Proper maintenance of Research Project Files and all other such documents including National Register of Soil Series emphasised upon.
* The Research Institutes asked to show the requisite urgency in completion of the projects within the stipulated period and take necessary measures to ensure that the objectives laid down in the projects are fully and timely achieved.
* Need for a system in place to ensure that scientists who were sent abroad submit their Reports timely.
* Effective institutionalized monitoring mechanism for periodical review of the projects urged to ensure that the projects are completed properly and expeditiously.
* With regard to effective co-ordination and supervision of various activities relating to transfer of technologies/research inputs developed by various Agricultural Research Institutes to the farmers, the Committee had asked for a feasibility study for setting up of State Level Agricultural Research Extension Committees comprising of representatives from the Ministry of Agriculture, Indian Council of Agricultural Research, State Governments, Farmers Associations and Non-Governmental Organisations involved in Agricultural Extension.

5. The Action Taken notes furnished by the Ministry of Agriculture (Department of Agricultural Research and Education) have been reproduced in the subsequent Chapters of this Report. The Committee will now deal with the Action Taken by the Government on some of their Recommendations/Observations that requires reiteration or merit comments.

A. Improper Maintenance of Projects Files (Recommendation Sl. No. 3, Para No. 83)

6. In their 40th Report, the Committee had regretted to note that National Bureau of Soil Survey and Land Use Planning (NBSS&LUP), Nagpur had terminated 15 projects even before their completion during 1999-2004. Further, it was observed that no records were maintained for 10 completed projects and in 16 projects, Research Projects Files (RPFs) had been maintained intermittently. The Committee had asked for taking suitable steps to ensure that Research Projects Files and all other such documents including National Register of Soil Series are properly maintained in order to have effective monitoring of research activities by Staff Research Council and Research Advisory Committees.

7. The Ministry of Agriculture (Department of Agricultural Research and Education) in their Action Taken Note have stated as under:—

> "The Director, NBSS & LUP, Nagpur had issued strict instructions to the Heads of Regional Centres to have proper maintenance of RPF-I, II, III files in respect of scientists for proper monitoring of their research progress and achievements by Institute Research Committee and Research Advisory Committtee. The ACRs of the scientists are to be based on the progress reflected in Research Project Files.
>
> The National Register of Soil Series is to be maintained by indexing in it the new series established from time to time after correlation at National level. The correlation of soil series involved many organizations, notably, soil survey agencies of State Departments of Agriculture. In most of the States soil survey agencies either became weak in strength or non-functional. Accordingly, the Bureau received less inputs from the State government organizations regarding soil correlation work. However, the Bureau has resumed soil correlation work with whatever inputs available from the State Departments. The work is in progress with West Bengal, Tripura, Meghalaya, Tamil Nadu, Pondicherry, Haryana, Himachal Pradesh and Uttar Pradesh. The required soil correlation committees have been formed wtih State Departments and correlation at State level is in progress at different regional centres. After Regional correlation, the same will be done at national level to establish National Soil Series."

8. The Committee expect that the steps taken by Indian Council of Agricultural Research to link ACRs of scientists with the progress reflected in Research Project Files would ensure proper maintenance of all records by ensuring a proper system. Needless to emphasise this move would in turn help in effective monitoring of the progress made in Research Projects by the controlling Research Institutes/Centres/Committees.

9. With regard to establishment of National Register of Soil Series, the Committee have been apprised that inputs regarding soil corrections are being obtained from various States and after regional correlation, the same will be done at national level to establish 'National Soil Series'. The Committee would like the Central Government to take up the matter at the highest level with State Government to expedite the action in the matter. Thereafter 'National Soil Series' may be established in a time bound manner.

B. Non-transfer of technology

(Recommendation Sl. No. 8, Para No. 88)

10. With regard to transfer of technologies, the Committee had noticed that sixteen technologies that were developed at a total cost of about Rs. 2.44 crore in the fields of water and soil conservation had not been transferred to the end-users *i.e.* farmers. The Committee had desired that whatever steps that were required to strengthen the system should be taken so that the technologies reach the end-users. In this connection, the Ministry were asked to study the feasibility of setting up of State Level Agricultural Research Extension Committees comprising representatives of Ministry of Agriculture, Indian Council of Agricultural Research, State Government officials, Farmers Associations and Non-Governmental Organisations involved in Agricultural Extension etc. for effective co-ordination and supervision of various activities relating to transfer

of technologies/research inputs developed by various Agricultural Research Institutes to the farmers.

11. In their Action Taken Note, the Ministry of Agriculture have stated that in pursuance of the recommendation of the Committee, ICAR has developed a framework for Technology Development and delivery System in Agriculture for effective co-ordination of various activities relating to transfer of technologies/research inputs developed by various agricultural research institutions to the farmers. The framework is currently under active consideration of the Government for its adoption and implementation.

12. The Committee have been informed that a framework for Technology Development and delivery system in Agriculture for effective co-ordination of various activities relating to transfer of technologies/research inputs developed by various agricultural research institutes to the farmers, had been developed by ICAR and the same is stated to be under active consideration of the Government for adoption and implementation. The Committee would like the Government to implement the proposed plan at the earliest and the Committee be apprised accordingly.

CHAPTER II

RECOMMENDATIONS/OBSERVATIONS WHICH HAVE BEEN ACCEPTED BY THE GOVERNMENT

Recommendation

The Natural Resource Management Division in the Indian Council of Agricultural Research is responsible for research on conservation, improvement and efficient utilisation of soil and water in the country. To accomplish these tasks, five research institutes of Indian Council of Agricultural Research are engaged in the research activities in these areas. The National Bureau of Soil Survey and Land Use Planning, Nagpur is engaged in conducting soil survey and mapping the soils of the country to promote scientific and optimal land pedology, soil survey, land evaluation and land use planning. The Indian Institute of Soil Science, Bhopal had been set up for conducting basic and strategic research on soils, especially physical, chemical and biological processes related to management of nutrients, water and energy and for developing advanced technologies for sustainable systems of inputs management in soils. For basic and applied research for developing strategies for salinity control, reclamation and management of salt affected soils, the Central Soil Salinity Research Institute was established at Karnal. In order to conduct basic and applied research for developing strategies for efficient utilisation of on-farm water resources so as to enhance agricultural productivity on sustainable basis, the Water Technology Centre for Eastern Region was set up at Bhubaneswar. With a view to control lands degradation under all primary production system, rehabilitation of degraded lands, updating technologies in soil and water conservation, watershed development and its management and undertaking water harvesting measures the Central Soil and Water Conservation Research and Training Institute was set up in Dehradun.

[Sl. No. 81, Appendix II, Para 1 of 40th PAC (14th Lok Sabha)]

Action Taken

Introductory account only. Hence, no action required.

Sd/-
(A.K. Upadhyaya)
Secretary, ICAR and Additional Secretary (DARE)

[Department of Agricultural Research and Education, O.M.No. 11/1/5/2005/PAC dated 9.3.2007]

Recommendation

The Committee are concerned to note that a review of the management in-house projects, sponsored projects and externally aided projects undertaken and completed over the last five years by the aforesaid five institutes for utilisation and conservation

of soil and water with reference to the milestones and achievements of objectives and benefits derived from them has revealed a number of deficiencies in the system. These include non-maintenance of project files by two Research Institutes namely National Bureau of Soil Survey and Land Use Planning, Nagpur and Central Soil and Water Conservation Research and Training Institute, Dehradun as required under rules resulting in adequate monitoring of the project by Staff Research Council/Research Advisory Committee. Many research projects were concluded with non-achievement/ partial achievement of objectives despite time overruns. Technologies developed were not transferred to the end users thereby defeating the ultimate objective of dissemination. Further, there was under performance in soil survey, mapping of salt affected soils and documentation of traditional wisdom. These issues have been discussed in detail in the following paragraphs.

[Sl. No. 82, Appendix II, Para 2 of 40th PAC (14th Lok Sabha)]

Action Taken

General recommendation for all the Institutes. The ATRs on specific issues of the institutes are given in the following paragraphs.

Sd/-
(A.K. Upadhyaya)
Secretary, ICAR and Additional Secretary (DARE)
[Department of Agricultural Research and Education, O.M.No. 11/1/5/2005/PAC dated 9.3.2007]

Recommendation

Another area of concern in the working of National Bureau of Soil Survey and Land Use Planning (NBSS&LUP) is the fact that it could not achieve the objectives of soil survey, mapping of land use planning in three projects involving total expenditure of Rs. 6.63 crores. In these three projects there were partial achievement of objectives and delay in completion ranged from three months to seven years. Soil Survey Reports were not prepared even after lapse of five to twenty-five years although conducting soil surveys and publishing report for land use planning was one of the mandates of this Institute. A project was undertaken in collaboration with CSSRI, Karnal, in May 1996 on "Preparation of soil resource inventory of coastal salt affected areas of West Bengal and Orissa using satellite imagery and characterization and classification of the soil to determine their potentialities, problems and mangement" at an outlay of Rs. 16 lakh was to be completed by December 2006 whereas the stipulated period of completion was two years. In another project on "Identification, characterization and delineation of agro-economic constraints of oilseed based production systems in rainfed eco-system" taken up from July 2000 to February 2003 at an estimated cost of Rs. 55.41 lakhs, studies were conducted for four crops in sixteen districts as against the target of six crops in nineteen districts. Further data on area and production by oil seeds conducted only in six districts as against twenty-eight different districts. Even in the sixteen districts covered, no strategies for improving the productivity of rainfed oilseed crops were suggested. The rainfed oilseed based production zones were also not delineated using Geographical Information System.Thus, the benefits of improving the productivity

of rainfed oilseeds could not be derived. In the third project on "Land Use Planning for Management of Agricultural Resources" from January, 2001 to December 2003, only Rs. 5.92 crore were spent against the allocation of Rs. 9.32 crore as of March, 2004.

From the above it is evident that aforesaid three projects were undertaken by the Institute of National Bureau of Soil Survey and Land Use Planning (NBSS&LUP), Nagpur without proper perception, planning and preliminary background work leading to unjustifiable delays, non-achievement of targets and under utilization of funds. The Committee are inclined to conclude that delay in completion of these projects deprived the beneficiaries of the intended benefits. As these are the only three projects test checked by the Audit, the Committee are of the view that there might be more such projects undertaken by these institutes where there could have been similar delays and non-achievement of the laid down targets. The committee desire that these Institutes should show the requisite urgency in completion of the projects within the stipulated period and should take all necessary measures to ensure that the objectives laid down under the projects are fully and timely achieved.

[Sl. No. 84 Appendix II Para 4 of 40th PAC (14th Lok Sabha)]

Action Taken

The Institutes have completed the delayed projects and submitted the final reports. For timely completion of the ongoing and future research projects as per their objectives, the necessary instructions for strict compliance have been issued to the Institutes by the Council (**Annexure-I).**

Vetting Comments of Audit

No comments Please.

Sd/-
(A.K. Upadhyaya)
Secretary, ICAR and Additional Secretary (DARE)

[Department of Agricultural Research and Education, O.M.No. 11/1/5/2005/PAC dated 9.3.2007]

ANNEXURE-I

Dr. NAWAB ALI
Deputy Director General
(Engineering/NRM)
D.O.No. 1-56/2004-IA-II

ICAR
INDIAN COUNCIL OF AGRICULTURAL RESEARCH
KRISHI ANUSANDHAN BHAVAN-II
PUSA, NEW DELHI-110012

23rd July, 2007

Dear Dr.

The Public Accounts Committee, 2006-07 (Lok Sabha) on Management of Projects on Utilization and Conservation of Soil and Water undertaken by Institutes of ICAR has submitted its observations in the 40th Report of the 14th Lok Sabha. The Institutes included for the scientific audit by CAG were CSWCR&TI, Dehradun. CSSRI, Karnal; IISS, Bhopal; WTCER, Bhubaneshwar and NBSS&LUP, Nagpur. The review has revealed that there was lack of proper planning, execution and monitoring of some research projects undertaken by the Institutes. Consequently, there were time and cost overruns and partial/non-achievement of objectives and targets. The inadequate action on the part of the Institutes defeated the very purpose of the projects for which they were conceived. The various deficiencies/shortcomings noticed point to the lack of effective institutionalized monitoring mechanism at ICAR/Ministry level. The Committee has recommended that ICAR streamline/strengthen the monitoring mechanism to have the projects reviewed periodically for their proper and timely execution. Further, the guidelines on submission of deputation report within 30 days after the completion of the visit abroad should be strictly adhered to in future by the ICAR Institutes.

It is, therefore, impressed upon all the Directors of NRM Institutes that there should not be any such lapses in future. There should be proper maintenance of RPFs of scientists for appraisal and monitoring by the Institute Research Committees and Research Advisory Committees. The ACRs of the scientists may be based on the real achievements reflected in the RPFs.

Yours sincerely,

Sd/-

(NAWAB ALI)

By Names,
All Directors,
NRM Institutes.

Recommendation

In respect of working of Central Soil Salinity Research Institute, Karnal the Committee have noticed that there were partial achievement of objectives in two projects undertaken during the period 1999-2004. An externally aided Indo-United Kingdom collaborative research projects on "soil salinity and breeding of salt resistant crops (soil salinity and breeding for salt resistant crops rice, Indian mustard and gram)" was undertaken by the Institute in March, 1996 for five years at a total cost of Rs. 5.63 crore. The scrutiny has revealed that two of the six scientists who went abroad in connection with the project did not contribute anything and there was a delay of about three years in completion of this project. The Ministry have informed the committee that the two scientists in question have submitted their deputation reports in November 1997 and January 1998 respectively and the final report of the project was submitted in November, 2004. The Committee however, have not been informed as to why the two scientists submitted their reports late and what action was taken by the Institute against them. It is, thus, clear that the delay in submission of deputation Reports by the two scientists led to delay in overall completion of the project. The Committee desire that a system ought to be put in place to ensure that the scientists who were sent abroad submit their Reports timely and deterrent action should be taken against those who do not comply with the instructions in this regard. In another project namely "Management of salt affected soils and use of saline water in Agriculture" in which the Institute spent Rs. 7.19 crore during 1999-2004, the benchmark survey for quality control of ground water was undertaken from 1972 only in Guntur district of Andhra Pradesh, but no strategy had been formulated as yet to solve the water problems of that area. Further no benchmark surveys were carried out at centres other than Guntur district. In this connection, the Ministry have intimated that the water problems of the coastal belt of Guntur area have been solved through studies on Doruvu Technology and this technology had found favours with the farmers in the coastal belt. A number of benchmark sites have been identified in various irrigation commands in Uttar Pradesh, Andhra Pradesh, Madhya Pradesh, Tamil Nadu and Haryana and so on where the temporal changes in different benchmark sites are being studied with a view to make possible land use planning. The Committee hope that expeditious steps would be taken to study conditions of these sites to make their best use for agriculture requirements.

[Sl. No. 85 Appendix II Para 3 of 40th PAC (14th Lok Sabha)]

Action Taken

The Director, CSSRI, Karnal has sought the explanations of both the scientists on late submission of deputation reports (**Annexure-II).** In fact, system is already existing in ICAR for submission of deputation report within 30 days of the completion of the visit abroad. The guidelines on submission of deputation report will be strictly adhered to in future by the ICAR Institutes. Necessary instructions in this regard have been issued (**Annexure-I**).

The soils of the benchmark sites in different irrigation commands have been characterized for their best use in agriculture purposes. The extent of different categories of salt affected soils has been woked out. (**Annexure-III**).

Vetting Comments of Audit

Result of explanation and action taken thereto have not been detailed in the reply.

Sd/-
(A.K. Upadhyaya)
Secretary, ICAR and Additional Secretary (DARE)

[Department of Agricultural Research and Education, O.M.No. 11/1/5/2005/PAC dated 9.3.2007]

ANNEXURE-II

No. Audit Obj.06/P&S/6838-39

Dated: 13.01.2006

Dr. A. B. Mandal, Principal Scientist
through CRC, CSSRI, RRS
Canning Town

Sub. : Deputation abroad under CSSRI- Sussex Programme—Dr. A. B. Mandal, Principal Scientist, CSSRI, RRS, Canning Town.

I am to inform you that you were associated in CSSRI-Sussex collaborative project on Soil Salinity and breeding of Salt Resistant Crops. The Scientific Audit conducted during 2004 observed that you did not contribute anything in this project as reported in Annual Report of 1996-1997 and also did not submitted Deputation Report within the prescribed period. This lapse on your part has put the Institute/Council in a embarrassing situation and bad name to the Institute in the eyes of Audit and PAC.

The Competent Authority has taken a serious view and advised this Institute to take appropriate disciplinary action for the above lapses on your part. Accordingly you are hereby directed to clarify your position within a period of one week why disciplinary action may not be taken against you so that such lapses do not occur in future.

(Gurbachan Singh)
DIRECTOR

CC: Dy. Director General (NRM), ICAR, KAB-II, PUSA, New Delhi-110012 for favour of informaton.

Sd/-

DIRECTOR

No. Audit Obj./06/P&S/6836-37
Dated: 13.01.2006

Dr. V. R. Babu, Principal Scientist
through Project Director,
Directorate of Rice Research Institute,
Rajendra Nagar, Hyderabad-500030

Sub. : Deputation abroad under CSSRI- Sussex Programme—Dr. V. R. Babu, Ex-Senior Scientist, CSSRI, Karnal .

I am to inform you that you were associated in CSSRI-Sussex collaborative porject on Soil Salinity and breeding of Salt Resistant Crops. The Scientific Audit conducted during 2004 observed that you did not contribute anything in this project as reported in Annual Report of 1996-1997 and also did not submitted Deputation Report within the prescribed period. This lapse on your part has put the Institute/Council in a embarrassing situation and bad name to the Institute in the eyes of Audit and PAC.

The Competent Authority has taken a serious view and advised this Institute to take appropriate disciplinary action for the above lapses on your part. Accordingly you are hereby directed to clarify your position within a period of one week why disciplinary action may not be taken against you so that such lapses do not occur in future.

(Gurbachan Singh)
DIRECTOR

CC: Dy. Director General (NRM), ICAR, KAB-II, PUSA, New Delhi-110012 for favour of information.

Sd/-

DIRECTOR

ANNEXURE-III

Characterisation of Benchmark Salt Affected Soils Occurring in Different Irrigation Commands and Evaluation of Salt and Water Regime

Benchmark salt affected soils have been established in the following irrigation commands.

In the Western Jamuna canal command the alkali soils identified initially as Zarifa viran series and presently sustaining a Litchi orchard have been characterized for their present status. The crop shows wide spread growth differences amongst the planted trees. The sub soil solicity is influencing the growth of plants.

In the Bhakra canal command soils of the Farm Corporation of India were characterized in collaboration with the Hisar centre of the AICRP Highly saline, moderately saline and non saline situations were selected. Another soil, alkali in nature was characterized at Bhaini Majra village in Kaithal district.

In the Jawahar Lal Nehru canal command soils at village Machana, district Gurgaon were characterized. These soils appeared to be primary alkali soils. Soils at Bawal farm of HAU were also characterized, which exhibited signs of alkalization in the substratum due to the use of high RSC waters for irrigation.

In the Sharda Sahayak canal command soils of the experimental farm of CSSRI at Srivri, Lucknow were characterized. These represent typical alkali soils of the Indo Gangetic alluvial plain.

In the Upper Ganga canal command three soils supplied by the Agra centre of the AICRP from Shikohabad, Mahamayanagar and Manipuri were characterized.

In the Agra canal command soils in Chhata block were characterized. These have very high degree of salinity associated with shallow highly saline ground water table.

In the Narmada Sagar canal command soils at the Barwaha Farm of the Indore centre of AICRP were characterized. Although these are unirrigated uptil now they are highly sodic in nature.

In the Indira Gandhi canal command (IGNP) two soils, one at Baror and another at Loonkaransar farms of the Rajasthan Agrl. University were characterized in collaboration with Bikaner centre of AICRP.

In the Krishna Western delta command; Nagarjuna Sagar Right canal command, and the Godavari Western delta soils were characterized at Alkapuram, Mydholi and Undi in collaboration with Bapatla centre of AICRP.

In the Tungabhadra canal command soils were characterized at Gangawati in collaboration with the AICRP Gangawati centre.

In the Cauvery canal command the soils were characterized in collaboration with Tiruchirapalli centre of AICRP.

Estimates of saline/sodic soils in India

State/UT	Nature of problem (Area '000 ha)				Source
	Saline	Sodic	Undifferentiated	Total	
Punjab	10.2	190.9	Nil	201.1	NBSS, Pub. 45
Haryana	175.2	255.7	Nil	430.9	NBSS, Pub. 44
Rajasthan	608.2	9.5	Nil	617.7	NBSS, Pub. 51
Delhi	21.2	Nil	Nil	21.2	NBSS, Pub. 72
Uttar Pradesh	-	-	3523.0	3523.0	NBSS, 1999
Bihar	-	-	229.0	229.0	NBSS, Pub. 50
West Bengal	377.7	-	Nil	377.7	NBSS, Pub. 27
Maharashtra	2819.3	2571.6	Nil	5390.9	NBSS, Pub. 54
Andhra Pradesh	154.9	-	517.2	672.1	NBSS, Pub. 69
M.P.	1953.4	26.6	-	1980.0	NBSS, Pub. 59
Karnataka	100.0	10.0	-	110.0	NBSS, Pub. 47
Orissa	74.5	-	-	74.5	NBSS, Pub. 49
Tamil Nadu	-	-	96.2	96.2	NBSS, Pub. 46
Gujarat	5080.3	846.2	-	5926.5	NBSS, Pub. 29
Goa	1.0	-	-	1.0	NBSS, Pub. 74
A&N Islands	91.9	-	-	91.9	NBSS, Pub. 61
Karaikal	1.7	1.8	-	3.5	NBSS, Pub. 28
Pondicherry	-	-	3.4	3.4	NBSS, Pub. 28
Kerala	203.0	-	-	203.0	NBSS, Pub. 4
Jammu and Kashmir	40.0	20.0		60.0	NBSS, Pub. 62
Total	11712.5	3932.3	4239.9	20013.6	

Recommendation

Another instance where there has been partial achievement of objective relates to two projects undertaken by the Indian Institute of Soil Science, Bhopal. IISS undertook a project on "Organic pools and dynamics in relation to land use tillage and agronomic practices for maintenance of soil fertility" in May 2000 with Bhopal as lead centre with six co-operating centres at an estimated cost of Rs. 1.08 crore to be completed by December 2003. The project was extended up to March 2004 with additional outlay of Rs. 3.14 lakh and was aimed to quantify the changes in soil organic Carbon and Nitrogen pools to assess the mineralization potential and C-sequestration in soils of semi-arid and sub humid regions and to fit experimental data in different models of C-sequestration. Rs. 36.42 lakh was spent on this project by IISS till its completion.

Completion report of the project revealed that the project was implemented only in seven out of targeted eleven districts. Further due to delay in procurement of Carbon Hydrogen Nitrogen Sulphur analyzer and Furrier Transform Infrared Spectrophotometer, the chemical analysis of the project was hampered. Due to non-materialization of training of two scientists in the USA in modeling of Soil Organic Matter (SOM) and recent technique in SOM dynamics and measurements, one of the objectives of fitting of experimental data in different models of C-seqestration could not be achieved.

IISS also undertook a project on "Integrated Nutrient Management in major pulse based cropping system and identification of the most productive and remunerative systems" from May 2000 to March 2004 with Bhopal as lead centre. Against the total provision of Rs. 30.66 lakh an expenditure of Rs. 18.83 lakh was incurred. The project involved six important cropping systems at different locations. The final report of the project revealed that experiments on three cropping systems were not conducted and experiments on another cropping system were not conducted in two out of four locations. Consequently, the objective of identifying the most productive and remunerative pulses based cropping system under different soil and nutrient management could not be achieved. The Committee are constrained to point out that this project was undertaken without giving due consideration to the cropping sequences prevalent in the targeted districts resulting in revision of the technical programme after two years of starting the project. The Committee hope that suitable lessons would be drawn by the Institute/ ICAR from these projects and due care would be taken in future to ensure timely completion of the projects and for achievement of broad objectives.

[Sl. No. 86 Appendix II Para 4 of 40th PAC (14th Lok Sabha)]

Action Taken

The Institute Research Councils (IRCs) and Research Advisory Committees (RACs) of the institutes will appraise/review each and every aspect of projects before their start to have proper identification, implementation and fulfillment of the objectives. The Project Monitoring and Evaluation Cells (PME) have been created at the institutes to monitor the progress of the research projects as per the approved objectives. To avoid delay in procurement of equipments, the ICAR has revised and simplified the purchase procedures. ICAR has also simplified the procedures for foreign visits of scientists in time by delegating the powers to the Directors of the institutes.

Vetting Comments of Audit

No comments Please.

Sd/-
(A.K. Upadhyay)
Secretary, ICAR and Additional Secretary (DARE)

[Department of Agricultural Research and Education O.M.No. 11/1/5/2005/PAC
Dated 9.3.2007]

Recommendation

In case of Water Technology Centre for Eastern Region, Bhubaneswar also the targeted results in three projects costing Rs. 48.90 lakh could not be achieved resulting in non-achievement of the objective of sustainable agricultural production through development of strategies for effective management of on-farm water resources. Similarly, Central Soil & Water Conservation Research and Training Institute, Dehradun did not achieve the objectives of research in soil and water conservation measures and land use systems for sustainable crop production in three projects costing Rs. 37.90 lakh. The Committee are not convinced by the explanation given by the Ministry for non-achievement of targeted results in respect of these projects. With a little bit of proper advance planning and farsightedness, these projects could have been properly and timely executed.

A review of the working of the aforesaid five institutes has revealed that there was lack of proper planning, execution and monitoring of some of the research projects undertaken. Consequently, there was time and cost over-runs, leading to partial/non-achievement of objectives and targets laid, defeating in the process the very purpose for which these projects were conceived for implementation. The various deficiencies/ shortcomings that have been noticed points to the lack of effective institutionalized monitoring mechanism either at ICAR or at the Ministry level. The Committee recommend that ICAR should streamline/strengthen their monitoring mechanism so that the projects are reviewed periodically and it is ensured that the same are completed properly and expeditiously. If necessary ICAR/Ministry may put in place requisite mechanism for the same.

[Sl. No. 87 Appendix II Para 4 of 40th PAC (14th Lok Sabha)]

Action Taken

The ICAR has an inbuilt mechanism of monitoring the progress and achievements of the research projects regularly by way of holding Institute Research Council and Research Advisory Committee meetings of the institutes. To further streamline/ strengthen the monitoring mechanism, the ICAR has constituted Project Monitoring and Evaluation Cells (PME)/Research Co-ordination and Project Monitoring Committees at the institutes. These monitoring committees are meeting regularly according to the norms fixed for their meetings. Further, their recommendations are being pursued vigorously and remedial measures, if any, being taken accordingly. The action taken report is being submitted to these committees in the subsequent meeting for their confirmation.

Vetting Comments of Audit

No comments Please.

Sd/-
(A.K. Upadhyay)
Secretary, ICAR and Additional Secretary (DARE)
[Department of Agricultural Research and Education, O.M. NO. 11/1/5/2005/PAC
Dated 9.3.2007]

CHAPTER III

RECOMMENDATIONS/OBSERVATIONS WHICH THE COMMITTEE DO NOT DESIRE TO PURSUE IN VIEW OF THE REPLIES RECEIVED FROM THE GOVERNMENT

— NIL —

CHAPTER IV

RECOMMENDATIONS/OBSERVATIONS IN RESPECT OF WHICH REPLIES OF GOVERNMENT HAVE NOT BEEN ACCEPTED BY THE COMMITTEE AND WHICH REQUIRE REITERATION

— NIL —

CHAPTER V

RECOMMENDATIONS/OBSERVATIONS IN RESPECT OF WHICH GOVERNMENT HAVE FURNISHED INTERIM REPLIES

Recommendation

The Committee regret to point out that National Bureau of Soil Survey and Land Use Planning (NBSS&LUP), Nagpur terminated 15 projects before their completion during 1999-2004. What is surprising is the fact that no records were maintained for 10 completed projects and in16 projects, Research Project Files were maintained intermittently. The Ministry have attributed these deficiencies to the fact that in some cases the concerned project investigators handling the particular project were deployed for other priority work where their involvement was felt most essential such as National Agricultural Technology Project work, due to which these principle investigators could not make noticeable progress in their regular projects and hence RPFs were not prepared. As regards, improper maintenance of National Register of Soil Series by the Institute, the Ministry have stated that the register could not be updated as all the scientists remained busy in accomplishing the task of mega project on Soil Resource Mapping and NATP mission mode projects. The Committee is not convinced by these arguments put forth by the Ministry in the Defence of NBSS&LUP, Nagpur. In the absence of proper maintenance of Research Project Files and National Register of Soil Series, effectiveness of monitoring of Research activities by Staff Research Council, Research Advisory Committees cannot be ensured. Obviously the Institute has not paid sufficient attention to these vital areas. The ICAR had also failed to monitor such basic activities of the Institute which ultimately affected the functioning of the Institute. At this stage the Committee cannot but emphasize that suitable steps need to be taken to ensure that Research Project Files and all other such documents including National Register of Soil Series are properly maintained.

[Sl. No. 83 Appendix II Para 3 of 40th PAC (14th Lok Sabha)]

Action Taken

The Director NBSS & LUP, Nagpur has issued strict instructions to Heads of Regional Centres to have proper maintenance of RPF-I, II, III files in respect of scientists for proper monitoring of their research progress and achievements by Institute Research Committee and Research Advisory Committee. The ACRs of the scientists are to be based on the progress reflected in Research Project Files (RPFs).

The National Register of Soil series is to be maintained by indexing in it the new series established from time to time after correlation at National level. The correlation of soil series involves many organizations, notably, soil survey agencies of State Departments of Agriculture. In most of the States soil survey agencies either became

weak in strength or non-functional. Accordingly, the Bureau received less inputs from the state government organizations regarding soil correlation work. However, the Bureau has resumed soil correlation work with whatever inputs available from the state departments. The work is in progress with West Bengal, Tripura, Meghalaya, Tamil Nadu, Pondicherry, Haryana, Himachal Pradesh and Uttar Pradesh. The required soil correlation committees have been formed with state departments and correlation at state level is in progress at different regional centres. After Regional Correlation, the same will be done at national level to establish National Soil Series.

Vetting Comments of Audit

No comments Please.

(A.K. Upadhyay)
Secretary, ICAR and Additional Secretary (DARE)

[Department of Agricultural Research and Education, O.M. No. 11/1/5/2005/PAC dated 9.3.2007]

Recommendation

Another disquieting feature of the functioning of these institutes is the fact that in all sixteen technologies involving a total cost of about Rs. 2.44 crore that were developed in the fields of water and soil conservation by the four Institutes of Indian Council of Agricultural Research, namely Central Soil Salinity Research Institute, Water Technology Centre for Eastern Region, Central and Indian Institute of Soil Science have not been transferred to the end-users *i.e.* farmers. The Committee regret to observe that despite spending large funds for research activities in the field of agriculture, the benefits of technologies developed by the various Institutes have not percolated down to the end users in whose name research is being carried out.

The Ministry have stated that Indian Council of Agricultural Research develops technologies, demonstrates and passes onto the line departments and also trains the farmers. An autonomous body namely Agriculture Technology Management Agency (ATMA) had been set up which serves as a focal point for integrating research and extension activities at the district level. One of the key activities of ATMA is to prepare a Strategic Research and Extension Plan and its Implementation by the various stakeholders. Indian Council of Agricultural Research has also established a network of Krishi Vigyan Kendras to aim at technology assessment, refinement and demonstration of technology/products. The Krishi Vigyan Kendras network is further interfaced with State Agricultural Universities through their Directors of Extension. It has further been stated that the technology transfer was also undertaken through lab to land programme, Institute village link programmes, and farmers fairs, visits and Goshtis etc. However, the Ministry have admitted that poor linkages and coordination between the Institute and users had resulted in poor transfer of technologies. Despite setting up of Krishi Vigyan Kendras and Agriculture Technology Management Agency it is quite evident that these Institutional mechanisms have miserably failed and as a result the benefits of Agricultural Research could not reach the farmers. The Committee are of the opinion that labours of research will come to naught, unless its fruits reach

end-users. The Committee desire that whatever steps that the required to strengthen the system should be taken so that the technologies reach the end users. For this if necessary, the Ministry may study the feasibility of setting up of State Level Agricultural Research Extension Committees comprising representatives of Ministry of Agriculture, Indian Council of Agricultural Research, State Government Officials, Farmers Associations, and Non-Government Organizations involved in Agricultural Extension etc. for effective coordination and supervision of various activities relating to transfer of technologies/research inputs developed by various Agricultural Research Institutes to the farmers.

[Sl. No. 88 Appendix II Para 1 & 2 of Fortieth Report of PAC (Fourteenth Lok Sabha)]

Action Taken

It is submitted that the recommendations of the Committee have been taken into consideration for implementation. As a result of consideration of these recommendations for effective coordination of various activities relating to transfer of technologies/ research inputs developed by various agricultural research institutions to the farmers, the ICAR has developed a framework for Technology Development and delivery System in Agriculture (**Annexure-IV**). The framework is under active consideration of the Government for its adoption and implementation.

Vetting Comments of Audit

No comments Please.

(A.K. Upadhyay)

Secretary, ICAR and Additional Secretary (DARE)

[Department of Agricultural Research and Education, O.M. No. 11/1/5/2005/PAC dated 9.3.2007]

ANNEXURE-IV

FRAMEWORK FOR TECHNOLOGY DEVELOPMENT AND DELIVERY SYSTEM IN AGRICULTURE

The Context

Owing to globalization and liberalization, agriculture in India need to change and change for better than the best. Diversification of production is fast happening along with widespread dietary evolution. Commodity based production is giving way to system based production and there is a paradigm shift using farming system to production to consortium system of operation. Private sector participation is increasing. Agriculture is becoming more and more knowledge-intensive and market-driven. Hence for more innovative research, efficient policies and effective delivery of services, supplies and markets are imperative. Agriculture is no more closed and protected, but globalized and open.

The Challenges

Against the anticipated annual growth rate of 4% plus, the agriculture sector grew only at 2% p.a. during the X Plan. National Commission on Farmers in its 3rd Report suggests attention to soil health care, water harvesting and management, credit and insurance, quality and safety, technology and inputs and farmer-friendly marketing in order to help our hard working farm families to help the country achieve 4% plus growth rate in agriculture. Suggesting to measure progress in agriculture by the growth rate in the net income against the current measure of physical production of foodgrains and other farm commodities, the NCF recommended review and reform of the service, support, research extension and input supply and market system. The suggestions of the mid-term review of X Plan by the Planning Commission are not much different. Thus, to achieve a growth rate of 4% plus p.a. in agriculture as well as to serve farmers. and save farming from increasing distress, a new model for technology development and delivery system in agriculture is necessary.

The Role of R&D in agriculture

Since Science and Technology are the drivers of change, the agricultural revival/ renewal has to be basically knowledge-intensive, technology led and resource based. Stagnating productivity growth in the sector and declining total factor productivity in agriculture are major challenges to meet the needs of a market-driven, competitive regime. In this context, R&D assumes more importance because it is a cost-effective method for promoting sustainability and attaining competitiveness. Harnessing advances in frontiers of science in selected priority areas with larger spin-off benefits by focusing on basic and strategic research also assumes significance. There is also a need to revisit the existing public extension system which is considered to have been weakened over the years at the State, districts and block levels. Hence, there is a serious search for alternatives to the present public agricultural extension system in the country.

A critique of the existing agricultural research and extension system

We have a good network of agricultural research institutions in the country, which is facing serious resource crunch to meet the existing and emerging challenges. The National Agricultural Research System (NARS) has although significantly contributed to the agricultural progress since independence, but the situation has changed and challenges foreseen in future are complex and the system has to prioritize

and focus itself to the jobs for which it has a mandate as also competitive advantage. A clear-cut delineation of roles at the Central and State level is to be defined. Similary, the technology delivery system requires an immediate re-look. Technology development and delivery need to be in a continuum and should be interactive. The research system has to forge linkages with the public extension system at all levels, particularly at the district and below levels where the actual uptake and impact happens. It is resolved to establish one KVK in each of the rural Districts of the country by the end of the Tenth Plan. ATMA model is developed and tested in 28 Districts of the country under NATP and now as a successful model is replicated in 252 districts of the country as a plan programme of Department of Agriculture and Cooperation.

Keeping in view the needed change in technology development and delivery system discussed earlier, at the same time utilizing the existing system, a framework for technology development and delivery is suggested. It is realized that far greater emphasis on basic and strategic research is essential in pursuit of effective technology development. With the new tools and techniques available now, it is possible what was considered impossible in the past *viz.*, with the new tools, designer genotypes could be developed as indicated sequentially by Prof. V.L. Chopra, Member, Planning Commission, in the flow diagram (Fig. 1).

Fig. 1. A STRATEGY FOR CROP IMPROVEMENT USING CURRENTLY AVAILABLE SCEINTIFIC ADVANCES

Suggested Framework

In the proposed Framework for Technology Development and delivery System, it is envisaged that basic and strategic research will be substantially carried out by the ICAR institutes, while region-specific strategic research will be done by SAUs and AICRPs. The strategic research of AICRPs will also feed other areas of the country and a generic model for the purpose is presented in Fig. 2 and the working of this generic model in some selected representative individual sectors/cases is illustrated through Figures 3-10.

Applied and adaptive research will substantially be carried out by the SAUs and AICRPs where location, situation and system-specific technology generation, testing and refinement will take place. In this task, private sector involvement will be mutually beneficial. As regards private sector research, proprietary technologies can directly go to farmers and others as per agreements/understanding, can also flow to SAUs/ATMAs for integration.

Technology transfer will be through ATMAs (registered societies) located at the district and bodies at district-subsidiary levels. It is a focal point for integrating research and extension complemented with development supplies and services. ATMA is a tested platform where all service providers will converge and share their strengths. It is an interactive backstopping system supported by research system, service providers like line departments, involvement of PRIs, NGOs, etc. ATMAs will decide on the kind of technologies to be transferred through which agencies. For example, if the technologies are commercial in nature, they will be transferred through private sector. If they are not commercial in nature, the help of NGOs or other civil society organizations will be sought with needed incentives. Knowledge empowerment of the whole system (Research and technology transfer) will be through the proposed ICAR portal which is interactive. Knowledge management includes HRD, policy, and national and international perspective related information and products. Training to extension functionaries will be provided by State Agricultural Management & Extension Training Institute.

At the block level, there will be a Farm Information and Advisory Centre (FIAC) which is an extension planning and operational arm of ATMA. It would have two bodies *viz.*, Farmer Advisory Committee (FAC) and Block Technology Team (BTT). FAC would review Block action plan, prioritize the activities and provide feedback. With high connectivity in terms of computers, Internet, telephone, etc., it would linked to KVKs, ZRSs, SAUs, etc. BTT would consist of Block officers representing different Departments.

At the village level, there will be Farmer Interest Groups (FIGs) and Farmers Organizations (FOs). The FIGs are informal, voluntary and self-governing associations of farmers and farm women, while FOs are federations of FIGs, mandated to support the cause and activities of member FIGs.

Technology Development and Delivery System in various Sectors of Agriculture

In different models, linkages will vary depending upon the nature of crop/ commodity/enterprise and technology service in involving relevant stakeholders to a specific technology-enabled zone/area/situation.

Such linkages will not only boost the production and productivity but also will create an enabling environment for job opportunities, rural marketing economy and export opportunities. Some sector-specific models for technology development and delivery system in crop, horticulture, livestock, fishery, farm mechanization, processing and value addition, and natural resources management have been described.

Knowledge drives development, and today, investment in knowledge development is becoming more and more important along with investment in capital development. The farmers need to connect with agri-business, production systems, research institutions, public administration, other farmers, open market both at domestic and global scale, and other numerous partners. Conventional systems of

dissemination of farm information through face-to-face communication by the development functionaries, providing information in the form of printed publications, organizing agricultural exhibitions, etc. are becoming limiting propositions. A model of 'Agri-India Knowledge Portal' to serve as a single electronic gateway for providing information to all those engaged in the task of development of agriculture has also been described subsequently.

Development of High Yielding Seeds

Development of improved varieties and hybrids and availability of their quality seed is the most vital and critical input for increasing the productivity of crops. Appropriate seed ensures its suitability for adoption in specified agro-ecologies. It also ensures its acceptability for consumer quality preferences, trade and industry suitability for various products for domestic and international markets. There is a tremendous diversity of crops and agro-ecologies in the country. The Breeders, Geneticists, Plant Pathologists, Physiologists, Biotechnologists and others are engaged to work on basic, strategic and applied aspects in order to develop quality seed and associated production and protection technologies in various Institutes/Directorates/ National Research Centres (NRCs), All India Coordinated Research Projects (AICRPs) and State Agricultural Universities (SAUs). These technologies are tested and demonstrated in the first instance. Breeder seeds are produced for production of foundation and certified seeds in the chain before it is made available to the farmers. For efficient development and delivery of improved seeds of varieties/hybrids and associated production and protection technologies, the following system is being suggested:

(i) The Institutes/Directorates/NRCs need to interact with various Advanced Research Institutes (ARIS), CGIAR Centres/other international institutes and Centres of Excellence for exchange of knowledge, germplasm and human resource development and relate these developments to the national/regional requirements. Relevant basic and strategic research issues need to be identified and investigated by the institutes utilizing adequate resources.

(ii) Interfaces with relevant commodity (crop, horticultural, animal and fisheries) Institutes, Central Government Department (DOAC, DAHDF, DBT, DST)/ State Departments/SAUs/other Universities/Institutes and Industries to take up applied R & D and related to production of varieties/hybrids, so that output reaches the intended stakeholders without loss of time and gets converted into outcome. An applied R & D effort must have a pre-identified stakeholder/public-private partnership to accept the output.

(iii) Frontline demonstrations, supply of mini kits and training by the ICAR Institutes/Directorate of Seed research/Private sectors for technology dissemination and feed back including the preparation of training manuals and organizing institute-stakeholder interface meetings.

(iv) Multidisciplinary commodity and multilocation/region specific technology development and testing by the AICRPs in a network mode in involving the local scientists, farmers, extension agencies and industries so that the output reaches the stakeholders without any gestation period. AICRPs will also

undertake frontline demonstrations in collaboration with KVKs of the region to ensure technology absorption and awareness creation to the maximum extent.

(v) Production of breeder seed and test stock seed of varieties and parental lines of hybrids to be undertaken by the ICAR institutes/directorates/NRCs, AICRPs and SAUs, while the central/State seed development agencies/private sectors/self help group/farmers associations/individual farmers will take up the production of foundation/certified/truthfully labeled seed including delivery mechanism for availability of seed to the farmers/growers.

(vi) Production of truthfully labeled seed by the ICAR Institutes/Directorates/ NRCs/AICRPs/SAUs at their own farm to a limited extent in addition to production of more parental lines of hybrids/other varieties to expand the base of availability of quality seed to the farmers. Besides, SAUs can also augment the production of foundation seeds.

(vii) Appropriate policy interventions by the central/State developmental departments/agencies for ensuring the availability of critical quality inputs, adequate price support policies, market infrastructure development, agro-processing industries and other facilities for optimum utilization of potential of high yielding/hybrid seed.

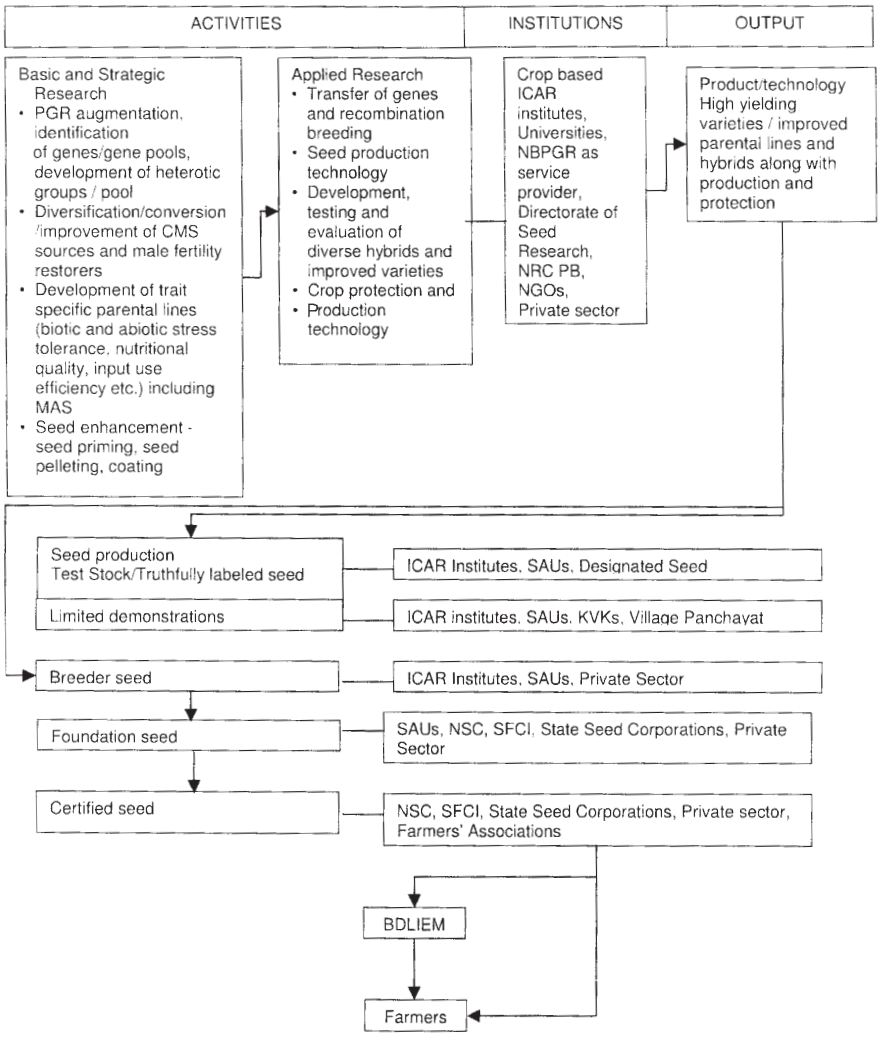
(viii) Seeing is believing. Also in the fast changing technology domain, it is inperative that awareness is brought about without any loss of time. Hence, it is necessary to ensure stock seed production and ensure supply of a limited quantity of seed by breeder institutions as Centre/State supported development activity to each Panchayat which can serve as demonstration, demand generation as well as in inbred varieties farmer-to-farmer seed flow in the Panchayat in the shortest possible time. This new system is believed to bring much needed transformation by cutting the time lag. To avoid any misuse of precious seed, treated seed could be supplied which will also take care of seed borne diseases.

The model for technology development and delivery system of high yielding varieties and hybrids and seed supply is presented in Fig. 3.

Cut and dry flowers for export

The country has diverse agro-climatic conditions for growing several cut flowers like rose, chrysanthemum, carnation, gerbera, lilium, tuberose, etc., which can effectively be grown in glasshouses and gladiolus in open fields. The protected cultivation is presently undertaken by about 70 export oriented floriculture units, with an area, of about 1000 ha. Flower export has now grown worth more than Rs. 200 crores; however, the domestic market still plays a dominant role. Among the loose flowers, marigold ranks the first followed by chrysanthemum, jasmine, tuberose, gaillardia and crossandra. In a planned way, the cultivation and export of cut flowers will bring foreign exchange to the country manifold.

Fig. 3 : MODEL FOR HIGH YIELDING VARIETIES AND HYBRIDS



Basic District Level Interactive Extension Model (BDLIEM) as in Fig. 2

Besides cut flowers, there is a tremendous scope of dry flowers, which constitute 70% of the total floriculture export of the country. Many of the plant species having ornamental value include floricultural crops, horticulture crops, grasses, legumes and edible crops. Even wood carving and clippings are considered in this class of product. The added advantages of dry flowers are that the maintenance is easy and cheap and the product is durable. The dry flowers as well as live flowers and cut leaves of certain plants may also be used for preparing floral crafts. There is therefore, a great need of production of fresh and dry flowers with novelty and strengthening the delivery system to promote the export of these products. The action points in this regards are suggested below:

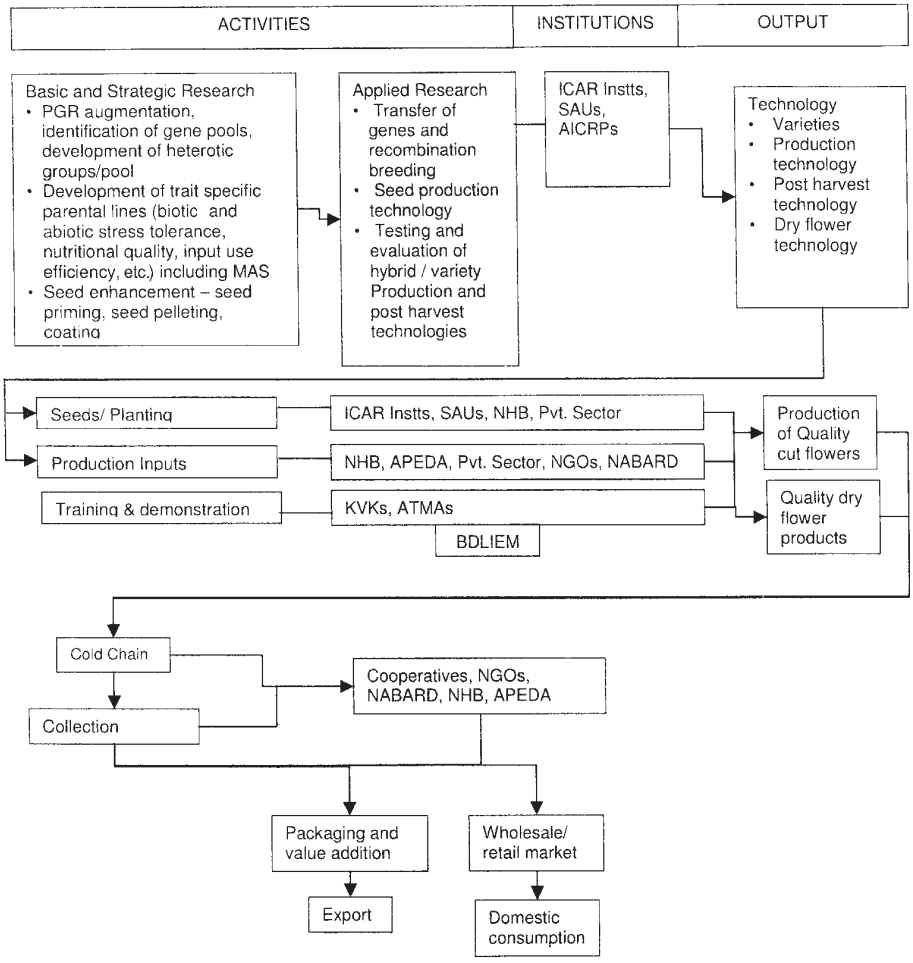
- Identification of crop and product and quality requirement for export.
- Development of varieties/hybrids for cut flowers and their testing for region-specific adaptation.
- Development of protected cultivation for cut flowers.
- Agro-techniques including substrate, integrated nutrient and water management and integrated insect pests and disease management for cut flowers.
- Post-harvest technologies including time of cutting, post-harvest handling and standardization of holding, storage, wrapping, transport, etc. for cut flowers.
- Facilitating production of quality cut flowers in greenhouses by the entrepreneurs with support of NHB, APEDA and NABARD.
- Institutional arrangement of collection and delivery mechanism of cut and dry flowers from entrepreneurs to the export point.
- Establishment of packaging houses by the exporters/entrepreneurs with the technical guidance of APEDA.
- Establishment of cool chamber at the airport/sea port points by the Air/Sea Port Authorities of India and private exporters.
- Standardization of drying, value addition, packaging, moisture level in finished products and management of insect problems with dry flowers.
- Demonstration of technology/product of dry flowers by the research institutes to the entrepreneurs.
- Market research for destination of product and requirements.
- Policy support or incentive for export.

The model system for cultivation and commercialization/marketing of cut flowers for trade is presented in Fig. 4

Dairying

The Livestock is a rapidly growing sector in Indian economy contributing 5.22% to GDP and 28% of the value of output of agricultural and allied sector. India is the highest producer of milk with an annual production of 91 million tonnes. The milk production has grown @ 3.4% in the last few years, and the productivity @ 2.6% in

Fig. 4 : MODEL FOR CUT AND DRY FLOWERS



Basic District Level Interactive Extension Model (BDLIEM) as in Fig. 2

last ten years. The productivity of milch animal is 987 kg per year as compared to world average of 2200 kg. The per capita availability of milk is 231 gm/day as compared to world average of 270 gm/day.

The true potential of Indian farmers was realized through Operation Flood which is a classic example of fusion between technology intervention and linkage with the end-user. The innovative technologies has the potential to revamp growth of dairy sector. A number of technologies has been developed in the field of dairying including improved growth and reproduction; area specific recommendation on feed and fodder including mineral mixtures; diagnostics, vaccines and drugs; process of value addition, quality assurance and shelf life enhancement. There is a need to re-structure the mechanism of technology dissemination from individual to collective mode because common resources and its open access play a major role in adoption of dairy practices. The suggested steps of facilitating the adoption of dairying will be as follows:

(i) Addressing the research gaps in genetic improvement in cattle, area specific feeds and fodder including mineral mixtures, development of diagnostics, vaccines and drugs, and process improvement for value addition, quality assurance and shelf life enhancement.

(ii) Identification of high producing dairy animals.

(iii) Supply of progeny tested semen/bulls from ICAR institutes and State livestock farms for upgradation of the breedable cattle.

(iv) Organizing large scale training and demonstration through State DAHDF, KVKs and NGOs.

(v) Organizing milk co-operatives, federations and feed manufactures for supply of key inputs and credit from NABARD and other financial institutions.

(vi) Capacity building and networking for organizing collection centres, increasing shelf life and value addition with dairy co-operatives and unions, public/ private sector milk chilling plants, local milk based business organizations.

(vii) Certification of hygienic milk production producers by APEDA and its franchise.

(viii) Integrating the use of information technology.

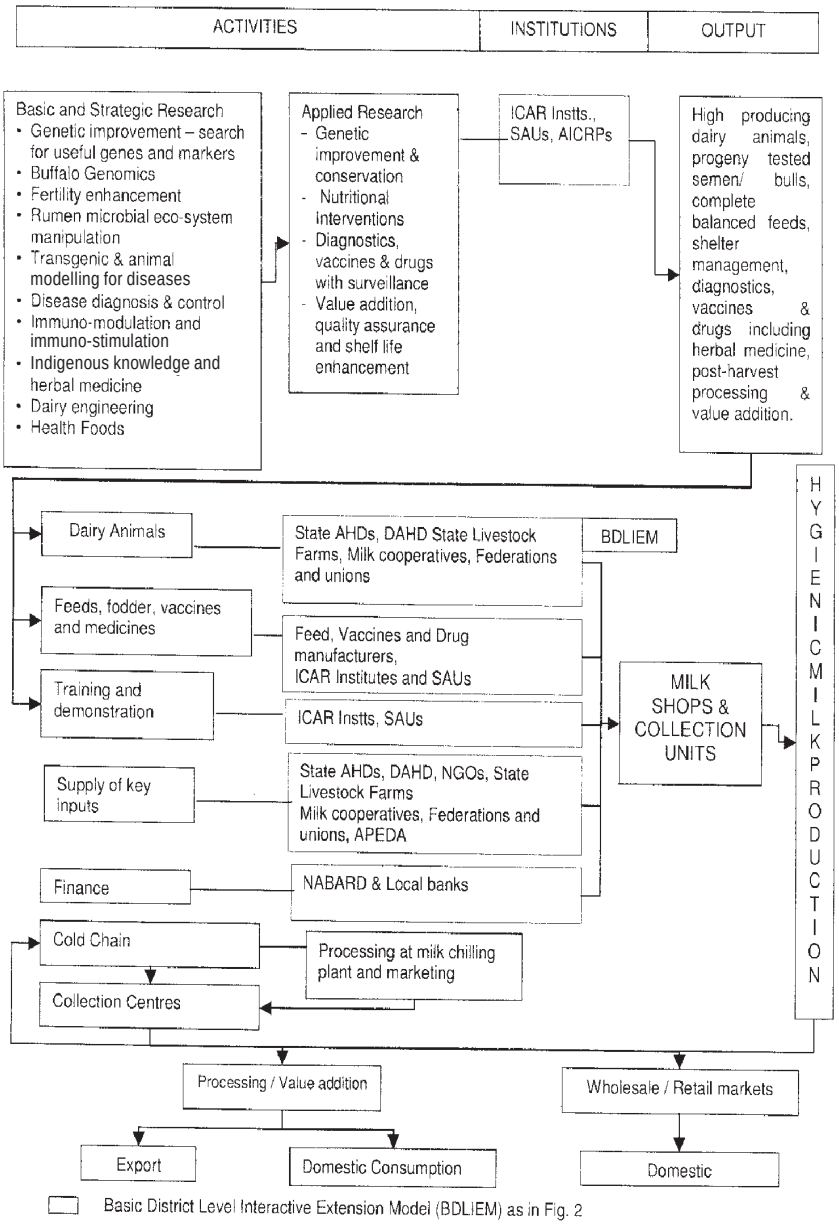
(ix) Providing enabling policy and environment.

The model for technology development and delivery system of dairy farming is presented in Fig. 5.

Aquaculture

Aquaculture provides for diversification of agriculture, as well as value addition in terms of higher returns from a unit area. Along with high potentials for ensuring domestic nutritional food security, it also generates high employment and contributes to export earnings. All the three segments, *viz.,* freshwater acquaculture, coastal aquaculture and mariculture have been showing high growth rates in the recent past.

Fig. 5 : MODEL FOR DAIRY PRODUCTION



While freshwater acquaculture comprises mainly of carps, along with catfishes, giant freshwater prawn and ornamental fishes, shrimp has been singly contribution to coastal aquaculture production which is also the main export commodity in the fisheries sector. Mariculture has come up in the last ten years, with scope for enhancing the coastal economy.

A planned strategy of improved natural resource management, breed improvement, seed production and dissemination, better input delivery systems, cold chain and marketing and human resource development in the relevant aspects would enable realization of full potentials of the sector. This requires a mix of basic and strategic research to address the key issues of the biology of the species including growth and disease resistance, feed and health management measures. At the same time aspects of scaling up of hatcheries, design of seed production systems for different species in varied ecosystem conditions are addressed in the applied research mode to develop and or refine technologies.

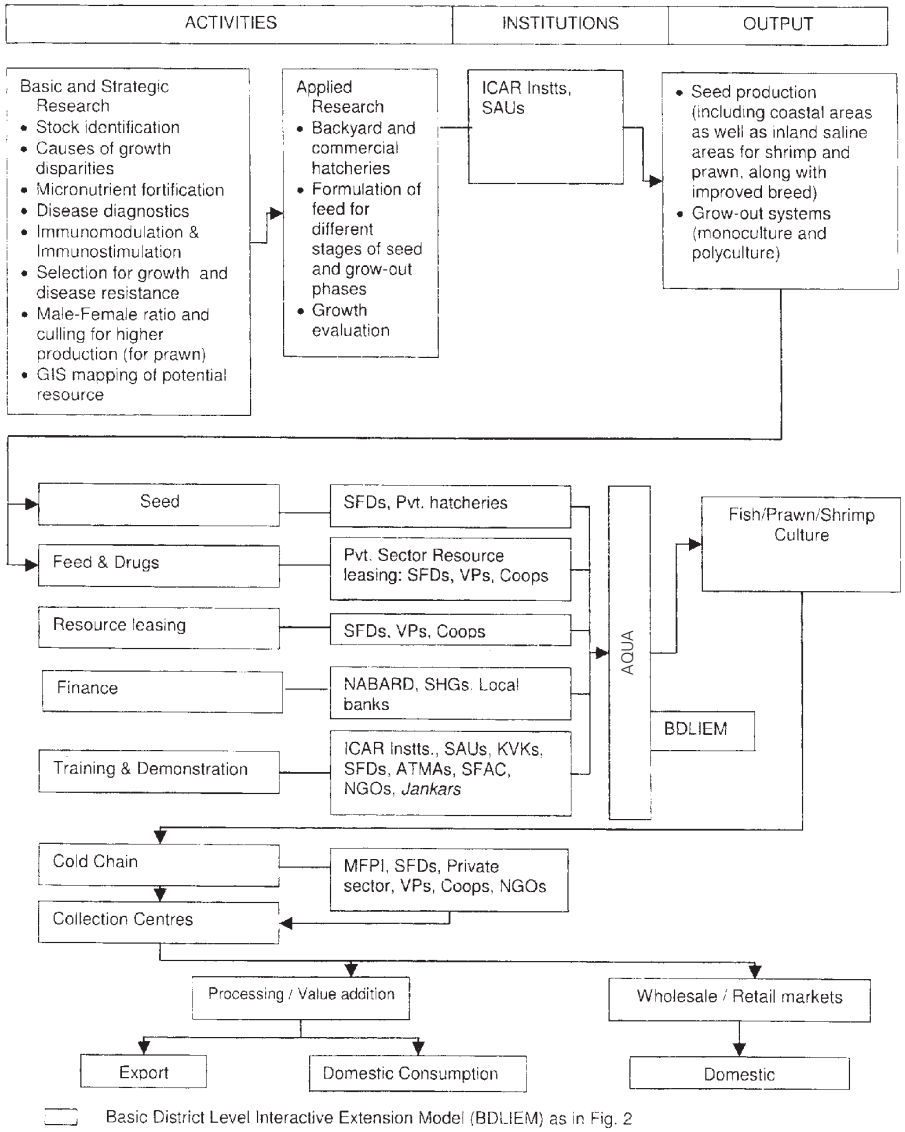
A key concern in Aquaculture has been the ready access and availability of all quality inputs in one place that has hindered the development. The concept of 'Aquashops' is intended to provide the seed, fertilizers, feed, prophylactics, therapeutants and diagnostics, nets and implements along with advisory services in one place, with a number of Institutions involved in these areas joining hands. Further, in view of the remoteness of places of fish/shellfish production lacking infrastructure for transport and marketing resulting in low price realization, cold chains of different levels and dimensions linked to the collection centres and marketing is incorporated in the model for Aquaculture.

While research aspects pertain to the aspects of breed improvement, nutrition and health management, as ingredients of breeding and culture of fish/shellfishes, policy issues relate to leasing of water bodies and infrastructure development. Major inputs for enabling the farmers to enlarge the operations and realize the gains would be training and demonstration, quality inputs, information about markets, both domestic and export, for scheduling culture and marketing processes and valued information from production to consumption. The model for technology development and delivery in aquaculture sector is presented in Fig. 6.

Farm Mechanization

Farm mechanization facilitates timeliness in operations, better placement of inputs, lower cost of production and reduction in drudgery of farm workers. It plays an important role in enhancing the productivity and profitability of agriculture by 20-30% reduction in cost of production and 5—20% higher cropping intensity. Mechanization involves development of tools, equipment and ensuring adequate power for carrying out the on-farm and off-farm agricultural activities. The technology development in farm mechanization begins with the identification of local needs and further design and development of tools, equipment and renewable power systems including market search through basic and strategic research by the ICAR institute (eg. CIAE, Bhopal) in collaboration with SAUs and IITs. Based on the commodity and location-specific packages developed through multilocation trials by the R&D institutions and AICRPs,

Fig. 6 : MODEL FOR AQUACULTURE



appropriate training modules and manufacturing drawings are prepared before developing interface with the entrepreneurs and industries for making the tools and implements available to the farmers on reasonable cost. The State Development Agencies, NABARD and other financial institutions need to provide necessary financial support for large scale promotion of farm mechanization. A flow chart indicating the different stages of technology development and delivery system for farm mechanization is given in Fig.7.

Post Harvest Technology

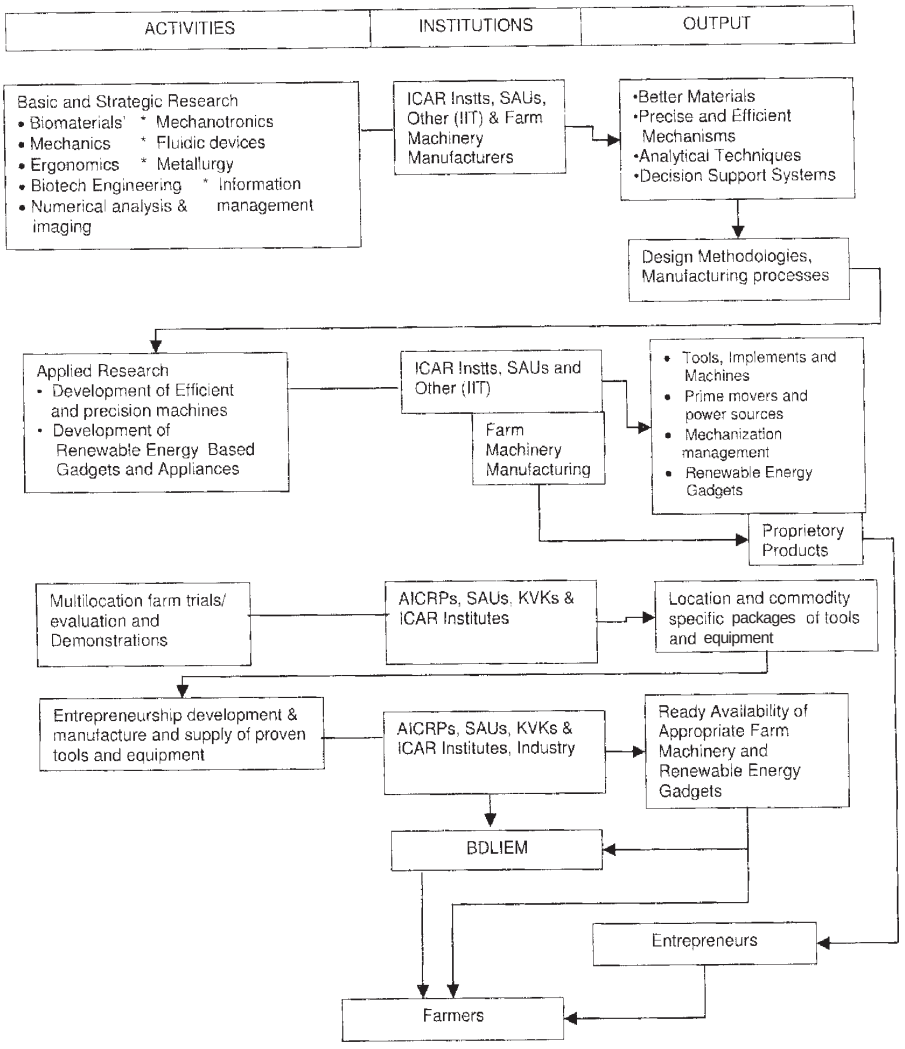
Post harvest technologies are commodity and location-specific and appropriate basic and strategic research inputs including varietal characteristics of particular crop, post harvest physiology, nutritional physiology, food biochemistry, and post harvest ecology are assessed before the intended products and processes could be developed by the ICAR institutes, SAUs and IITs. These research inputs are essential for developing products, processes and ultimately design of pilot plants. Based on the assessment of market response and consumer acceptance, standardization of product, process and equipment is undertaken to ensure the quality and safety of the output. These developments are then evaluated and demonstrated in different locations for the entrepreneurs, NGOs, self-help groups, and cooperatives for large scale promotion and adoption of the post-harvest technologies. Banks, State Development Departments and other agencies are given the exposure for enabling them to extend necessary financial support. Figure 8 provides the linkages of different activities of technology development and delivery and actors in the form of a flow chart.

Rainfed Farming through Watershed Management

The productivity of rainfed areas occupying 60 per cent of cultivated area in the country and supporting 59 per cent of population is still low and is a major concern of policy makers, planners and R&D investments portfolio. Even after achieving the full irrigation potential, nearly 50 percent of cultivated area will remain rainfed, constituting an important source of food and livelihood. Therefore, integrated and holistic development of rainfed areas within the perspective of watershed management constitutes one of the key elements of increased production in the country.

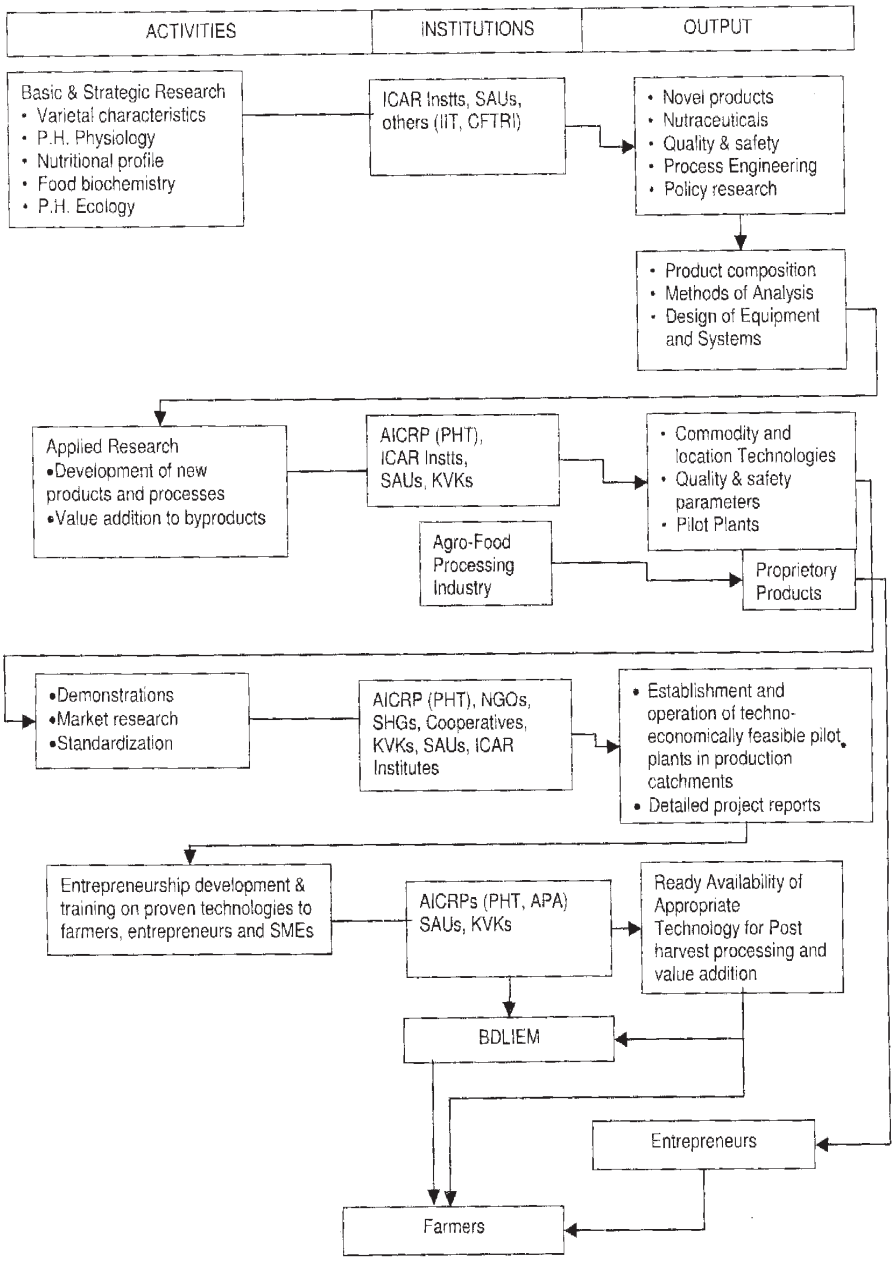
There is a need to develop appropriate technology to remove the production constraints of these areas and establish an effective system for the dissemination of the technology to the farmers. The research back up concerning basic and strategic issues would be provided by the ICAR Institutes, SAUs and related National Institutes. Research is required to be focused on run-off and recharge modelling, soil-water-plant interactions, water harvesting, *in situ* moisture conservation, integrated nutrient and pest management, contingent crop planning during droughts and drip/ sprinkler/ fertigation systems. The socio-economic-environmental-market imperatives should be given due consideration while framing up technologies. The technology generated is required to be further assessed and refined for different agro-climatic situations through AICRPs and SAUs and disseminated through State Development Departments (Agriculture, Horticulture, Animal Husbandry and Forestry), ATMAs, KVKs, SAUs, NGOs, Co-operatives and web-based Agro-advisory Services. The financial institutions

Fig. 7 : FARM MECHANIZATION AND RENEWABLE ENERGY FOR AGRICULTURE



Basic District Level Interactive Extension Model (BDLIEM) as in Fig. 2

Fig. 8 : MODEL FOR POST HARVEST MANAGEMENT AND VALUE ADDITION



like NABARD would need to provide financial support for development of infrastructure like water harvesting ponds and pressurised irrigation systems. The cooperatives and contracting/leasing agencies could be associated in agro-forestry/ bio-fuel plantations.

The activities and functioning of the watersheds need to be in a participatory mode, ensuring transparency and equitable sharing of services and benefits among different stakeholders. The participatory watershed management will be facilitated through formation of watershed associations (Pani Panchayats, Van Panchayats, and Joint Forest Management Committees). The technological interventions would have deliverables in terms of water conservation, increased land productivity, enhanced employment, livelihood security, equitable sharing of benefits, and empowerment of women, environmental upkeep and better quality of life.

The model of technology development and delivery mechanism of rainfed farming through watershed management is given in Fig. 9.

Integrated Farming System

Development and adoption of integrated farming system provides high opportunities of productivity enhancement, employment, income generation and nutritional security by diversifying and integrating different components of farming, *viz.*, crops, horticulture, livestock and fisheries (depending upon location specificity). The systems based on multiple recycling of carbon, eneregy and nutrients would also help minimize environmental loading with pollutants. The different components of the system have complementarities with waste products of one component becoming source of food and energy for another.

The researchable issues encompassing analysis of nutrient and energy fluxes among system components, path analysis of bio-physical constraints, multiple uses of water, water harvesting and recycling, socio-economic conditions of people, internationalization of ITK and market analysis, etc. are to be addressed through basic and strategic research by ICAR institutes and SAUs. The integrated technology would be develop integrating crops, horticulture, fisheries & livestock by ICAR Research Complexes having R & D facilities on different system components at SAUs. Further assessment and refinement of developed farming system to cater to region and location specific requirements would be accomplished through centres of AICRPs on Cropping/ Farming System Research and SAUs. The technology would be disseminated through KVKs, SAUs, NGOs, SHGs, etc. with true participation of ATMAs and different functionaries of State Line Departments (Agriculture, Horticulture, Animal Husbandry Fishery) at district and block levels. The backward and forward linkages between KVKs and state functionaries would provide the required feed back to SAUs and ICAR institutes on upgradation of technology. The KVKs would organize regular training on different aspects of technology to extension personnel and various stakeholders. The model of technology development and delivery system of integrated farming system is given in Fig. 10.

Fig. 9 : MODEL FOR RAINFED FARMING THROUGH WATERSHEDS

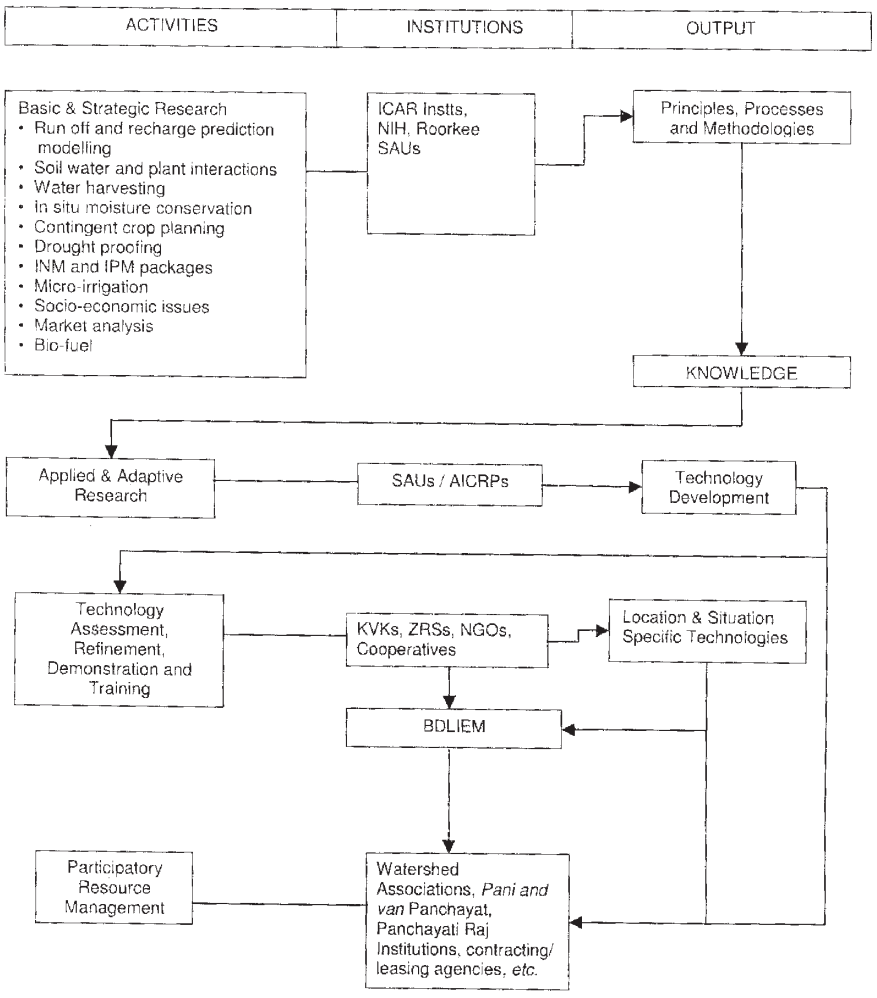
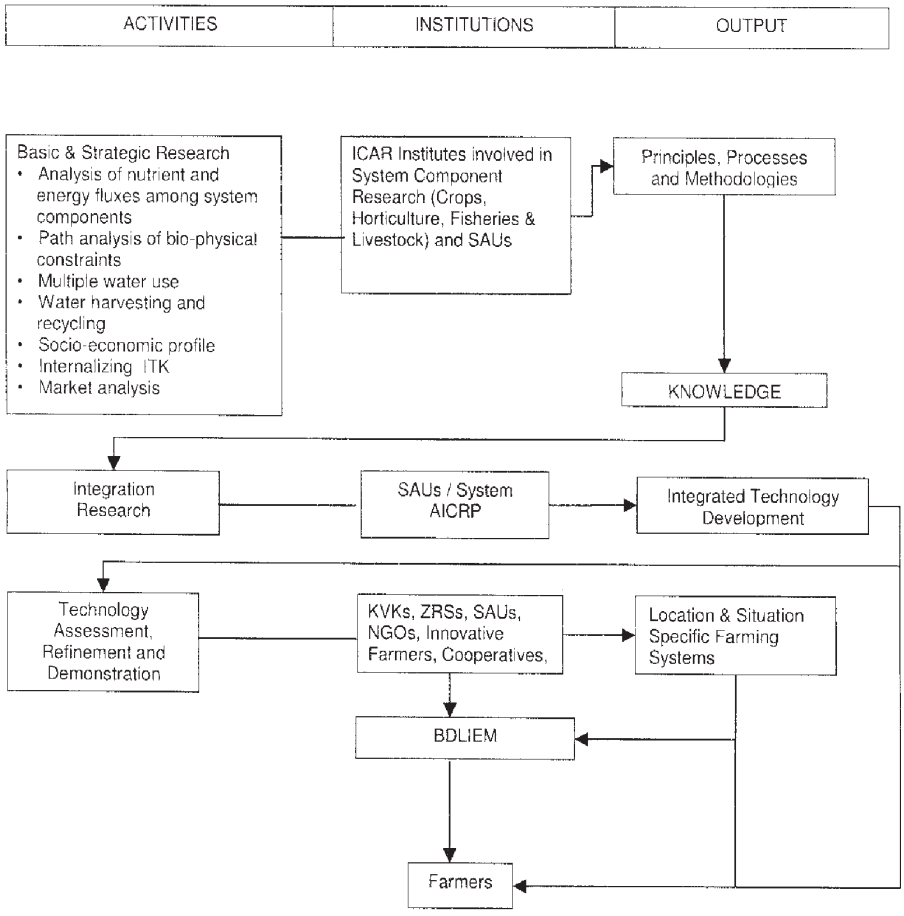


Fig. 10 : MODEL FOR INTEGRATED FARMING SYSTEMS



Establishment of Agri-India Knowledge Portal—A Single Electronic Gateway

The information on improving agricultural productivity and protection of crops, livestock and natural resources from damages caused by disasters and unsustainable activities is focal to the rural farming communities. This would require access to a wide range of information on new technologies, alternate varieties of crops, improved breeds of livestock, information related to soil, water quality, information on pesticides, farm implements, animal health, weather and other related aspects. Besides farm-activities, non-farm activities also constitute source of income and livelihood for the rural farmers. Therefore information is also required on the means to produce food products required by markets and ability to sell them as also the markets, cold-chains, warehouses, processing and other avenue.

ICAR-ERNET network consists of 274 Institutions including National Agriculture Institutes, State Agricultural Universities including some of their colleges and Research stations, National Research Centres, Project Directorates connected through Leased line and VSATs. Besides, a VSAT-based network of Krishi Vigyan Kendras could be had. Both these networks will be linked through a high capacity leased line to make a unified high speed secured Intranet. Since the intranet of NARS institutions is built over the existing ERNET network, it is planned to host the core components of knowledge portal application at the ERNET Hub.

The Department of Telecommunications has set up several sub-groups on network expansion, broadband, telecom equipment manufacturing and R&D to examine various options to enhance growth. The sub group on network expansion has targeted that subscribers numbers must cross 250 million by 2007 and 500 million by 2010. Another target is mobile coverage of 85% of the country by the end of 2007. To boost the broadband penetration in the country, another sub-group will examine the ways to provide broadband coverage for all panchayats by 2010 and all secondary/higher secondary schools and public health care centres by 2007.

The Portal application will be constructed and deployed using suitable Portal management software. The core functional components of the portal application software are:

1. **User Registration:** The user registration process is a mechanism for acquiring the information related with the user of portal which is an integral part of the portal.
2. **User Authentication:** The user ID and the password pair generated as end result of registration process are authenticated through a carefully designed mechanism and form a basis for accessing the various resources of a portal.
3. **User Access Control:** Once the users are authenticated, an access control mechanism built into the portal determines which data and information can they see/manipulate, and how will it be displayed? The User Access Control mechanism is designed based upon the specific role that the particular user will perform in the portal.

4. **Personalization:** Personalization is a feature that enables a user to access targeted web content that meets a user's needs and preferences from the enormous web content on the portal.

5. **Content and Document Management:** Content and document management system in the portal application streamline redundant content development, publishing and management processes to increase operational efficiencies, and improve content quality.

6. **Document/workflow:** The various rules to manage the workflow and lifecycle of documents are established in a portal, which automates the manual, labour-intensive process and results in consistency and auditability in authoring and producing content.

7. **Collaboration:** The portal applications facilitate collaboration among the various stakeholders/partners *via* online chat rooms, discussion groups, online document sharing, messenger applications, etc.

The digital content of the portal will be developed through a peer review process (Fig. 11). For this purpose, 15 Content Accreditation Centres, *i.e*. one each in the 15 Agro-climatic regions of the country could be had. Each accreditation centre will coordinate with other SAUs and agricultural institutions in their region for development of content in regional language as well as in English and also do its validation, which will be collected in the central data warehouse integrated in the knowledge portal. The intranet network consisting of various stakeholders primarily ICAR institutes, SAUs and KVKs will facilitate the development of Central Agriculture Data warehouse, Content Development and Validation System, Agricultural Best Practices, Expert System for users, Multi-lingual content development and convertibility. The portal will also serve as a platform for facilitation of interaction among researchers and extension workers in KVKs through high speed secure intranet.

Various applications and services of the knowledge portal will be accessible to the users including farmers, entrepreneurs, private sector organizations, other participating government and non-government organizations, extension workers, etc. through Internet. The services include Agro-met advisory services, Market intelligence, Packages of practices, Agri-business consultancy, e-learning, knowledge on indigenous farming practices, and agriculture related FAQs. Besides, it will also act as information gateway for all agriculture related schemes and programmes etc. The Portal will also serve as a gateway for up-to-date websites of various agricultural research and education organizations accessed through Internet. The portal will provide a platform for facilitation of interaction among the end user communities through Internet also.

The Agri-India Knowledge portal will also provide for collaboration among other agencies related with agriculture like Meteorological Deptt. Agricultural Markets, Banks and other financial organizations, Input suppliers, agricultural equipment manufacturers, Non-agricultural universities for providing services through Agri-India knowledge portal both through secure and high speed Intranet and Internet. The services proposed to be implemented in the collaborated mode include On-line education, Information on

Market Prices, Weather Information including early warning system, Agricultural Input status information, Credit and crop insurance services, land record information, etc.

The AIK Portal is neither intended to replace any agency websites nor any other Government portal. This Portal will, however, provide additional means by which those sites might be accessed by a possibly wider and more varied client base. The AIK Portal will open opportunities for multiple agencies to participate in web delivery and development opportunities. The Portal would be able to integrate diverse interaction channels at a central point, providing a comprehensive context and an aggregated views across all information related to agriculture including *know-what* or declarative knowledge, *know-how* or procedural knowledge, and *know-why* or usual knowledge and *creation of new knowledge.*

Re-envisioning Extension System

The main extension system primarily responsible for delivery of technical messages is operated by the State Department of Agriculture (DOA), through the State, district and block level machinery. Other State Government departments, such as Animal Husbandry, Horticulture, Soil and Water Conservation and Fishery have been providing very limited extension services. The main focus of the Department of Animal Husbandry has been treatment of animals and for the Department of Horticulture, distribution of seeds/seedlings (of fruit and vegetables) is the prime activity. While the Department of Soil and Water Conservation are mainly engaged in constructing soil and water conservation structures, the Department of Fisheries is mainly engaged in providing fingerlings and some financial support to Fish Farmer Development Associations. The research centres and agricultural universities play a very limited role in extension service.

The system, however, is more pre-occupied with implementation of a number of Central and State sector schemes having input/subsidy delivery. The performance of the main extension system has been adversely affected by the difficulty in recruiting and retaining extension staff due to budgetary constraints, depleting operational support and inadequate technical background of the majority of the staff commensurate to the changing scenario of agriculture, resulting in the dependence of farmers on input dealers and others, as sources of information. Their role in technology up-scaling has been minimal and even non-existing. Through Centrally Sponsored Scheme on Support to State Extension Programmes for Extension Reforms, Agricultural Technology Management Agency (ATMA) has been established in 252 districts so far. The ATMAs are expected to support the State extension system by making it more broad-based and participatory for planning, implementing and monitoring the extension activities of a district.

Diversified nature of farming demands, against a background of the economic liberalization and globalization, is radically changing the spectrum of service providers to the farmers. Indeed, the private sector, farmers' organizations, cooperatives, self-help-groups, Para-professionals, Non-Governmental Organizations, input suppliers and small agri-businesses are increasingly engaged in providing information and services. Increased reliance on private sector extension does not imply a complete withdrawal of

the public sector, which must continue to finance public goods extension and information services and coordinate extension activities.

In view of the above, the basic concept of extension needs to be re-looked from persuasive technology transfer originally conceived, to the model of interdependence within specific innovation system framework of the stakeholders and institutional context based on the strengths of both public and private sectors.

The Approach perspective

The models for technology development and delivery system in various sectors of agriculture is essentially indicative of a pluralistic environment right from research Institutions engaged in technology development, up scaling and integration of technology, and its adoption by the end users. The models can be modified as per the need for various States and districts for appropriate multi-agency extension arrangement with the State, district, block and village level functionaries of various development departments, including the farmers' organizations and the private sector. While in floriculture, there is an emphasis on quality production of cut and dry flowers with appropriate institutional arrangement for cold chain and collection centres; in dairying the emphasis is on the institutional arrangement for availability of progeny tested semen/bulls, complete balanced feeds, shelter management, diagnostics, vaccines and drugs, post-harvest processing and value addition. Similarly, the emphasis in aquaculture is on establishment of Aquashops with cold chain and collection centres; there is need for formulation of location and commodity specific packages of tools and equipment and its availability through entrepreneurship development for manufacture and supply of those to the farmers at an affordable price or on custom hire service. There is a need for promotion of agro-processing centres in rural sector/production catchments for value addition of agricultural produce including technological back-up support. The participatory resource management will be the key to watershed management. The pluralistic extension pattern requires that the programmes are jointly planned, implemented and evaluated by all service providers.

Unified Production System Approach

The activities of different agencies from technology development to its dissemination at the user level need to be unified. For example, once the production and protection technology of high yielding varieties/improved parental lines and hybrids are developed, its dissemination needs to be initiated through frontline demonstrations by the technology development institutions, and the mini kit testing of technology by the development departments, ensuring quality seed of improved variety/hybrid to each Village Panchayat in the region for which the variety is recommended/released. Breeder seed production and test stock seed production for Panchayats must be simultaneous to cut short the time lag and ensure demand for seed by the time breeder seed is converted to certified seed and it is ready for distribution. The demonstration plot seed in each Village Panchayat of inbred variety would also move from farmer to farmer in each of the villages. Simultaneously, there is need for integrated programmes for production of breeder, foundation and certified seed by seed producing agencies including the production of parental lines for hybrid seed

production, supported by marketing, transport, storage, credit and policy environment. Similarly, with the devleopment of appropriate varieties, production technolgoies, post-harvest technology for quality production of cut and dry flowers, the support for packaging and wholesale market/agencies for export is imperative. In aquaculture, along with aquashops for increased production, there is need for unificaiton of processing plants and marketing both for domestic and export.

Knowledge Centric Approach

In knowledge-driven devleopment, there is need for providing extension education keeping in view their diverse needs not only on production procedures, but also quality certification and reporting procedures, grading, packaging, storage, transportation and other requirements of both domestic and export markets. The farmers need to have knowledge about the whole range of agri-business, production systems, research institutions, programmes and schemes of the development departments, open markets both at domestic and global scale, and other unlimited partners is to be provided through training, demonstration, literature, and other human resources devleopment support including interfaces at different levels. The devleopment of Information Communication Technology (ICT) and Telecommunication Network have paved the way for creation of information network, knowledge pool and services on new agricultural technology, products and marketing of produce, which must be intensively used. It will be appropriate to develop farmer-friendly information network to provide whole range of information leading to delivery of knowledge of new agricultural technology, products, procedures, and related services to enable them to take control of their farming environment in near future.

Research-Extension-Farmer Interface

The strategy for technology development and the strategy for technology dissemination are not mutually exclusive. Agricultural extension is a process of bringing about innovation and change. There is an inherent degree of overlap among them; however, the fundamental point is that they are potentially useful in joint assessment, diagnosis, planning, implementation, monitoring and evaluation. The models presented in various sub-sectors of agriculture have made it clear that research and extension are part of a continuum. While research-extension linkages were theoretically possible in inter-personal mode, in the new regime, effective linkages of production systems with marketing, agro-processing and other value added activities have acquired greater importance. In the present competitive environment, the research and extension service must be reoriented to overcome the exclusive focus on production that ignored market demand, profitability and institutional arrangement in the past.

Although a variety of farmers' organizations including cooperatives, farmers' club/ self-help groups, and farmers' companies has been promoted in the past, there is lack of sustainability of their existence and the purpose for which they were promoted. These farmers' organizations need to be looked as a kind of business federation for undertaking primary processing and marketing of local products and to facilitate much needed organizational support for effective implementation of quality control and standardization of farm products.

The new mechanisms and protocol suggested for technology development and delivery system for various sectors of agriculture would need spatial and functional integration and complementarities and institutional arrangements in the context of creating an environment to encourage and assimilate results of innovativeness. There is need for introducing MBO based agenda and clear delineation of task components in the form of assembly line and also creating coherent synergy within and amongst State development departments, SAUs, ICAR institutes and all related functionaries. This would require policy support in terms of integration of efforts of institutions dealing with technology development, assessment and refinement, and dissemination including encouraging and accepting the contribution of corporate sectors, private sectors, cooperatives and farmers' associations in delivery systems.

Growth of agriculture both in terms of GDP and livelihood security with social equity has been ever challenging and more so in the present context of inadequate public sector investment and services, and pressure of globalization of agriculture leading to a greater demand for highly knowledge-intensive services. Investments in present Indian agriculture need to be rationalized and appropriate knowledge driven institutional reforms have to be brought in. Appropriate framework for technology development and dissemination would be very much needed for transforming Indian agriculture from the present approach of its sustenance as a way of life to a vibrant economic activity with a sense of pride for future generations.

NEW DELHI;
17 *January*, 2008
27 *Pausa*, 1929 (*Saka*)

PROF. VIJAY KUMAR MALHOTRA,
Chairman,
Public Accounts Committee.

PART-II

MINUTES OF THE SIXTEENTH SITTING OF THE PUBLIC ACCOUNTS COMMITTEE (2007-2008) HELD ON 9TH JANUARY, 2008

The Committee sat from 1600 hrs. to 1630 hrs. in Committee Room "D", Parliament House Annexe, New Delhi.

PRESENT

Prof. Vijay Kumar Malhotra — *Chairman*

MEMBERS

Lok Sabha

2. Shri Kirip Chaliha
3. Shri Khagen Das
4. Shri K.S. Rao
5. Shri Mohan Singh
6. Shri Rajiv Ranjan 'Lalan' Singh
7. Shri Kharabela Swain
8. Shri Tarit Baran Topdar

Rajya Sabha

9. Prof. P.J. Kurien
10. Shri Janardhana Poojary
11. Dr. K. Malaisamy
12. Shri Ravula Chandra Sekar Reddy

SECRETARIAT

1. Shri S.K. Sharma — *Additional Secretary*
2. Shri A. Mukhopadhyay — *Joint Secretary*
3. Shri Brahm Dutt — *Director*
4. Shri M.K. Madhusudhan — *Deputy Secretary-II*

Representative of the office of the Comptroller and Auditor General of India

Shri A.N. Chatterji — Director General (PA)

2. At the outset, the Chairman, PAC welcomed the Members to the sitting of the Committee. Thereafter, the Committee took up for consideration of the following draft Reports:—

(i) * * * * *

(ii) * * * * *

(iii) Action Taken Report on 40th Report of PAC (14th Lok Sabha) relating to **"Management of Projects relating to Utilisation & Conservation of Soil and Water Undertaken by Institutes of ICAR";** and

(iv) * * * * *

3. After taking up the draft Reports one by one, the Committee adopted these draft Reports with some verbal changes and authorised the Chairman to finalise and present the same to Parliament in the light of factual verification by the Audit.

The Committee then adjourned.

APPENDIX

STATEMENT OF RECOMMENDATIONS AND OBSERVATIONS

Sl. No.	Para No.	Ministry/ Department	Recommendations/Observations
1.	8	Ministry of Agriculture (Dept. of Agricultural Research and Education)	The Committee expect that the step taken by Indian Council of Agricultural Research to link ACRs of scientists with the progress reflected in Research Project Files would ensure proper maintenance of all records by ensuring a proper system. Needless to emphasise this move would in turn help in effective monitoring of the progress made in Research Projects by the controlling Research Institutes/Centres/Committees.
2.	9	-do-	With regard to establishment of National Register of Soil Series, the Committee have been apprised that inputs regarding soil corrections are being obtained from various States and after regional correlation, the same will be done at national level to establish 'National Soil Series'. The Committee would like the Central Government to take up the matter at the highest level with State Government to expedite the action in the matter. Thereafter 'National Soil Series' may be established in a time bound manner.
3.	12	-do-	The Committee have been informed that a framework for Technology Development and delivery System in Agriculture for effective co-ordination of various activities relating to transfer of technologies/research inputs developed by various agricultural research institutes to the farmers, had been developed by ICAR and the same is stated to be under active consideration of the Government for adoption and implementation. The Committee would like the Government to implement the proposed plan at the earliest and the Committee be apprised accordingly.

PARLIAMENTARY PUBLICATIONS CAN ALSO BE OBTAINED FROM THE FOLLOWING AUTHORISED AGENTS

Sl. No.	Name of the Agent
	ANDHRA PRADESH
1.	M/s. Ashok Book Centre, Benz Circle, Vasavya Nagar, Vijaywada-520 006.(A.P.)
	BIHAR
2.	M/s. Progressive Book Centre, Zila School, Pani Tanki Chowk, Ramna, Muzaffarpur-842 002 (Bihar)
	DELHI
3.	M/s. Jain Book Agency, C-9, Prem House, Connaught Place, P.B. No. 1113, New Delhi-110 001.
4.	M/s. Bookwell, 2/72, Sant Nirankari Colony, Kingsway Camp, Delhi-110 009.
5.	M/s. Rajendra Book Agency, IV-D-50, Lajpat Nagar, Old Double Storey, New Delhi-110 024 (T. Nos. 26412362 & 26412131)
6.	M/s. Central News Agency Pvt. Ltd., P-23, Connaught Circus, New Delhi-110 001.
7.	The Manager, M/s. Books India Corporation, Publishers, Importers & Exporters, L-27, Shastri Nagar, Delhi-110 052.
8.	M/s. Sangam Book Depot, LG-3, Akarshan Bhawan, 23, Ansari Road, Darya Ganj, New Delhi-110 002.
9.	M/s. Biblia Impex Pvt. Ltd., 2/18, Ansari Road, New Delhi-110 002 (T.No. 23262515).
10.	M/s. Universal Book Traders, 80, Gokhale Market, Opp. New Courts, Delhi-110 054 (T.No. 23911966).
11.	M/s. Seth & Co., Room No. 31 D, Block-B, Delhi Hight Court, Sher Shah Road, New Delhi-110 003.
12.	M/s. Dhanwantra Medical & Law House, 592, Lajpat Rai Market, Delhi-110 006. (T.No. 23866768)
13.	M/s. Jayna Book Depot, Chowk Chhapparwala, Bank Street, Karol Bagh, New Delhi-110 005.
14.	M/s. Standard Book Co., 125, Municipal Market, Connaught Place, P.B. No. 708, New Delhi-110 001 (T.No. 23411919)
15.	M/s. D.K. Agencies (P) Ltd., A/15-17, Mohan Garden, Najafgarh Road, New Delhi-110 059.
16.	M/s. Vijay Book Service, C-D/123/C, Pitam Pura, New Delhi-110 034.
	MADHYA PRADESH
17.	M/s. Suvidha Law House, 28 Malviya Nagar, Roshanpura, Bhopal-462 003.

Sl. No.	Name of the Agent
	MAHARASHTRA
18.	M/s. Usha Book Depot, 585/A, Chitra Bazar, Khan House, P.B.No. 2621, Mumbai-400 002.
19.	M/s. Jaina Book Agency (India), 649-A, Girgaum Road, Opp. 2nd Dhobi Talao Lane, Mumbai-400 002.
	PUDUCHERRY
20.	Editor of Debates, Legislative Assembly Department, Puducherry-605 001.
	TAMIL NADU
21.	M/s. M.M. Subsrcription Agencies, 123, Third Street, Tatabad, Coimbatore-641 012.
22.	M/s. C. Sitaraman & Co., 73/37, Royappettah High Road, Chennai-600 014.
	UTTAR PRADESH
23.	M/s. Law Publishers, Sardar Patel Marg, P.B. No. 1077, Allahabad (U.P.)
24.	M/s. Ram Advani Bookseller, Mayfair Building, Hazrat Ganj, GPO Box No. 154, Lucknow-226 001.