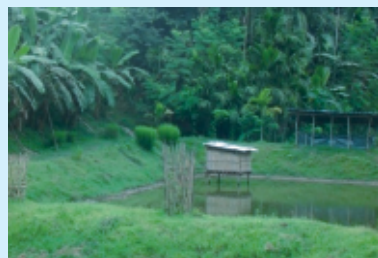


National Agricultural Innovation Project



Strengthening Agricultural Development and Livelihoods



**Project Implementation Unit
National Agricultural Innovation Project
Indian Council of Agricultural Research
Krishi Anusandhan Bhavan-II, Pusa, New Delhi - 110012**



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Concept

With the limited scope for area expansion the role of agricultural research and development is critical, in order to generate employment and additional income for the rural poor. Enhanced productivity, profitability and competitiveness surface as the main sources of agricultural growth for the future. This can be triggered by innovations and applications of science in agriculture. To further improve agricultural research and technology, Indian Council of Agricultural Research (ICAR) initiated National Agricultural Innovation Project (NAIP) in September 2006. NAIP is the fourth in a series of World Bank funded projects undertaken by ICAR and incorporates lessons from the earlier projects. NAIP addresses the challenges of strengthening institutional capacity in the National Agricultural Research System (NARS), improves coordination among institutions within and outside the agricultural research system, and promotes partnerships of NARS institutions with the growing private sector, and NGOs.



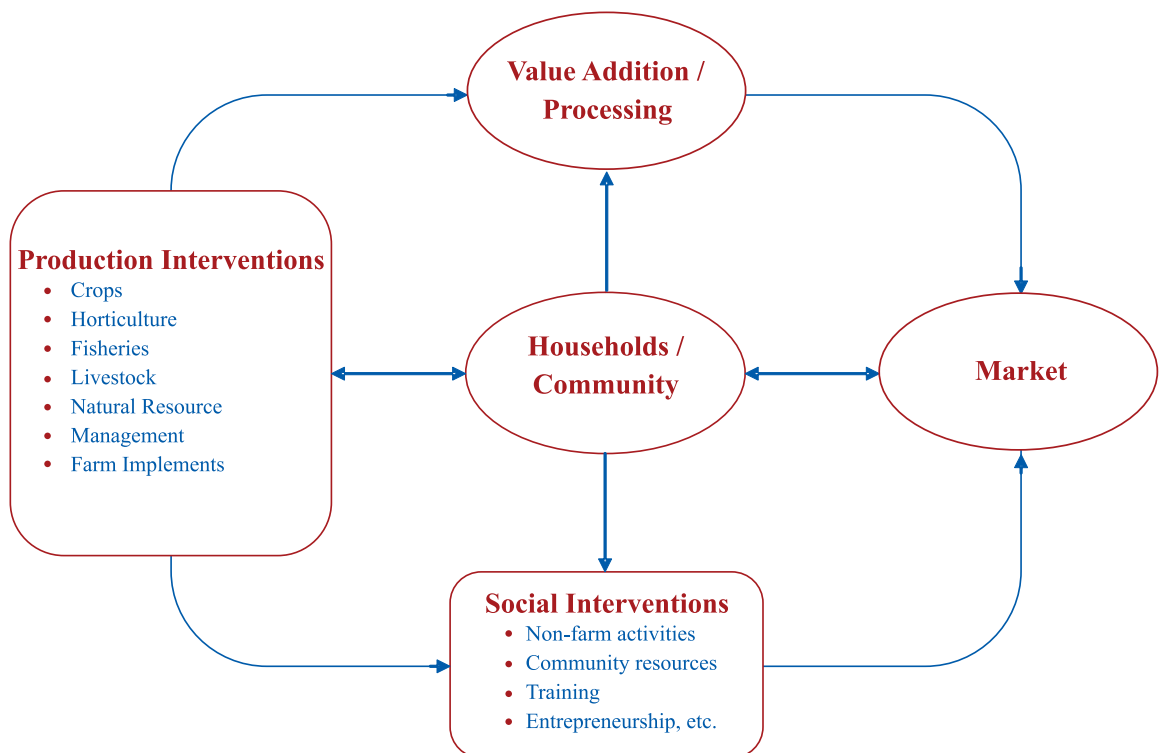
The overall objective of NAIP is to contribute to the sustainable transformation of Indian agricultural sector from an orientation of primarily food self-sufficiency to one in which a market orientation is equally important for poverty alleviation and income generation. The specific objective is to accelerate the collaborative development and application of agricultural innovations between public research organizations, farmers, private sector and other stakeholders.

Approach

NAIP harnesses synergies through collaboration between public and private sector, farmers and farmer organizations, and the civil society under its farmer first approach. A rural livelihood improvement approach is implemented for the disadvantaged regions of the country. Issues related to natural resource management, increasing farm productivity and profitability, constraints to sustainable improvement of the wellbeing of rural vulnerable groups and nutrition security were identified and addressed in addition to income improvements.

This approach places explicitly focus on achieving innovation on-farm and in the production to consumption system by combining technology generation and uptake pathways within the components, which also cover processing, marketing and consumption issues. The production to consumption approach allows for better integration of income and poverty alleviation objectives in a market context.

Livelihood strategy



Promoting agricultural research and technological innovations

Increasing on-farm productivity stems largely from the rapid and widespread adoption of the new innovative technologies and technical interventions of biological, chemical, mechanical, ICT and organizational advances. Formal research programs are carried out in the NARS laboratories, universities, other government laboratories, and by private firms with inputs from NAIP. Most agricultural innovations building off this research programmes are utilized for livelihood improvement of the rural poor, as well as for the industrial uses and social development. These agricultural research and development generated high payoffs and larger social benefits to the farmers.



Innovation support and spread

In rural areas of India, the poor people are either landless or small and marginal farmers, subsistence and part-time farming predominates and where there is considerable subsistence agriculture, there is high incidence of rural poverty. Planning Commission, Government of India has identified 150 districts as backward. These districts are characterized by extreme weather, poor infrastructure and socio-economic backwardness. Many technologies and research findings have not reached these farmers. The socio-economic backwardness, lack of risk taking capacity, poor communication networks or deficiency in the delivery systems are some of the reasons.



NAIP through its component on sustainable rural livelihood security has addressed such issues in 97 disadvantaged districts. Based on local needs and available resources, a collection of proven, regionally appropriate technologies are taken in an integrated and holistic manner. Research was conducted to assess technologies applicable for small and marginal farmers for development of relevant replicable models. To ensure the success of sustainable rural livelihood security, a number of innovations are built in the design. These includes:

- Introduction of interventions appropriate to the region
- Cluster approach in specific sites differing in natural resources
- Self-help group formed for federating farmers
- Public-private partnership (PPP) to accelerate the pace of productivity and profitability
- Producer company through processing, value addition and marketing reaps higher benefits

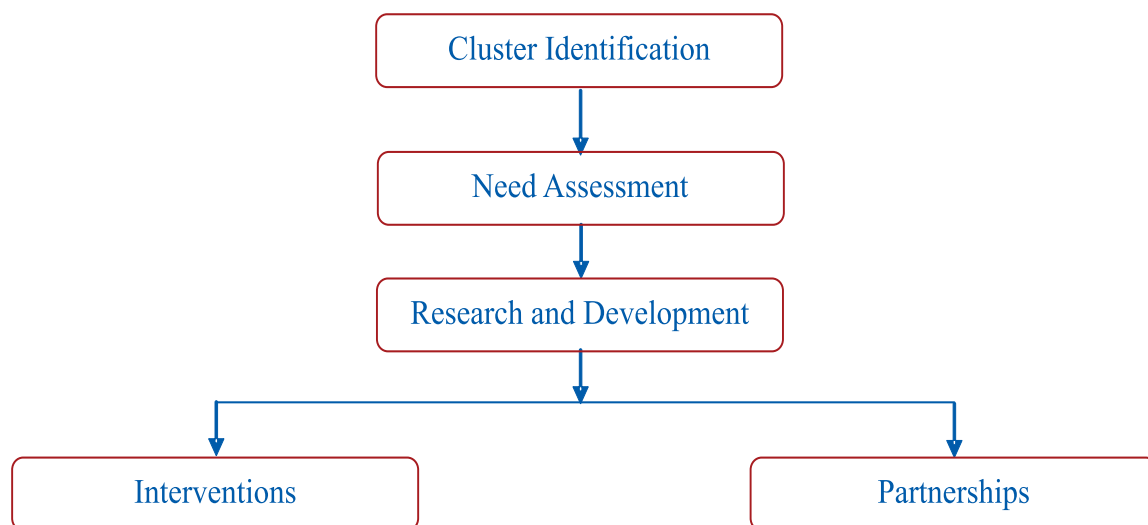
- Rural technology centres (RTC) created for reducing knowledge gaps, technological empowerment
- Agribusiness Resource Centres for entrepreneurship development
- Seed bank to make available quality seeds at right time
- Marketing linkages for providing outlets for sale of their produce
- Sustainability fund generated through farmers' contribution for post project sustainability

The approach for attaining livelihood security and inclusive growth steers the clusters towards self-sufficiency in inputs and improvement in on-farm and off-farm employment opportunities. In all 2,00,000 farmers through technology interventions were guided to increased income, better quality of life, livelihood and nutritional security.

Livelihood improvement under the project was made through a mix of appropriate technologies suitable for the region, as different disadvantaged districts have their own unique features in terms of natural resources, climatic conditions, social needs, etc. The basket of proven technologies integrated to provide livelihood and nutritional security involves interventions related to crop, horticulture, forestry, kitchen garden, livestock, poultry, fisheries, natural resource management, mechanization of farm implements, post-harvest management, processing, value addition and marketing. NAIP evolved IFS models that are viable, sustainable and replicable. The interventions are designed to enhance job opportunities, incomes, and quality of life for the resident rural communities such that the natives once again beginning to find that living in a rural, rather than a suburban or urban area is increasingly worthwhile.

For technological backstopping and price/weather forecasting NAIP has also linked the agricultural expert, extension workers and the farmer through various ICT tools. Notable among these are Agropedia, Rice Knowledge Management Portal, Market Intelligence and m-KRISHI. These platforms deliver expert agricultural advice to the farmers both in a timely and personalized manner as per his need.

Project cycle



Women empowerment

Women empowerment cuts across all interventions, as they play a significant role in performing the day to day farm activities. Innovations can lead to woman empowerment, securing freedom and resources for the women to make decisions, build confidence and act in their own interest. NAIP has strengthened rural women by providing training and awareness programmes for income generation activities through vegetable cultivation, vermicomposting, mushroom cultivation, organic farming, value addition, harnessing non-timber forest produce, etc.



Reaching the unreached

The project has reached the unreached in the disadvantaged areas. The focus is on decentralized development, resource conservation, water harnessing, biodiversity management, integrated farming systems, etc. which have potential to sustain in the long run. Some of the models on ground water sharing through pipeline network, rice-fish-poultry, rice-fish-vegetables, forest produce processing groups, livestock based interventions like improved breeds of goats, poultry, pig, etc. have shown good results in enhancing livelihood. Such models are being mainstreamed by institutional framework like KVKs and Zonal Research Stations. In some states the models were adopted with support from rural development schemes. The technologies have potential to be upscaled with the support from MNREGS, RKVY, NABARD, NFDB, State Extension Agencies, etc.



Innovative gateways

NAIP through its multiple technology options in holistic and integrated approach is facilitating the agricultural sector to become more productive, sustainable and capable of tackling challenges such as fiercer competition, more volatile market prices and climate change. It functions by forming partnerships and linking the different players in the network through operational groups and focus groups. Different farmers, advisors, researchers, agribusinesses, NGOs, entrepreneur's and other actors work together, share their ideas and turn existing knowledge into innovative solutions that can more easily be put into practice.



Appropriate, wide-ranging and effective baskets of technologies encompassing the entire available resource base were developed for the disadvantaged clusters extending from the Himalayan to coastal regions including the plains and plateaus covering 27 states and 13 agro-climatic zones of the country. The basket of technologies addresses the issues of augmenting natural resources; diversification of agriculture; integrated pest management (IPM); integrated nutrient management (INM); improvement of livestock, goat, backyard poultry and fisheries; land and water management; post-harvest processing and value addition; marketing; and sustainability. Some of the promising livelihood models developed under NAIP are enlisted.

Fish-pig-duck farming system in South Garo Hills, Meghalaya: Fish-pig (Hampshire)-duck (Sonali) based farming system introduced in eleven villages of Sibbari cluster, South Garo Hills. Ten new ponds were constructed and 30 existing small ponds were renovated. Due to this intervention fish productivity increased and individual farmer earned about Rs.10,000/- from a pond (25m x 25m). Ducks produced around 150 eggs/year as compared to 110-120 from local breed and villagers sold eggs for Rs. 6-7/- per egg. The improved Hampshire breed two farrowing of 7-8 piglets per year. The piglets were sold after 3 months for Rs.1,500/- per piglet.



Integrated fish - makhana- water chestnut farming system in Darbhanga, Bihar: Multiple uses of water attempted through integrating makhana with fish and water chestnut as a concurrent crop. The integration of fish and water chestnut (*Trapa bispinosa* Natans) with makhana (*Euryale ferox* Salisb) exhibited fish yield of 0.18 to 0.4tonnes/ha and makhana seed yield of 1.06 to 2.06tonnes/ha and water chestnut yield of 3.08 to 8.8tonnes/ha. The outcome of the intervention from the 96 beneficiaries tried in an area of 50ha of Darbhanga Sadar Block, revealed that makhana as a primary crop gave a net profit of Rs.18,553/- per ha with an employment generation of 223 man days/ha/ year. The fish as a secondary crop integrated in makhana ponds showed an additional net income of Rs.16,146/- per ha with an employment generation of 35 man

days/ha/year, whereas water chest nut taken as tertiary crop generated an additional net income of Rs.20,533/- per ha with an employment generation of 83 man days/ha/ year.



Integrated rice-fish-poultry farming system in Villupuram, Cuddalore and Nagapattinam, Tamil Nadu: In this approach fish culture was taken up in trenches running along the border of rice fields. Broiler birds, 1 bird/10m² of rice area, were housed in coop installed in fields so that the chicken droppings fall into the rice field. This enables poultry waste to serve both as rice manure and fish feed. This resulted in addition of poultry manure-11.4 to 19.6 t/ha, suppression of pest-17-27% and increase in net return per household/annum – Rs.6,600 to 10,100/- with enhancement in livelihood by 21 to 32%.



Integrated rice-fish-vegetable system in Assam: Introduced HYV of paddy like Ranjit, Gitesh, Jalashree and Jalkuwari. Aquaculture was added in existing rice crop. Vegetables like French bean, chilli and knolkhol were

grown after rice harvest to utilize residual moisture and soil nutrients added by aquaculture activities. Achieved paddy yield of 2.58t (additional 0.9t); fish 40-42 kg and vegetables 3.9t. Net income per HH/year generated was Rs.42,983/- (from 0.28 ha; previous income was Rs.11,144/-).



Land shaping in salt affected coastal areas of Sundarbans, West Bengal: Initiated the 'land shaping' (farm pond, ridge & furrow and broad bed furrow, etc.) intervention under Global Environment Facility (GEF) in the salt affected coastal areas of Sundarbans, Canning Town, West Bengal. Earlier the land was mono-cropped and only traditional rice varieties were grown in Kharif. After harvest of rice in December the land was fallow till transplanting of next paddy crop in June–July. With the intervention farm-pond technology the farmers are practicing integrated farming system (crop-vegetable-fish). In addition to rice crop, fishes like carps and prawns are



reared in the farm pond and in low-lying rice field. Vegetables are grown throughout the year on the raised land and high ridges created by land shaping and irrigated with rainwater harvested in farm pond.

Redgram transplanting/dibbling in Bidar, Karnataka: Improved variety of redgram (BSMR-736) is cultivated in Bidar district of Karnataka by transplanting / dibbling method. The advantages of redgram transplanting are advance sowing, less pod borer, drought resistant, 2-3 fold increased branching and increased yield. Yield obtained was 22.5quintals/ha with average cost of cultivation of Rs.23,875/- per ha. The net profit under rainfed conditions was Rs.66,125/- per ha.



Mushroom cultivation in Odisha: Mushroom cultivation was successful introduced using agricultural waste in Dhenkanal, Kandhamal and Kalahandi districts of Odisha. This resulted in monetary benefits to small and marginal farmers being a low risk crop.



Mushroom cultivation is not dependent on outside weather of open fields and need less water in comparison to green vegetables. About 104 farm-families are benefitted by mushroom production activities.

Precision farming of marigold in Tamil Nadu and Karnataka: Precision production technology of marigold developed for the African marigold hybrid L3. Adoption of precision production technology has resulted in yield increase as well as increase in xanthophyll content. This has helped the farmers in realizing higher price. Efforts taken under the NAIP project have helped in rapid outreach of technologies. This in turn has led to expansion of area in marigold and adoption of marigold production by more number of small and marginal farmers in Tamil Nadu and Karnataka.



Casuarina based agroforestry in Tamil Nadu: Developed two superior clones of Casuarina with short maturity period as a source industrial pulpwood with cellulose content more than 45%, with an average yield of 125 tonnes/ha. Price realization from Rs. 1.60 lakhs/ha to 3.00 lakhs/ha in 3years against 5 years. The casuarina (cloned) agroforestry gave net profit of Rs. 73,241/ha/yr (casuarina + vegetables) and Rs. 43,075/ha/yr when only casuarinas is grown compared to traditional system Rs. 26,700/ha/yr (Black gram) and Rs. 36,400/ha/yr. (Groundnut).



Lac cultivation in Betul, Madhya Pradesh: Around 4500 trees of Palas, Kusum, Ber were inoculated for lac cultivation producing 13470kg of brood lac in Betul district. This resulted in an income of about Rs.12,000/- to 15,000/- to each farmer every year. Attracted by the successful model, other villagers are following.



Tamarind processing in Bastar, Chhattisgarh: The trade of tamarind after collection was entirely in the hands of middlemen resulting in low profit. In Pedawada cluster of Bastar district, 60 tribal families were organized in 6 groups for collection, dehulling, deseeding, packaging and marketing thus shelving middlemen. A produce of about 200 quintals was handled by the cluster which is providing additional income of about Rs.8,200/- to each family annually. Community organized group procurement, processing and marketing increased profit upto 40-50%. Further value addition in form of candy, sauce, etc. is being taken up.



Value addition of non-timber forest produce in Godda, Jharkhand: (i) **Leaf plate mechanization:** Optimum utilization of forest produce through value addition by promoting leaf plate machines (5 SHGs - 15 persons each SHG). Income generated per machine is Rs.0.17 lakh in three months. (ii) **Pickle making:** Jackfruit abundant in Sunderpahari and Godda forest ranges, Godda district were underutilized and sold at low price. A group was trained for value addition. Pickles were prepared and sold under the brand name “Yogini”. It fetched higher price besides employment to 117 women. Total production was about 2t resulting in additional income of about Rs.1,150/- to every participant annually.



Sharing of groundwater through pipeline networking and social mobilization in Rangareddy, Andhra Pradesh: Seven bore wells owned by different farmers located

over a 45 acre patch were linked through a network of underground pipelines. The groundwater extracted through these bore wells was shared by 18 farmers through sprinkler irrigation. Thus, farmers are now able to diversifying their cropping pattern during Kharif and are able to provide protective irrigation and save crop during mid-season droughts. Farmers are able to cultivate crop during Rabi. This prevented out migration of farmers.



Rainwater harvesting and recycling in Dang, Gujarat: Rainwater harvesting and collecting through construction and renovation of (i) small farm ponds, (ii) temporary check dams and (iii) gully plugging are most essential components for maximum utilization. This is practiced in hilly and moderately to highly sloppy terrain that receives high rainfall in monsoon but experiences severe water scarcity during post-rainy season. Owing



to these interventions groundwater level increased to the extent of about 1.09 m in Sarvar and Chikhaldada clusters of Dang district, Gujarat. Increased soil moisture content and availability of water for irrigation, further increased area under crop cultivation by 10-16% and consequently crop yield.

Protected Cultivation at Lohaghat, Uttarakhand: Designs of ventilated greenhouse developed. IPM for cucumber and tomato for green house cultivation developed and validated. Production technology of cucumber, tomato and coloured capsicum standardized for zero energy, ventilated greenhouse condition.



Commercially viable products of millets in Dharwad, Karnataka: Collected 1000 land races of foxtail and little millet, analysed nutrition, nutraceutical, functional and sensory characteristics based on colour and size of the grains. Increased Little millet production from 1-2 acres to 2-4 acres by 200 farmers. Millet processing



units having dehulling, destining, polishing, flaking machines established in 2 districts. Developed five commercially viable ready to eat foxtail and little millet products, viz. diabetic mix, khakara, cookies, flakes and sports food. Ready to cook instant foods viz. millet vermicelli, composite mix for children, noodles, chutney powder, rava idli mix standardized.

Seed Societies in districts Jhabua and Dhar, Madhya Pradesh: NAIP implemented the concept of seed societies in order to accelerate the availability of quality seed in tribal district Jhabua, Madhya Pradesh. Seed societies namely, Laxami Beej Utpadak Shakari Sanstha Maryadit, Golabadi and Sharda Beej Utpadak Shakari Sanstha Maryadit, Narsingrunda, Rotla having 22 and 21 farmers members, respectively were established. Further, two seed societies namely, Ashapuri beej Utpadak Shakari Sanstha Maryadit, Jhyada and Balram Beej Utpadak Shakari Sanstha Maryadit, Vaglawat were also created with a total of 21 members in each society. With success of these societies, farmers in neighbouring villages and districts are also inspired. Presently, 21 seed societies in Dhar district are offering services to tribal farmers.



Collection and marketing of farm produce in Kerala: Vegetable and Fruit Promotion Council Keralam (VFPCCK) started fruit and vegetable collection points in Wayanad district of Kerala. This is managed by Farmers on a self help mode. 17 farmer

owned procurement and 2 retail centres established with handling capacity of about 2500 tonnes. They provide transportation facility to distant markets. It has taken GI registration for speciality rice (Jeerakasala, Gandhakasal) of rice.



Promoting *Kadakhath* rearing in Jhabua and Dhar, Madhya Pradesh: Kadakhath, famous for its black meat is mainly reared by the tribal community of Bhil and Bhilala in the districts Jhabua and Dhar in Madhya Pradesh. It's population is declining rapidly. To conserve and promote these high value local poultry, farmers were trained on technologies of scientific poultry production, balanced feeding, handling of feeder and drinkers, health management and marketing. This led to increase in production and consequently higher income. The success of the intervention led to its horizontal expansion. It is contributing to income generation and reduction of out migration.

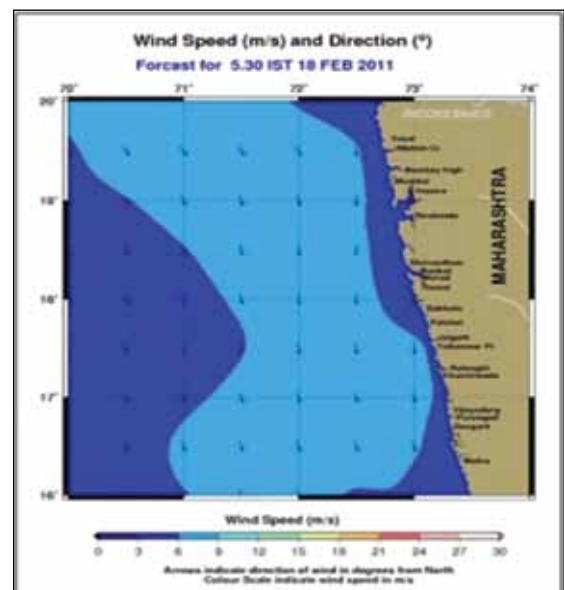


Sirohi bucks for breed improvement, Rajasthan: The bucks and goat of Sirohi breed were provided to small and marginal

farmers. Farmers are getting higher returns from sale of male progenies and also getting higher milk production. At village Phalasia, a farmer was able to earn about rs.15,000/- on sale of two one and half year old two male Sirohi progenies.



m-KRISHI - Fisheries advisory service in Raigad, Maharashtra: The advisory service is a collation, analysis and integration of thermal, wind speed and algal movement data. It provides oceanic wind speed and direction advisories 4 times daily and 5 days in advance and potential fishing zone (PFZ) advisories 3-4 days in advance. This service, being mobile based, ensures continuity and dependability in reaching the communities most effectively and quickly. About 1,040 craft



owners and operators, 6,240 fisher men and women are collectively benefited under 14 pilot fisheries cooperatives in Raigad district of Maharashtra. This innovation increased fish catch efficiency, reduced time taken in each trip and diesel consumption in every trip besides mitigating GHG emissions due to reduced diesel consumption.

Rice knowledge management portal:

To create, manage and share scientific, technology and market-related information a Rice Knowledge Management Portal (www.rkmp.co.in) has been developed. It is the largest portal on any single crop in the world for providing complete information on rice.

Market intelligence: Established 11 centres for commodity price forecasting covering 19 crops in 10 states. Crop forecast is made through publishing in about 130 leading dailies, through Text and Voice SMS directly

to more than 1.5 lakh farmers. Forecasts are made for maize sowing, turmeric storage, price of basmati paddy, etc.

Agropedia: Agropedia is a crop knowledge management portal created for accessing agricultural R&D information of crops. It is a multi-language agriculture knowledge repository of universal meta models and Indian localized content for a variety of users. Platform enabled experts to generate highly focused advisory and send them via SMS and/or over voice to farmers. Further a platform connecting KVKs [Virtual Krishi Vigyan Kendra (vKVK)] with farmers through internet and mobile technology for efficient agro-advisory services through SMS and voice messages is developed. All KVKs in Uttar Pradesh and Uttarakhand, four in Karnataka and one KVK in Andhra Pradesh covered. The portal has global reach.

Environmental and social safeguards

Environment and social safeguard management aspects are adequately addressed. The environment friendly technologies like agro-forestry, water harvesting, organic farming, etc. are encouraged wherever required and possible. In case of the interventions with negative impacts such as excessive use of farm machines, use of insecticides, pesticides, etc., methods to mitigate their effects were planned, recommended and implemented.

Some of the environmental and social safeguard measures undertaken are:

- Use of integrated nutrient management (INM) and integrated pest management (IPM) in crop production
- Production of compost and vermicomposting
- Use of bio pesticides and bio-control of the aquatic weeds
- Balanced use of fertilizers and chemicals through soil test based recommendation
- Introduction of local breeds of poultry, such as Kadaknath and small ruminants, such as Sirohi goats is resulting in monetary benefits for the communities
- Development of Community Seed Banks and Seed Societies are helping salvage and reintroduce landraces; and making available quality seeds in time
- Formation of Producer Companies by farmers are ensuing new business opportunities through crop diversification
- Introduction of integrated farming systems, which are profitable and significantly contributing towards reduction of localized migration
- Federating large number of women self-help groups (SHGs) are resulting in gender empowerment along with income increases.



Adoption and diffusion: Spin-off benefits

Additional households to the tune of about 1,50,878 (gross) have adopted one or more of the demonstrated interventions. An additional area of about 17,866 ha area was brought under these innovative practices. The range of adoption varied from 29% to 100%. Some of the interventions widely accepted by the farmers were:

- HYV of crops and vegetables
- Rice- fish- vegetable integrated farming system in Assam,
- Pig- fish- vegetable integrated farming system in Assam and North East India
- Water harvesting system with multiple use of water
- Drip irrigation system
- Introduction of Beetal buck in Dumka and Jamtara, Jharkhand
- Conservation of *Kadakhnath* in Jhabua, Madhya Pradesh
- HDPE pipes in Rajasthan
- Redgram transplanting in Bidar, Karnataka
- Rice- fish- poultry integrated farming system in Tamil Nadu
- Interventions with low acceptance by the farmers were medicinal and aromatic plants, floriculture and soil test based fertilizer application.
- Interventions like SRI, seed production and bio inputs production had mixed response. Their acceptance varied from 30% to 85%.

Based on results of demonstrations consortia recommended a viable and sustainable models to be scaled up. These models provided a bouquet of technologies for improve livelihood.



Way forward

NAIP is moving towards greater sustainability in agriculture. Some of the initiative undertaken are:

- A number of IFS models are tested at multi-locations and this approach can be scaled up for livelihood improvement at other locations.
- The consortium approach is successfully demonstrated. For upscaling, development departments, research institutions, NGOs and private sector can be brought together.
- Capacity building is the key to successful adoption of the interventions and needs to be taken up in holistic manner by agencies supporting livelihood programmes.
- Value chain approach including inputs, interventions and linkages to markets can be implemented for livelihood improvement.



Region specific interventions

States	High Payoff Interventions
Andhra Pradesh	<ul style="list-style-type: none"> • Site specific rainwater harvesting and its judicious use • Improving groundwater productivity: Social Mobilization • Groundwater sharing through pipe line network • Site specific nutrient management
Arunachal Pradesh	<ul style="list-style-type: none"> • Integrated farming system for effective natural resource management • Improved production technology for pig • Poly-house technology for nursery and year round vegetables production
Assam	<ul style="list-style-type: none"> • Integrated Rice-fish-vegetable/spice • Integrated poultry-fish farming system • Integrated pig-fish farming system • Restructured cropping plan • Rice-Fish-Horticulture • Potato cultivation in sand and silt deposited area • Integrated pig-fish-horti farming system • Pit Cultivation- Extensive cultivation of sweet potato and Water Melon
Bihar	<ul style="list-style-type: none"> • Introduction of SRI in paddy and zero tillage in wheat for RCT • Skill upgradation / development of artisans engaged with natural fibre rope making, crochet work and fabric weaving • Cattle breed improvement • Integration of Fish with aquatic commercial crops i.e., Makhana (<i>Euryale ferox</i> Salisb.) & Water Chestnut (<i>Trapa bispinosa</i> Natans.) • Introduction of processing varieties and warehouse potato, seed-plot-technique in potato production • Secondary reservoir for fish-cum-horticulture & duckery • Alternate income generation through mushroom production and vermi-composting • Salt affected soil management (Motipur and Kanti cluster) • Preparation of vermi compost from locally available farm waste • Wide popularization of Zero Tillage sowing in wheat crop • Mushroom production
Chhattisgarh	<ul style="list-style-type: none"> • Water recycling models- lift system for bodies, low cost gravity drip system, use of low lift pumps, gravity irrigation through pipes • Agriculture, horticulture and duck-poultry farming model • Utilization of upland fallows for maize and millet cultivation. • Development of pasture lands in upland fallows. • Tamarind processing model
Gujarat	<ul style="list-style-type: none"> • Seed village (Pigeonpea, Cowpea, Soybean, Maize) • Crop diversification (Chilli, Okra, Brinjal, Turia, , Clusterbean, Cowpea) • Micro Irrigation System • Promotion of vermi composting
Haryana	<ul style="list-style-type: none"> • Zero tillage in wheat • Trench farming in vegetable • Promotion of biogas

States	High Payoff Interventions
Jharkhand	<ul style="list-style-type: none"> • Multi layer vegetable cropping (Elephant foot Yam + Ridge/Bitter/ Bottle Gourd) • Restoration of land under Jhum cultivation • Value addition of NTFP (Leaf plate, Jack fruit , bamboo craft) • Ramakant nadi kund • Mushroom cultivation among farm women • Development of fruit based multi-tier system in the fallow uplands. • Rearing of lac on palas and Ber tree • SRI Method Rice cultivation • Introduction of black Bengal buck (male) in case of Goatery • Introduction of Divyayan red poultry • Introduction of aquaculture in selected areas • T&D male pig for piggery for sustainable breed improvement
Karnataka	<ul style="list-style-type: none"> • Intercropping in Groundnut and onion • Productivity Enhancement in onion by variety, INM, IPDM • IGA: Backyard poultry and Ornamental fishery • Upgradation of local goats by Osmanabadi bucks • Pulse and milk processing • Redgram transplanting technology • Effective utilization and enrichment of fodder
Kerala	<ul style="list-style-type: none"> • Cultivation and primary processing of medicinal plants • VFPCCK model for procurement, transportation and marketing of agri-produce • Arranging GI registration for specialty rice (Jeerakasala, Gandhakasala)
Madhya Pradesh	<ul style="list-style-type: none"> • Lac cultivation. • Mechanization of cultivation practices. • Conservation and strengthening of local high value poultry race “Kadakhath” • Intercropping in maize • Promotion of vegetables and spices
Maharashtra	<ul style="list-style-type: none"> • Forest based Enterprises: tassar sericulture • Value addition: linseed • Wadi/tree based farming: agri- horti- forestry model • Water resource development • synchronization in cattle • Goat rearing • Watershed development approach • Estrous synchronization for cattle • Dairying- a sustainable source of livelihood security to the farmers • Sprinkle irrigation system • Early and raising of community nursery • Use of Community tank for pisciculture • Utilization for Forest Produce for Livelihood- Leaf plate, Broom from Assam grass, honey • Cultivation of watermelon in of drying beds of water tanks in summer. • Introduction of isabgol in Dhule and Gondia

States	High Payoff Interventions
Manipur	<ul style="list-style-type: none"> • Integrated farming system for effective natural resource management • Agro-forestry for rehabilitation of degraded land • Resource Conservation technologies- Zero tillage • Improved production technology for rice, pig and fish • Up-scaling of water productivity
Meghalaya	<ul style="list-style-type: none"> • Integrated farming system for effective natural resource management • Resource Conservation technologies- SRI, ICM • Improved production technology for pig/goat/fish • Up-scaling of water productivity • Subsidiary activities vermin-composting
Mizoram	<ul style="list-style-type: none"> • Integrated farming system for effective natural resource management. • Improved production technology for pig • Up-scaling of water productivity • Subsidiary activities Turmeric processing
Nagaland	<ul style="list-style-type: none"> • Integrated farming system for effective natural resource management • Agro-forestry for rehabilitation of degraded land • Improved production technology for pig • Up-scaling of water productivity
Odisha	<ul style="list-style-type: none"> • Vegetable cultivation and establishment of commercial nurseries • Integrated fish- duck farming • Ornamental fish breeding • Crop diversification with tuber crops- yam, EFY and yam bean • Off-season vegetable cultivation • Farm Mechanization-Setting up CHC & trained mechanics and operators • Production of paddy straw mushroom and oyster mushroom
Punjab	<ul style="list-style-type: none"> • Income generation through rope making from lemon grass • Increasing animal productivity through improved feeding • Agro forestry and cultivation of medicinal plants • Value addition of amla
Rajasthan	<ul style="list-style-type: none"> • Horticulture based IFS module • Livestock based IFS module • Seed Replacement in Maize • Introduction of quick connect PVC pipes for irrigation • Federating Farmers into Producer Company
Sikkim	<ul style="list-style-type: none"> • Integrated farming system for effective natural resource management. • Improved production technology for cardamom • Poly-house technology for nursery and year round vegetables production • Up-scaling of water productivity • Subsidiary activities (vermin-composting)

States	High Payoff Interventions
Tamil Nadu	<ul style="list-style-type: none"> • Integrated Rice + Fish + Poultry farming system • Integrated Goat + Crop farming system for dryland farming • Integration of seaweed for coastal shore farming culture. • Mushroom production • Integration of insect agents <i>N. bruchii</i> / <i>eichhornia</i> with plant product of <i>C. amboinicus</i> for bio-control of water hyacinth in water sheds
Tripura	<ul style="list-style-type: none"> • Integrated farming system for effective natural resource management • Agro-forestry for rehabilitation of degraded land • Resource Conservation technologies- SRI, ICM • Improved production technology for pig/goat/fish • Up-scaling of water productivity • Subsidiary activities (Mushroom cultivation)
Uttar Pradesh	<ul style="list-style-type: none"> • Introduction of quick connect PVC pipes for irrigation • Development of check dams and water harvesting bunds • Direct seeding of rice with herbicidal weed control. • Goat husbandry • Soil and water conservation measures • Forage resource development and their conservation • Agroforestry/agri-horti model- Bamboo plantation for soil and water conservation and entrepreneurship • Crop production through mini seed multiplication programme • Promotion of micro enterprises like rope making, motor rewinding etc. • Animal nutrition and breed improvement programme • Integration of SIFS with commercial banana production • Mass infertility control in bovine; Mastitis prevention in high milking animals • Reclamation of sodic soils • Rural poultry production with azolla as feed supplement • In-situ production of Pseudomonad and Trichoderma
Uttarakhand	<ul style="list-style-type: none"> • Diversification to off season vegetable cultivation • Allied activities- mushroom fisheries and apiary • Development of silvipasture and fodder cultivation • Commercial papaya and potato cultivation • Agro processing and value addition
West Bengal	<ul style="list-style-type: none"> • Rice – groundnut (Rabi&Kharif) -livestock model • Productivity enhancement of cotton and cashew • Livestock (goat/pig)-vegetable model for landless people • Zero tillage wheat • Low cost bio input production • Homestead based multi-tier vegetable production system • Pit loom interventions

Spread of NAIP



About NAIP

National Agricultural Innovation Project (NAIP) is the largest national initiative of ICAR in collaboration with the World Bank. The project objective is "to facilitate an accelerated and sustainable transformation of the Indian agriculture so that it can support poverty alleviation and income generation through collaborative development and application of agricultural innovations by the public organizations in partnership with farmers' groups, the private sector and other stakeholders". The project became effective on September, 2006 and will close by June 30, 2014.

In all, 203 consortia leaders and 653 consortia partners are participating in the project, adding up the number of participating institutions to 856, which are spread over 364 centres. To address project objective, research agenda is divided into four components:

Component-1: ICAR as a catalyzing agent for management of change in Indian National Agricultural Research System (NARS)

Component-2: Research on production to consumption system (PCS)

Component-3: Research on sustainable rural livelihood security (SRLS)

Component-4: Strengthening basic and strategic research in frontier areas of agricultural sciences (BSR)

A steady stream of new technologies emanated from the NAIP funded research includes: development of 130 production and 142 processing technologies, piloting of 62 rural industries, commercialization of 80 technologies/products, filing of 149 patent/intellectual property protection applications, publication of nearly 635 research papers in high impact international journals, establishment of about 165 public-private partnerships, 22 business planning and development units and 5 producer companies.

Innovative elements -

- Scenario planning and full involvement of the clients
- Formation of consortia to promote pluralism
- Implementation of sub-projects through public-private partnership
- Competitive selection of sub-projects
- Emphasis on priority and strategic research
- Institutional strengthening of ICAR/SAUs
- Partnerships with Consultative Group on International Agricultural Research institutes, Global Environment Facility and International Fund for Agricultural Development