

Indigenous Knowledge: Experience of Sodic Project, U.P., India

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Introduction:

Before start of Sodic project in year 1990 in Uttar Pradesh, about 6.4 million ha land was estimated to be wasteland out of which 1.15 million ha was sodic land . To address the problem the Government of U.P. with the financial assistance from The World Bank brought an aura of hope for agricultural development for poverty-ridden rural masses, which was addressed through Sodic Land Reclamation Project implemented by UPBSN a UP Government undertaking. This project got underway in 1993 and completed in March 2001. More than 68400 ha of sodic land of 1003 villages in 10 districts of the state was reclaimed benefiting 155892 families out of which 94% were marginal (having less than 1 ha land) and Small farmers (less than 2 ha land). An annual incremental production of wheat and paddy from reclaimed land is estimated at 3.10 million tonnes per annum worth Rs 180 million.

Though, Indian society is amongst the oldest society of the world, having rich social, cultural and agricultural traditional knowledge and practices, alongwith modernization, such knowledge and practices are gradually eroding. Under the project, land reclamation has been carried out through modern technologies. For sustaining the agricultural activities, a balance blend of indigenous and modern technologies was adopted. Indian indigenous knowledge popular amongst rural communities. The indigenous knowledge techniques are cost effective, based on locally available resources and are eco-friendly. Resource poor farmers are always being thriven for cost-effective technologies, which are easily adaptable and within their reach. Such need-based demand driven approach of resource poor farmers led to evolving, experimenting, refinement, strengthening and then adoption of indigenous technologies.

U.P. Sodic lands reclamation project is based on participatory approach of implementation involving participating farmers from the planning stage through execution and monitoring and evaluation. In order to operationalize the participation of key stakeholders, several farmer level institutions such as Water Users Groups, Self Help Groups and Site Implementation Committees have been developed by adopting appropriate tools and techniques. Among these institutions SIC is the village level institution, which is instrumental in micro level planning, implementation and monitoring. The farmers in SIC meeting during the course of technology dissemination process share traditional knowledge and wisdom. Though some practices were age old and some were new, they were found to be vogue because they are yielding desired results. UPBSN decided to capture such indigenous knowledge to preserve and validate to be further disseminated to the farmers. About 70 such ITKs related with different aspects of farming system were , collected from 291 places across the state, 37 out of which sent to State

Agriculture Department for refinement and revalidation. State Agriculture Department also concluded at the same results in 17 ITKs that have been circulated to extension agencies as valid recommendations. UPBSN also publishes ITKs in its bimonthly magazine 'Bhumitra' which circulation has gone more than 34000. Some of the ITKs are described here giving imperative features how and why the farmers thought to take on particular ITK.

Food Security Through ITK- Peoples' initiatives

In Sodic Project implemented by UPBSN reclamation technology is based on use of Gypsum as major soil amendment. During the regular visit of field staff to project site, found that some of the farmers whose land were not part of the project and deprived of soil amendment given by UPBSN, discussing about the alternatives of gypsum. Mr. Ram Tirath who had been active member of SIC of village Ainthoo, district Pratapgarh shared an alternative for gypsum. He said that his grandfather had used water hyacinth and paddy straw in some of his sodic plot situated in other side of the village. Over a period of time where nothing was growing now has converted to double cropped area with normal productivity. Mr. Ram Tirath shared his views with other farmers as how water hyacinth and paddy straw can be used to reclaim sodic soil. He told the farmer that a 20 cm thick layer spread over in moist field and plough in followed by impounding the field maintaining 10 cm water depth.

UPBSN management noticed this sharing of idea, which was adopted by Mr Khelawan, and surprisingly he could harvest around 10 q of paddy and 8 q of barley per ha in subsequent year, though this less than the average productivity of the crop but the farmers succeeded in their efforts. This experience did not remain, but radical effect was shared by many more farmers of the districts.

This has not happened in village Ainthoo only but in all parts of the project area, leftover sodic land farmers after seeing crop performance and returns from the reclaimed land under project are highly motivated. They are now attempting to reclaim their lands with indigenous knowledge. As an indication of adoptability of this ITK it has been observed that 1905 farmers of 679 project villages reclaimed 714 ha sodic land after using the same indigenous knowledge. A reclaimed piece of land on an average yields 0.6 mt food grain per ha in two crop seasons in a year. Thus total incremental production can be estimated at 428 mt per annum from 714 ha sodic lands reclaimed by the farmers.

Canary grass (Phalaris minor) is a major weed in wheat crop. Technical recommendation is to use Isoproteuron through sprayer attached with flat fan nozzle. Resource poor farmers in general did not have access to flat fan nozzle and it became a real problem for them to combat this weed. Invention is mother of necessity, this proverb was got translated into action by Mr Ram Murti of district Azamgarh. He experimented a number of options such as burnt diesel and sand

mixed Isoproteuron for smooth and wider spread over the field but finally succeeded with sand. ITK was evolved. Department of Agrioculture validated this ITK and now it has been recommended as alternate technique. Now the farmers who do not have flat fan nozzle are using this technique.

Garlic is a major cash crop in Mainpuri and Etah districts, which is grown after harvest of paddy crop. Due to harvesting of paddy crop in first fortnight of November it has an adverse effect on garlic production as it was sown late instead of its normal time by end of October. To figure out this problem, farmers of village Saidpur, Nigoh and Hasanpur of district Etah on an experiment basis sowed garlic in standing crop of paddy nearly 15-20 days before its presumed harvest. Paddy crop was harvested 15-20 days after sowing of garlic subsequently germination of garlic began. Recommended dose of fertilizers for garlic was applied after the first hoeing & weeding. This was a very successful experiment conducted by the farmers, which accrued 3 benefits all along.

1. No pre-irrigation, low costs
2. Zero tillage
3. High yield due to timely sowing

No such relay cropping was recommended before. Gradually this relay cropping system is gaining popularity amongst farmers of these two districts.

Etah & Aligarh districts are known for specialized farming of mustard. Average productivity of mustard in these districts is higher than any other district of the state. Due to small size of holdings farmers wish to get maximum return from per unit of land. Owing to low cost of cultivation, net income from mustard cultivation is comparatively good even then farmers wish to get more income from the same piece of land in specified period. This intended to add something new in the existing package what they were having. On an experiment basis one farmer named Mr Shishu Pal Singh of Sasni district Aligarh decided to take mixed crop of mustard with fenugreek. He broadcasted fenugreek seeds in mustard field after 15 days of sowing of mustard. No additional input was applied for fenugreek. Both crops were ready to harvest at the same time without adverse affecting the productivity of mustard. This facilitated the farmer with additional income from fenugreek. Surprisingly the farmer observed that there were no aphids in the fields. Thus an ITK on aphids control and additional income together evolved. This mixed cropping is being promoted in western U.P. & gaining popularity amongst farmers. The bi-monthly magazine of UPBSN has also contributed in publicizing this mixed cropping system.

Mr. Ram Abhilash Patel, a small farmer of Tikari village of Allahabad district saw some rice plants germinating in one of his fields after unexpected rains that year in the beginning of May. This could not go unnoticed to Mr. Patel as he had never sown rice seeds in that plot. Later, he traced after uprooting the plants that at

sometime, his children were playing in the courtyard with the small mud balls and the mud was containing paddy grains. While cleaning the courtyard, these mud balls were thrown out in the nearby field and have germinated after the rains. This struck to Mr. Patel and he discussed with his fellow farmers that why not they could try to grow rice by sowing the seeds in this fashion, which will save time, labour and ensure germination. After some initial set backs, Mr. Patel came out with the refinement in method which requires wet soil obtained from the bottom of ponds as it contains no weed seeds and is very fertile. Small pellets are made with the soil with 4 to 5 paddy seeds embedded in it. The pellets are prepared in the month of April-May so that they may be thoroughly dried as partially dried pellets may affect the germination of seed. Mr. Patel advised to place these pellets in furrows made in east-west direction to allow proper sunshine to the plants. The sowing is done during 2nd fortnight of June coinciding with the monsoon rains facilitating the seeds embedded in the pellets to germinate. In this method 80-85 kg pellets, prepared with 10-12 kg seed, is required for one acre of land. The advantage of this technique was realized with the reduction in cost of planting and seed rate, its usefulness in undulated land and maturity of crop is advanced for at least 15 days. Farmers from surrounding villages are experiencing these advantages. The technology has been found more useful under delayed rains condition also.

The disinfectant quality of Margossa (neem) leaves are known to Indian people since ages. To prevent losses in stored food grains, farmers from Kunvarpur of Fathepur and Gopiyapar and Airwakatra village of Auraiya district, thought over to utilize the benefits of margossa (neem) leaves. These farmers used shade dried margossa leaves laid in alternate layers with grains in a storage bin. The bin is closed airtight with the help of paste prepared with mud and cow dung. It is ensured that the grains are dried thoroughly before storage. Almost every farmer of the region is adopting this practice because of its simplicity and usefulness. The method is helping to keep stored grain pests like weevils and other insects off for more than a year if the bin is not opened. Besides, farmers from Charanti and Muhammedpur village of Azamgarh district are using 250 gm of shade dried neem leaves and 15-20 cloves of garlic to protect one quintal of stored rice from insects. This way they are able to protect their rice for household consumption through out the year.

Mr. Jagmohan of Jamkura, Meernagar of Sandila in Hardoi district noticed that in his paddy field deadly Tungru virus could not affect the crop plants due to some sesbania (dhaincha) plants grown for green manuring left casually in the preceding summer. The scientific base is that Tungru virus is spread through grasshoppers and thus Sesbania plants attract and divert them from affecting the main crop. Next year he experimented to grow 1-2 rows of Sesbania as border crop in paddy fields and the result was quite encouraging as his crop was not affected by the disease caused by this virus while some of the near by fields were affected. Now the practice is known to control tugru viral disease and popular at least in all the

UP Sodic Land Reclamation Project districts however, the technology has been broadcasted under the project by All India Radio and published in UPBSN magazine and literature. Another innovative project farmer Mr. Ram Shiromani Pandey of Ahda village of district Sultanpur used Ipomoea a wild perennial plant around his paddy field to protect the crop from Tungru virus.

From primitive ages, the cow dung and urine are used in agriculture practices and people believe that these have some miraculous properties, which are still unknown to many of them. Mr. Hurmat Ali a motivator posted at Etah district knew that pests devastatingly attacked the crop and fruit plants resulting in massive damage and declining production. To prevent such attack, he thought to develop an innovative technology with use of cow urine. He collected 10 litres of cow urine and added 100 g leaves of each Datura metal, Carissa carrandas, Azadirachta indica , Aegle marmolis, Emblica officinalis, Citrus limoni and Garlics in an earthen pot. He sealed earthen pot and buried under the ground. After 30-35 days the entire material meshed and skewed in a copper pot and 1 litre of this solution diluted with 6 litre of water and sprayed on crop as a bio-pesticide. After application no attack of pest on the crop was reported. This IK has recently been collected, needs to be refined and revalidated and if found significantly effective, it would be helpful in putting back high priced and inhygienic pesticides.

Shri Keshav Prasad Tripathi of village Pari, district Raebareli, is a teacher by profession but he is also an active member of Shanti Kisan Club formed with the help of U.P. Bhumi sudhar Nigam. Mr. Tripathi is an innovative farmer. He felt the problem in winnowing operation after thrashing of crop. For this operation the available winnowing fans in market were costly and out of reach to resource poor farmers. He gave deep thought about this problem and started to develop a cost effective winnowing fan to reduce drudgery of farmers. He collected some scrap material of old bicycle and some other parts such as fan blade, wheel, angle, bottom set and chain of old bicycle. With the help of this scrap material he made winnowing fan. The total cost of his winnowing fan was only Rs. 600/- and he given name to his innovation as **Keshav Winnowing Fan**. These winnowing fans are performing well in the field. The winnowing fan of Mr. Tripathi is much popular amongst the farmers. Mr. Tripathi has also started custom service to the farmer who requires the winnowing fans. Now other farmers are also collecting scrap of bicycle and preparing this implement indigenously.

Farmers of Kaderpur village of Jaunpur district have developed a cost effective structure for rice storage. They use paddy straw & Jute bags to make a structure. The farmers prepare platform with the help of paddy straw and Jute bag and rice to be stored is put on the platform in piecemeal. Rope made of paddy straw is spiraled around along with gradual filling of structure upto height of approx. 5' and

then it is closed with same rope making a conical shape at the top. Top is covered with small polyethylene sheet. Though the structure is made in open air, it provides complete protection from moisture, insect and rats without any extra cost. This technique is being adopted in many villages of Jaunpur district.

INCLUSION OF GENDER

Ensuring women as co-title holders of allotted land and their inclusion in overall decision making of the project has been a major challenge before UPBSN, therefore project recognized both men & women of the beneficiary family as member of SIC, the main decision making body at the village level. The Project also emphasized on active involvement of both women and men farmer in transfer of technology through selection and further enhancing the skills of Mitra Kisan and Mahila Mitra Kisan. Endeavors were also made under the project towards increasing control of women over common resource management through joint operation of SIC maintenance account by MK and MMK.

WOMEN SELF HELP GROUP: an institutional innovation for Women empowerment

WSHGs have been an institutional innovation with demonstrable success in facilitating women's collective engagement in the development process. As women contribute significantly in agriculture activities, UPLRP perceives women as potential beneficiary of the project. Women Self Help Groups (**WSHGs**) are promoted in the project villages as a forum to empower women in terms of increasing their access to decision-making process, opportunities and income. This forum facilitates the atmosphere of self-help among the women and enables them to influence socioeconomic issues affecting their life. It provides space and support necessary to take effective steps towards greater control of their lives in private and society. Thrift and credit activities are promoted in these SHGs, which leads to development of self-manageable alternative credit delivery systems to meet their credit requirements. This paves way for economic empowerment of women thereby giving them a social stand in an otherwise male dominated society. Till date 6962 WSHGs have been promoted covering 79791 members. Identification and promotion of Mahila Mitra Kisan and WSHGs, with the help of Partner NGOs, the project facilitates the process of women participation and a gender sensitive environment in the project villages.

Initiatives towards Women Empowerment

- Project recognized both male and female member of the family as a member of Site Implementation Committee (SIC) a main decision making body at the village level, thereby involving them directly in land reclamation process and establishing their access to resources, technology and decision making power.

- As a representative of women, Mahila Mitra Kisan plays key role in establishing the communication between project and women by disseminating the land reclamation technology among the women farmers.
- Enhanced economic capacities of women influenced the gender-based relationship at family and community level. Their image emerged as a "Provider" of credit for agricultural inputs, income generating activities and other family requirement. This significantly contributed towards agriculture development in the reclaimed area.
- Linkages of WSHGs with Banks further enhanced the availability of credit as per their requirement. Initially, the initiatives were taken by project to facilitate the linkages but now demand is emerging from the members themselves.
- Exposure visits and training played an important role in building up the confidence of the women and developing their faith in collective processes besides broadening their vision towards self- managed development initiatives.

Capacity enhancement of these SHGs is being done under the project through regular trainings and exposure visits. These WSHGs are further networked into Clusters/Federations to address the issues related to women empowerment at larger scale. The major areas of cluster intervention are literacy, women and child health, hygiene and sanitation, advocacy of women rights, drudgery reduction etc.

Glimpses of successes of WSHGs,

The majority of women covered under SHGs are from resource poor families with almost little or no access to the productive resources, still women with the use of **indigenous knowledge** are contributing towards enhancing their family income through activities like Bidi-making from Tendu leaves, leaf cup plate making, basket making and mat-making through elephant grass, rope making from sun hemp etc. The members of SHGs with their small savings have generated the capital of Rs.531.95 lacs. For further strengthening the capital base of SHGs they have been linked with bank for CCL and other ongoing socio-economic development programs, thus enabling them to diversify their activities in order to meet their socio-economic needs in the long run. Total 3452 groups have been linked so far with the bank for Cash Credit Limit and Rs. 371.17 lacs have been disbursed.

Members of SHGs have diversified themselves into numerous **economic activities**. Till date groups have internal loaned Rs.850.63 lacs for various consumption and productive purposes. Total 359.86 lacs have been internal loaned for agriculture, followed by Rs 227.99 lacs for Economic and Rs. 279.55 lacs for Domestic purposes. Almost 30,231 women have started economic activities with the help of group loan. Bhadki Devi, member of "Sneh" SHG, of Tulsipur village of Sultanpur district has established Rice Mill. Kamlesh Devi, member of "Puga" WSHG have opened PDS shop in district Kanpur. Cheddi devi of Girta SHG has established Flour mill, and numerous others have

diversified themselves in activities like apiary, dairy, piggery, grocery etc. In some of the group members are collectively involved in economic activities. They collectively procure order, material, and market the finished goods and distribute profit among themselves. Members of Rekha WSHG, of village Chirkuaa of district Auriya are collectively doing embroidery work. Similarly Members of "Jaanki" WSHG, of "Karnau" village of district Pratapgarh are collectively doing fishery. Nandani, member of SHG of "Pepalgava" village of Aligarh district facilitated in establishment of Parag Dairy in her village and currently all the members of the group are collectively engaged in dairy.

Supporting Agricultural Activities:-

The Women's of Self Help Group are also **supporting Agriculture activities** through providing credit for purchase of inputs like seeds, fertilizers, irrigation water, agriculture implements etc. The Members of "Durga" WSHG of Vero-savaya village of district Jaunpur purchased winnowing fan through group dividend and are providing it to other farmers on hire basis. Member of "Aakashya" WSHG of village gadha is running agriculture input service shop through group loan. Similarly Rekha Devi of "Jai Haridas Baba" WSHG of village "Salemabad", of district Fatehpur is a dealer of IFFCO input service center.

Spreading Literacy

Women of these SHGs have also shown their potential to enhance capabilities across a broad front including **functional literacy**. The members of "Jai Maa Durga" Self Help Group of village "Isai mahloi" of Mainpuri district and "Maa Gaytri" WSHG of village Pandpur of Auriya district, Girta SHG, of Devri village of Fatehpur district and numerous others have developed their skills in functional literacy where all the members of groups have learnt to read and write. The members are so enthusiastic with the group experiences that they have also formed new groups in the neighboring villages with their own efforts. Chanda devi, of village Beni harsinghpur belongs to SC category, was selected as Mahila Mitra Kisan and with her hard work became so popular that she was selected as a Panchayat member. There are several such examples, which reflect the empowerment of women through SHG experiences

Helping Their Families :

Project has inculcated the feeling of **Self-Help** in such a way among the members that the president of "Radha WSHG", Ms Rachkala of Belwa hasanpur village of Raibarielly district, despite of being a widow and disabled with one limb, not only reclaimed the sodic land but is also running a grocery shop through group loan and is generating income to meet her family expenses. Similarly Champa, a Scheduled Caste member of Parvati WSHG of Bhikampur village of Etawah district started piggery through group loan and repaid old debts of her family.

Members of these groups are also raising their voice against **social vices**. "Shakuntala Devi" member of Self Help Group of village Goghmau of Sultanpur district with the

support of cluster not only restrained her husband from alcoholism but also restricted the sale of alcohol in her village.

Endeavors were also made by the group towards **drudgery reduction**. Sangita, a scheduled caste member of Santoshi group and Vidhya of Jai Lakshmi group of Soro village of district Allahabad, facilitated in establishing **common toilets** for women through group capital. Members of Self Help Groups of Sandila, Hardoi district have participated in the scheme of "Unnat Rasoi Yojana", where they have been provided **safe cooking appliances** such as Cooking gas, pressure cooker, gas connection etc.

FARMER FIELD SCHOOL / FARMER CLUBS:

The Farmers Field School has also evolved as an institutional innovation for farmer led Extension services. Farmer school facilitates multi-directional communication process between and among extension staff and farmers, involving the sharing, sourcing and developing of knowledge and skills in order to meet farming needs and develop innovative capacity among all actors, in which a farmers have a '**controlling interest**'; are '**centre stage**' and play a key role in technology development and delivery; and involving farmers in training other farmers and trainers, and in sharing, sourcing and transferring knowledge and skills.

Such institutions have been developed with a view to increase the participation of farming communities towards agriculture development, appropriate land use, exchanging knowledge & indigenous technology, upgrading the quality of life of members from participating villages and ensuring effective management of their resources. The network also provides a mechanism of shared participation both in ideas and collective efforts for community development and opens a formal channel to facilitate linkages with government organization and credit institutions at local level.

The Farmer school is a network of progressive farmers of villages within the radius of 5 Kms. These schools involve farmers in learning and disseminating the appropriate technologies to other farmers. The knowledge bases of these schools are further strengthened through linkages with the Agriculture research institute, Government department and NGOs. Besides addressing technological needs of fellow farmers these schools are also playing major role in Policy advocacy issues and provides platform to farmers to raise their voices to the policy makers.

Currently 126 Farmer Field Schools have been successfully operating and catering the needs of 19850 member farmers of 1470 villages. Farmer schools are actively involved in disseminating technical know-how to its member farmer through master trainers and **1473** such master trainers on different subjects (Agriculture, Horticulture, Animal Husbandry, SHGs, Fisheries, Bee keeping, Health, Education etc.) have been developed so far, who are providing regular training / support to member farmers. Members of farmer schools are also facilitating in arrangement of credit and so far, **708** WSHGs and **418** MSHGs have been formed with the support of farmer schools. Credit camps have

also been organized by the members of Farmer Schools where **7840** KCC has been distributed to farmers and Farmer school also facilitated in CCL linkages of **425** SHGs.

Endeavors have also been made towards **organic farming**, till date **647** Nadep, **573** Vermi Compost pit and **100** CPP have been formed with the support of master trainers. The members of Farmer school's have started **474** fertilizer sale outlets, for providing quality fertilizer to other farmers.

In order to promote agriculture development through the use of information –technology, efforts have been made to set up IT-Kiosks at Farmer School level. UPBSN has been instrumental in establishing linkages of FS with ITC & ICICI for setting-up ITC-e-chaupal and IT Kiosks at the FS level. ITC-e-chaupal has already been set up in FS of Sultanpur and Allahabad district and farmers have started using computers for technology dissemination.

Efforts have also been made to establish linkages of FFS with private institutions like IFFCO, ICICI, ITC and Indo-Gulf etc. to get support in the area of procurement of seeds, fertilizers, skill based trainings, Literature, MED activities so as to develop these institutions as a 'Centre of Excellence' in the field of Agriculture as well as sustaining the impacts of the Sodic-II Project. Till date, dealership has been provided by IFFCO to 17 FFS and they are providing training, literature and building maintenance support to the Farmer schools on regular basis. Libraries have also been established in almost all the FFS and BSN has coordinated with several departments and provided a set of 27 books worth Rs.13000/- to some highly vibrant 99 FFS and Clusters.

Corporate Linkages and Income Generating Activities.

Food security is a major concern for the poor farmers and landless labourers. The root cause of food insecurity is poverty caused due to the degradation of soil, water resources and the scarcity of biomass resources to meet daily needs. In addition to this, ignorance of people also plays an important role in deteriorating the social conditions of the people leading to poor quality of life. Is there any alternative to ensure the food security of the present as well as future generation of the resource poor families and save them from the vicious cycle of poverty caused due to the depletion and degeneration of the natural resources which in turn caused the depletion of social resources and poor quality of life. Well, under the project efforts were made for the application of indigenous technologies for ensuring the food security. Indigenous method of conservation of natural resources, such as use of farm waste as organic manure, bio-pesticides and adoption of various package of practices helped in addressing the issue of food security in cost-effective manner and enhancing the income of poor farmers. The farmers have developed their own mechanism of alternative public distribution system. To ensure food security of the group members, they have established their own grain bank. At the time of harvesting, every individual farmers of the group contributed equal quantity of grain to the grain bank. The needy members of group take grain from the grain bank and returned with incremental benefit to group, because of having strong view to reasonably increasing the quantity of stored grain and sustainability of the alternative public distribution system.

Mrs. Dhankumari, a member of Dr. Bheem Rao Ambedkar Women Self Help Group, residing in village Hiddain under Block Harchandpur of district Raebareilly was a landless agricultural labourer before joining the Self Help Group. With the capacity building interventions provided under the project, she took initiative to do shared cropping after getting loan from the Group. She used indigenous technology of pest control and manuring, for crop production as perceived in integrated pest management and integrated plant nutrient management. The produce obtained was perfectly organic and was sufficient to meet out the requirement of her family for the year round.

Income Generation Activities helped in gradually improving beneficiaries' confidence levels, as the productivity of land enhanced with the support for reclamation and awareness generated through skill development efforts. To address the issue of poverty alleviation through lateral approach and sustenance of project results, income generation related interventions provided succor to the most needy and bring in more opportunities for their own development. On the other hand, intervention for the promotion of such income generation activities found helpful in strengthening the local economy as well as sustaining the entrepreneurs' livelihood. It helped in enhancing the risk bearing capacity and confidence of the beneficiaries in success as well as constraints. It also helped in developing sales skills amongst the beneficiaries and also gives impetus to improve their bargaining power. Indigenous technologies of heap composting with certain innovations have been adopted by the farmers for improving their productivity and promotion of bio-practices.

Members of Adarsh Women Self Help Group in village Sirsa of district Unnao are involved in vegetable cultivation. They had preferred cash crop instead of food crops. Their business acumen is being reflected through the approach, they have adopted for organic farming for production of vegetable crops. To enhance shelf life of their perishable items, they took initiatives for construction of zero energy cool chambers made of sand and bricks. In this technology, two walls of bricks are constructed and between the walls sand is being kept. To maintain the temperature water is regularly sprinkled on sand. They keep vegetables in this zero energy cool chamber and market the same on better prices.

For empowering rural women gender concerns are addressed through the interventions of the indigenous knowledge. Being easily adaptable, readily available and having clear understanding these indigenous technologies played vital role in women empowerment. With the enhancement of women skills, their access to income improved through the promotion of income generation activities. Adoption of indigenous technologies for drudgery reduction, viz. storage bin and improved sickles gave enough time and opportunities for women development. Members of Pragya Women Self Help Group at Raibareilly had adopted various indigenous technologies for income generation, such as preparation of rice puffs, jaggery sweetmeat, basket from locally available weed (Lantana), etc.

Mrs. Sadawati, a member of Nav Chetna Self Help Group in village Dulampur at district Raebareilly has been appointed as a dealer of Hindustan Lever Ltd. for marketing the personal care products. This corporate relationship served as a boon for enhancing her sales skill and establishing her identity in the nearby villages. She daily visits different villages along with the products and earns her livelihood. A drastic change in her attitude from housewife to business lady can be reflected from setting up her own daily target of business. She is very specific to get the daily business of Rs. 250/- to Rs. 300/- this may be a step towards her economic empowerment, where she decides her own product portfolio. Her life is gradually moving towards sustenance. She is also planning to establish a community kitchen from the support of Hindustan Petroleum Corporation Ltd

Conclusion

Radio active substance and chemical are globally being used in development of latest advance technology and researches. The indigenous experiences of the farmers are not fully considered by the scientists during carrying out researches. In production of various chemicals such as pesticide, weedicide and fertilizers many green house gases emit that has become a menace to ionosphere and which was a burning global issue before Kyoto Protocol . UPBSN has realized the importance of indigenous knowledge and wisdom which are cost effective, eco-friendly and can be adopted by resource poor farmers to a greater extent. UPBSN is emphasizing and promoting use of locally available indigenous knowledge .

UPBSN had concerned for the sustainability efforts not confining to agriculture production and productivity but also in the areas of gender sensitization, women empowerment and linkages with corporate sector organizations. Formations of various institutions such as Women Self Help Groups , cluster, Farmers field Schools / clubs and there linkages with public / private / cooperative sector companies has proved a milestone. UPBSN endeavor in this direction desired tools