

Successful approach for integrated farming system

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Team of scientists from All India Coordinated Research Project for Dryland Agriculture, College of Agriculture, Indore regularly visits different rural areas for convincing and motivating the farmers for adopting improved rainfed technologies for enhancing their farm production and income. During a visit to Dhar district of Malwa and Nimar region, the team came across few progressive farmers who are practicing various agricultural methods on basis of their own field experiences for earning profits from farming. However, due to lack of extension activities and awareness, other farmers are not getting information on these very successful and efficient farming practices. Experience gathered by the team through interaction with progressive farmer is detailed here for its wide scale adoption.

Keywords: Dryland agriculture, Income, Integrated farming system

A progressive farmer, Dr R.S. Sikarwar, after retiring from Govt. Science College, Barwani is involved in agricultural activities in village Mehalgaon, block Chikhaldia of district Dhar (Madhya Pradesh).

He has adopted various innovative practices and trying to enhance agricultural production from his parental cultivated fields. Dr Sikarwar got a part of parental land and owing it since 1990. At that time, this field

was severely damaged, eroded and degraded due to

uncontrolled runoff movement from undulating fields with multidirectional slope. Initially, he started constructing various earthen bunds at different locations to reduce the land erosion process. Then he tried to level the different fields using various types of farm machineries. Since the soil depth in these fields is very deep, he was successful in



Pearl production in farm ponds.



Vermi-compost and agro-forestry.



Pearl culture, pisciculture and prawn cultivation in farm ponds.

levelling the field very effectively. In 1991, Teak plantation of 500 saplings was carried out by him in 1 ha area of this levelled field. Similarly, plantation of aonla in 1 ha and mosambi (*Citrus limetta*) in 1 ha was also carried out simultaneously. At various locations, plantation of mango, jackfruit, palm (tadi), sapota (chikoo), papaya, guava, banana, coconut, sandal woods, aromatic and medicinal plants etc. was carried out as per the requirement and availability of land. In another part of the levelled field, plantation of 1,100 custard apple plants was carried out.

of water was available for irrigating these fruit plants. In between these plant rows, cultivation of soybean-maize during *kharif* and wheat-chickpea in *rabi* was also started by him with time.

After 4-5 years of plantation of aonla and mosambi (*Citrus limetta*), he started getting fruit production from these plants. Since these fruits were new to the area, he earned a handsome income and profit from selling it initially. However, after few years, the income from aonla drastically reduced as other farmers also started growing aonla in their



Agro horti system with maize-aonla.

fields. Initially the aonla was purchased at the rate of ₹ 20 per kg by the local vendors but later, its selling price was reduced to only ₹ 2-3 per kg due increased production in the area. However the higher income, profit and production from mosambi (*Citrus limetta*) continued for 10-12 years which helped him developing the cultivated fields further.

At present, he is getting very good production from the 1,100 plants of custard apple which were planted in 2007-08. Dr Sikarwar informed about custard apple plants that these require less water, less maintenance and provide higher production in short time. However, it is very essential to provide irrigation to these plants at the time of fruiting, which



Fish rearing along with fruit production.



Medicinal and aromatic plants.



Intercropping of papaya, banana and aonla.



Fish rearing and duck production.

ensures very high production of custard apple. All these trees are being irrigated using drip irrigation system. Beside, custard apple, mango, jackfruit, sapota, palm (tadi), banana, coconut, sandal woods, papaya and medicinal and aromatic products are also being sold by him in the nearby local market to add to the farm income.

The initial provision of earthen bunds brought the undulating fields to leveled conditions after few years. In these leveled fields, five farm ponds of $40 \times 40 \times 3$ m size have been constructed. In these farm ponds, pumped seepage water from Narmada River and runoff during rainy season is being collected regularly by him. In these farm ponds, he started fish rearing and

prawn production and even duckery.

Dr Sikarwar was the Professor of Zoology in Govt. Science College therefore he started using his own experiences and its application in his farm. In 2005, he constructed cemented tanks of $10 \times 10 \times 2$ m in almost 4000 m^2 area. In these tanks, they are producing fingerlings of various fishes. Good quality of compost cow dung manure is mixed in these cemented tanks to provide natural environment to all the fishes and also to provide feed for them. Dr. Sikarwar is producing fishes, prawns and earning higher income and profit from these rearing activities.

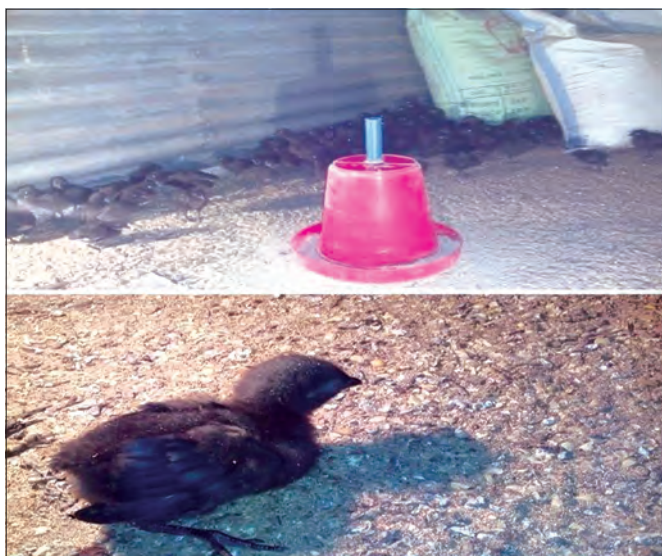
Dr Sikarwar started innovative activities for the first time not only in Nimar region but also in Madhya Pradesh. He started producing pearl

from these tanks, which were developed for fish rearing initially. For this purpose, he received practical training and technical knowledge from an institute at Bhubaneswar. This training helped him for starting production of designer pearls instead of simple one. Though initially he faced lot of troubles for selling these pearls but after that he contacted traders from Hyderabad who helped him to earn a huge profit through the sell of designer pearls.

He is also practicing sericulture and moriculture since 2016. For this purpose, he planted shahtut (mulberry) plants in 1 ha and he is producing silk fibre. He ensured regular pruning and cutting of mulberry plants from time to time to allow their faster growth. Similarly,



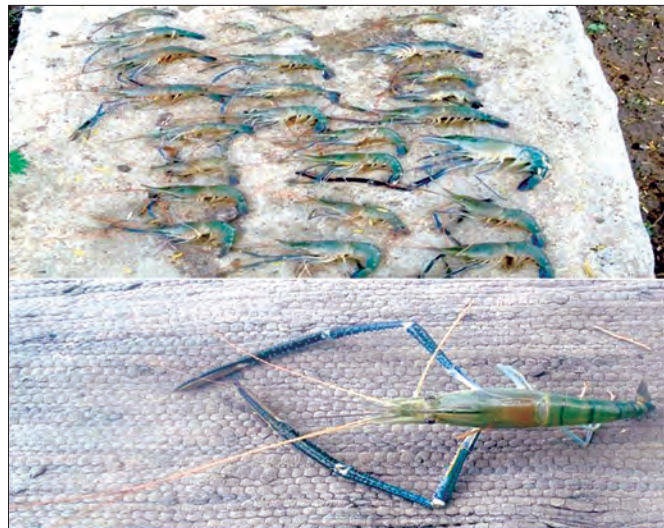
Coconut and sandal wood plantation.



Poultry farm with kadaknath.



Fishery pearl and lotus production.



Prawn production.



Cemented tanks for fish rearing.



Water harvesting tanks for run-off collection.

he tried for developing poultry business by having Kadaknath breed of birds. However it is experienced by him that the Kadaknath bird is normally heavier than Broiler bird,

therefore its production cost is also higher than broiler. Therefore, production and selling of Broiler is easier than the Kadaknath breed.

In 2015-16, a vermi-compost unit

was developed by using the leaves of teak plant, farm wastages and cow dung. For vermi-compost unit, he also tried and used plastic bags and cement separately. However it is suggested by him that cemented



Pruning of mulberry trees.



Plantation of mulberry trees.

vermi-compost unit is cheaper and sustainable. It is also easier to collect vermi wash from cemented unit which can be used as liquid fertilizer along with drip system for irrigation purpose. He is also trying to develop various vermi-compost units in between rows of fully developed teak trees which were planted in 1991. The shades of the trees provide suitable environment for proper growth of worms by lowering the temperature as higher temperature always adversely affect worms working efficiency.

On the basis of experience shared by Dr Sikarwar, it can be experienced that Dr Sikarwar tried to adopt integrated farming system and also tried to enhance its quality from time-to-time to get higher farm production and income. He also shared that it is not easier to get higher income and production from



Custard apple production.

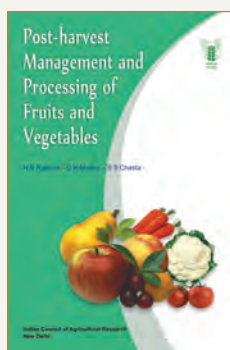
any agricultural field because it is laborious and time consuming and requires higher input cost in the initial years. There are several years in which the farmers do not get the income but can incur losses in comparison to higher input cost. Similarly, farmers should adopt improved scientific technologies, improved varieties of crops and plants and improved techniques of

irrigation gradually. He also wishes to suggest to the farmers that after adopting any new technique, one should not expect immediate profit. Instead one should keep patience and should try innovative ideas to enhance the income. Similarly in all the fields, soil and water conservation practices should be adopted for conserving natural resources for enhancing irrigation water availability for different crops and plants. The experiences

shared by Dr. Sikarwar are worth considering and a source of inspiration for other farmers who wish to adopt integrated farming system by including other farm activities and enterprises for enhancing farm production and income on their own.

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Post-harvest Management and Processing of Fruits and Vegetables



Post-harvest management technology offers promising option for increasing production of vegetables and fruits quantity-wise and also in maintaining quality of the products. It involves all the activities that occur after production or harvesting of commodities, including procurement, removal of field heat, sorting, grading, packaging, storage, transportation, primary and secondary processing and marketing of agricultural products from farm-gate to distributors. This book is an effort to document vast available knowledge on the various aspects of post-harvest management and processing, and it will prove worthy for teachers, students and extension workers for understanding post-harvest management and processing of fruits and vegetables. It has 16 chapters covering storage, packaging, advanced preservation technology and value-addition of fruits and vegetables.

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