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COLLECTIVE FARMING - KOTHAMANGALAM MODEL

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Farming in dry district of Sivaganga is mostly rain dependent besides small land holdings but it has withstood in need of a thorough change. The fragmentation and sub - fragmentation of land is posing a serious threat to agrarian economy. Hence, it is right time that efforts are needed to draw the principles of joint family institution in India and applying the principles to farming and taking up joint farming or collective farming to overcome the threats of labour paucity, climate risk *etc*.

A NEW INITIATIVE

The basic idea underlying the collective farming is of pooling of both land and labour resources and the individual farmers, whether a small holder, tenant or landless agricultural laborer in the region who are willing to be a member of collective farming is included in the group. There is no condition to become a member but it is only the willingness and interest of the farmer. Though farming in our country is severely handicapped by the common factors of poverty and lack of financial resources and the small size of holding but in Sivaganga district the major problem is obnoxious and heavy intrusion and infestation of invasive tree species, *Prosopis juliflora* in cultivated and uncultivated fields, which is causing a major threat to ecology and environment of the region at the same it is moderately giving returns to the land owner without any investment. Hence, before organizing collective farming, it is mandatory to remove the *Prosopis* trees from the field, which has to be done by the owner as well as the group involved in this process.

KOTHAMANGALAM MODEL

This model is based on bringing together of all the land resources of the willing farmers

Keeping these in mind, the concept of collective farming is introduced by DARS, Chettinad, Sivaganga district to a group of farmers at Kothamangalam village of Sakkottai block during 2012. The group was led by Mr. Solaimuthu, a retired engineer, native of that village. He and his two of his neighbours contacted all the land owners located nearby and in and around the village and requested them to join for the new initiative of collective farming either by themselves or leave/ lease the land so that farming could be done collectively. The farmers agreed on the new proposal and 'Kothamangalam Iyarkai Velan Pannai' took birth to look after collective farming activity. Right now it has about 100 acres of land spread in three locations in the village owned by nearly 250 marginal/small farmers and they are sure of annexing another 500 acres, infested by *Prosopis*, which can also be brought back to the agriculture operation. From day one they have jointly started cutting and clearing of *Prosopis* trees found in the cultivated fields, cleaning the land, formation of feeding and drainage channels, fencing and ploughing and preparing the land for crop cultivation.

They started cultivation in 2013 and developed nursery for paddy for the entire 52 acres in anticipation of normal rain during the season. Unfortunately that village experienced failure of the monsoon the worst after 40 years. Under acute moisture stress situation they may not able to save entire area, but they have one borewell and it could support 3 acres. At that juncture Dryland Agricultural Research Station (DARS), Chettinad, Tamil Nadu Agricultural University implemented the large scale cluster demonstration of PPFM Technology to mitigate the moisture stress in rice under NFSM (RICE) in conjunction with ADA, Sakkottai. The DARS Scientists and ADA, Sakkottai made a visit to farm and next day PPFM was sprayed by using Boom sprayer. PPFM spray was helped to save two irrigations and facilitated to protect the additional 6 acre areas in and around the borewell and harvest the paddy without severe loss. It was the first success of the group farming in Kothamangalm village and they started to reap the Agro technological information from DARS, Chettinad and demo benefits from ADA, Sakkotai.

After the harvest of rice they approached DARS for assessing the soil health status, soil based crop matching and identify the suitability of different crops. The Scientists of DARS gave the technical guidelines for soil sampling, site selection and collection of representative soil samples for characterization. As per the soil sampling *mandra* they collected soil samples and sent to DARS for analysis and soils fertility status were analyzed. Based on the soil health status and less water availability, scientists suggested to go for watermelon, maize and ragi crop to enhance the crop productivity under changing climate. First they started cultivating watermelon crop with improved crop production technologies provided by DARS. They harvested 45.0 tonnes / hectare with a maximum fruit weight of 10kg /fruit and marketed at Rs. 1.00/kg of fruit. This paves way for strong road map of collective farming and enhanced the interest of farming among the farmers.

Similarly on the other side, five acres were allotted for mechanized cultivation of maize and was raised using Happy seeder available with DARS, Chettinad and required maize seeds and necessary inputs were supplied by ADA, Sakkottai. Manures were scientifically applied through integrated nutrient sources as per the soil test and crop requirement in split mode and the crop was completely monitored by Scientist of DARS and ADA, Sakkotai. A yield 7.5 tonnes /hectare was realized and marketed at Rs. 13 /kg to the private firm. At the same time another 5.0 acres of land was raised with ragi under SRI mode and followed the improved soil and crop management technologies as per the guidelines of DARS, Chettinad. The crop was closely monitored at fortnight interval as on when the pest and disease problem was solved and about 2000 kg of ragi was harvested per hectare and sold at Rs. 32/kg. The cost analysis were worked out for both crops and tabulated.

As a latest attempt for the year 2014 as per the suggestions of Scientists of DARS summer sesame was sown in 45 acres under summer rain and uncertainty of rainfall severely affected the crop. Even then a yield of 200kg of sesame per hectare was harvested. Presently they raised 5 acres maize and 5 acres ragi in the in different field by adapting improved production technologies. In this introduced 3 *desi* cow as an animal component for IFS system and Vermicomposting unit was partially supported by ADA, Sakkottai, which is being used for converting cow waste in to valuable vermicompost. Crops are in blooming stage in the field and expected to reap very good yield in the days to come. Recently District collector visited to collective farming site with Scientist of DARS and ADA, Sakkottai to interact with farmers and he was very much impressed to see that crops under limited water situation and requested to upscale this collective farming concept to other parts of the district and publish in the media.

They are praying the God to give very good showers to bring 300 acres of green mat in that village and DARS, Chettinad and Department of Agriculture are ready to continue the technical and demo support to that village to speak louder the success of 'Collective farming' in the other parts of Sivaganga district.

CONCLUSION

Farming in dry district of Sivaganga, Tamil Nadu is mostly rain dependent besides small and fragmented land holdings which is posing a serious threat to agrarian economy. The promotion of collective farming among the rain dependent farmers to overcome the threats of climate risk and non - availability of labourers for farm operations is the need of the hour; and timely intervention of farm institutions like SAUs, ICAR institutions and other NGOs is essentially required to keep farmers and their family to stay in farming and to avoid migration. The information gathered from this model would help the farm scientists/ readers to take the message further and help in promoting collective farming in their areas.

Collective farming PPFM spray for drought tolerance

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JOINT FAMILY FARMING - AMMAYENDAL MODEL A NEW INITIATIVE & TECHNOLOGY INTERVENTION

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Poverty and vulnerability combine a vicious circle for many small/marginal farmers and to break that and turn into a virtuous circle, resilience must be built into farming and the system in which they operate. There is a need for changing the mindset of farmers to bring about the desired progress in farming through collective/cooperative/joint farming mode.

STUDY AREA

Ammayenthal village is a hamlet situated in Thirupathur block of Sivaganga district of Tamil Nadu State, South India. (Please see the maps for location.)

It encompasses 35 ha of cultivated field owned by 24 households / families. The main source of irrigation for this village is open wells; however, the non system tanks (rain dependent) and bore wells are also support irrigation. The average annual rainfall of the region is 940 mm with maximum area under rice–rice cropping system and there is no dearth of resources for farming except for labour scarcity during cultivation times and, is bestowed with all natural resources.

Rice is the principal crop in this village grown during June - September, November - February and also during summer (March – May) with an average productivity of 5.70 t ha $^{-1}$. Groundnut and Pulse crops like cowpea, green gram and black gram are grown both under irrigated and rainfed conditions.

Cropping systems followed in this village are

1. Rice (September - January) – Rice (March - June);
2. Rice (September - January) – Groundnut (Mar. - Jun);
3. Rice (September - January) – Black gram (March - June) and
4. Groundnut (December - March) - Vegetables/ Maize (Apr. - Jun.)

Regarding livestock activities, cross bred cows and backyard poultry are the predominant system with the average milk and egg production of 7.5 liter/day and 140 eggs/ year/bird.

CONSTRAINTS

The major constraint in farming is paucity of labourers particularly during peak period of cultivation, non availability good quality varieties, weed menace in crop cultivation which resulted in reduced crop yield, lack of technical knowledge and awareness on Improved Production Technologies (IPT) and poor marketing price for their products owing to lack of marketing information and market linkages. As rearing of milch animals is also a part of farm activity encounter the problem of non availability of green fodder during lean period, lack of technical knowledge on scientific management of animal rearing and sudden outbreak of pests and diseases are the major problem witnessed by the farmers.

Figures on the average cost of cultivation and gross income realized from all the crop and nimal components by the farm families

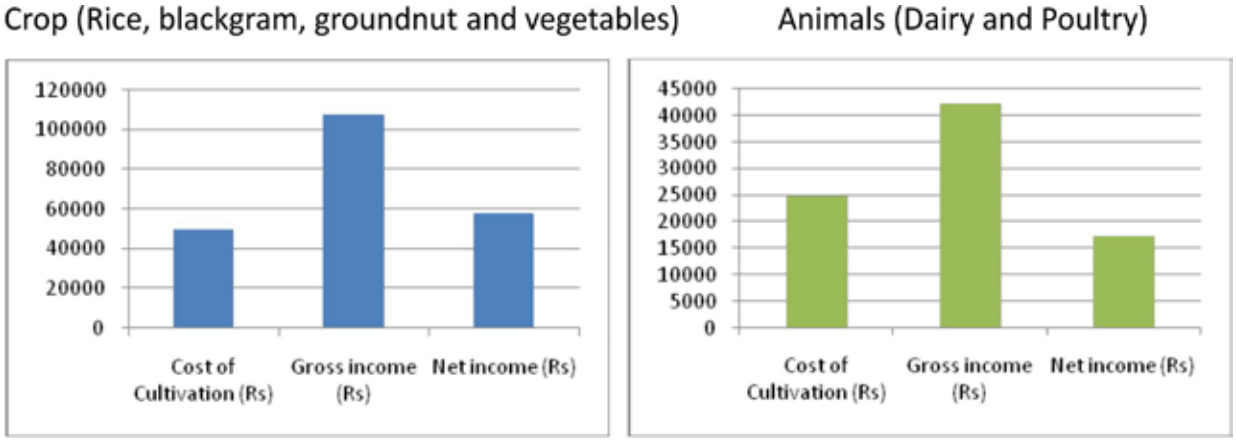

Fig 1. Economics of crop and animal components before the intervention

Details of the households

- The majority of the house holds belongs to backward community with a land holdings of less than 2.5 ha.
- Farmers diversify crops for food and animal fodders.
- Large Participation of women in farming .
- There are gender specific tasks or degrees of work specialization in crop production

Wild Thoughts

In the past, all field operations were done by themselves in their fileds which is labourious, time consuming and cumbersome, and were not able to complete the farm operations in time and space and hence the faced problems of crop failures, yiled loss etc. Over period of time they learnt lessons from their past experiences and the women folk come together and discussed informally about their problems and analysed in that one of them suggested a wild thought of "instead of doing field operations familywise why not we do the filed operations like sowing, weeding etc. in a collective way by joining of all women from the farm families".

Innovating and Experimenting the 'wild thought'

They had chosen weeding as their choice of operation for experimentation. All the women from 24 households assembled in a field and started manually weeding the

crop fields one by one. They found some success and drudgery reduction in the work and completion of work in time.

Institution intervention

Thus, under marginal and small house hold conditions, where the socio economic condition of the farmers is poor, it is necessary to develop low cost and gender specific technologies in crop production. In this regard, Dryland Agricultural Research Station, Tamil Nadu Agricultural University intervened and demonstrated and trained them on seed marker for line sowing in pulses, cono weeder and power weeder in direct sown rice, manual decorticator and stripper in groundnut and fruit plucker in bhendi and popularized among the women farmers for drudgery reduction thereby reduced the labour cost, energy and time. In this manner, drudgery for labour is managed besides reduced the cost of production significantly.

Crop diversification with short duration blackgram and groundnut in the existing rice - rice system was found to be productively promising and this technology enhanced the cropping intensity, gave additional remuneration of Rs.75000/ha besides improving the soil fertrility status through addition of crop residues and biological nitrogen fixation. Therefore, crop diversification with high value blackgram and groundnut was considered to be the best suited for rice - rice system under changing climatic conditions with a built in compensation provision for rice crop failure by the said high value crops.

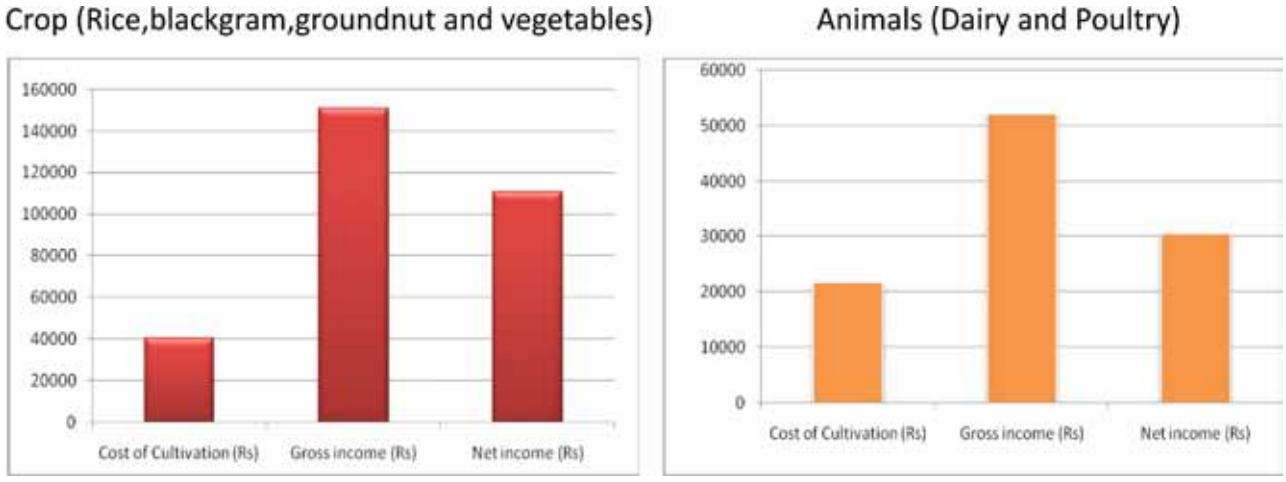

Fig 2. Economics of crop and animal components after the intervention

Lessons from family farming

In recent years, there has been a greater focus on (CDR) complex, diverse and risk prone agriculture in rural areas like Ammayenthal village where marginal and small farmers are located with resource poor condition. Though, rice is the major crop grown during peak season in this village, farmers do also grow blackgram, groundnut and vegetables after rice is harvested.

In this hamlet, women played an important role in all farming activities such as selection of crops, variety, weeding, spraying, harvesting and marketing. Moreover, due to the migration of men to the cities for better job activities, the demand for labour, particulalry during the peak period of cultivation prevailed in this village, is met by the increasing the participation of women through hired and exchange of labour including children during morning hours and holidays. Certain farming activiteis such as trainsplanting, weeding, harvesting and threshing and other post harvest activies are mostly done by farm women.

Labour Exchange Model

Generally rich farmers outsourced labourers and paid wages as cash. Whereas, women in this 24 households work on their own farm and participate in physical

activities in farming viz., sowing/planting, weeding, harvesting and threshing sometimes they hired the labour for skill oriented farm activities on need basis.

Inorder to improve the efficiency of women labour, reduce the cost of cultivation and increase the income of the farm, labour exchange module has also been introduced among all categories of the family. In this method, most of the women in the village, work on their own farm and in the fields of farmers of the same village as exchange labour. The wages is paid usually in the form of kind, money and goods. Most of the time, land owners exchange their resources such as fertilizers, seeds and other critical inputs to the labourers and it gave the ownership feeling and strenghthen amiable relationship between owners and labourers which leads in enhanced in efficiency, timely operation and resulted in higher remuration with less cost of production.

Focus for future

- Special efforts have to be made to develop skills in women and educate them about the latest technologies in farming system
- Inclusion of women in all kind of farm activities
- Development and testing of farm mechinaries for women for drugery reduction
- Optimize the utilization of agricultural by products and home based technologies.

Joint Family farming TNAU, Chettinad, India