

Sustainable agriculture through seed village concept in West Siang district of Arunachal Pradesh

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ABSTRACT

Seeds are fundamental to farming from the ancient agriculture to modern agriculture. Timely availability of quality seed of locally adapted crops and varieties is a pre-requisite for rainfed agriculture. In the present study Bhalum-3 variety of rice was introduced under the seed village programme at Lipunamchi village in West Siang district of Arunachal Pradesh. Time to time interaction and training programme were conducted. Seed village programme proved highly useful with partial perception among the farmers. It also led to the sustainable development of the farming community of the village and reduced dependency of the farmers on the external sources for agricultural input.

Keywords: Rice; seed village programme; sustainable development

INTRODUCTION

Seeds are the basic input for agricultural production and productivity. Small scale farmers save the seed from one harvest for the next cropping season which is known as farmers' seed variety. Around 60 to 80 per cent of seed used by the farmers is farm saved which may not meet the quality aspects as expected and therefore results in poor field stand and ultimately low yield.

To meet the potential challenge of catering to the food need of 1.4 billion

people of our country by 2025 (Anon 2006) a quantum increase in agricultural productivity is very much essential and hence production and distribution of high quality seed of improved varieties/hybrids to the farming community is becoming increasingly important. The expansion of agriculture under tropical conditions due to the improvement of cultivars with juvenile period imposed scientific and technological challenges concerning the seed production under different environmental conditions.

Seed village concept employs the above principle and has resulted in the

replacement of local varieties with new improved varieties which ultimately increased seed production. In this concept seeds of improved quality are produced in organized clusters. A seed village is the village wherein trained groups of farmers are involved in the production of seeds of various crops and cater to the needs of themselves, fellow farmers of the village and farmers of neighboring villages in appropriate time and at affordable cost (<http://www.kalyankvk.org/seed.html>). Seed village concept comprises two basic components viz the production of seed and the processing (Fig 1) (http://agritech.tnau.ac.in/seed_certification/seed_tech_Seed%20Village.html). Commencement of seed production requires site selection, availability of good quality seed and capacity building which rely on self-sufficiency and self-reliance of the village. The seed programme includes the participation of state government, state agricultural university (SAU) system, public sector, cooperatives and private sector institutions. Seed production, distribution and subsidy administration are localized within a cluster of villages where farmers' organizations have effective control over the process.

Seed village concept has resulted in the decentralization of the seed production and reduced dependence on the external seed source. It has been proved to be a step towards sustainable crop improvement with a reliable delivery system which encouraged the village level trade and made

improved seed available at lower prices (Ravinder Reddy et al 2010).

METHODOLOGY

The study area Lipunamchi is about 8 Km from Basar town in the West Siang district of Arunachal Pradesh and has a wide range of topography which ranges from N 28°00.270' latitude, E 94°44.762' longitude with elevation 2821 feet to N 28°00.357' latitude, E 94°44.699' longitude with elevation 3028 feet. In the year 2012 Jhum rice Bhalum-3 a variety released by Division of Plant Breeding, ICAR Barapani, Umiam, Meghalaya in the year 2010 was introduced in this village. Trainings on various technologies such as selection of certified seed and seed treatment were imparted to the farmers of this Village. One Farmer was selected as representative from the village for communication from time to time.

In order to encourage farmers to develop storage capacity of appropriate quality, training was given to them on conservation and storage of seed for next season crop.

RESULTS and DISCUSSION

Arunachal Pradesh one of the remotest areas of India is characterized by the varied agro-climate and most of the part is surrounded by hilly terrain. Lack of infrastructural facilities such as

transportation, communication etc is the major constraint for the socio-economic development of the state.

The main crop grown in the village was rice during Kharif season and only Jhum rice was being cultivated from the time immemorial without any external input other than seed. Most of the produce was consumed and as such there was scarcity of seeds for next season crop. This programme was aimed at increasing production and productivity by using high yielding varieties and at the same time upgrading the quality of farm saved seeds. The introduced variety Bhalum-3 performed very well and was accepted by the farmers of the village in terms of yield without external inputs as fertilizers, capable of withstanding adverse climatic conditions and some other yield attributing traits. The villagers of Lipunamchi village had been growing Bhalum-3 variety with satisfaction since 2013.

Usefulness and perception level of the programme

Lipunamchi village comprised 90 households with a total population of 540. Out of these 45 households adopted the seed village programme. All the households belonged to the below poverty line. Therefore economic condition was not sound. A perception is the way through which a person identifies and interprets the information. According to group discussion 46.7 per cent of respondents found the

programme highly useful followed by 31.1 per cent to be less and 22.2 per cent to be partially useful. Similarly partial level of perception was found to be the highest among the respondents. Among all the respondents, the level of perception of 44.4 per cent respondents was partial followed by 32.2 per cent whose level of perception was less (Table 1).

Major constraints during the programme

Lack of market facilities to sell the produce ranked at first position with 53.3 per cent respondents followed by lack of proper knowledge about the programme (38.9%) and lack of technical knowledge (37.8%). Lack of market facilities was directly related to the lack of infrastructural facilities of the region. Lack of sufficient finance ranked at fourth position (33.3%) as most of the farmers were poor in the region. Storage facilities for the seed as constraint were found by 28.9 per cent respondents due to attack of insect pests. Other constraints included lack of proper training, interaction with extension officers, lack of operational land etc (Table 2).

Economic development via seed village programme

The concept of seed village was slightly deviated from the main principle due to socio-economic condition of the farmers. The village was situated at the outskirts of the West Siang district of Arunachal Pradesh having a poor connectivity with the district

Table 1. Category-wise distribution of usefulness and perception of seed village programme at Lipunamchi

Attribute	Category	# respondents	Percentage
Level of usefulness	Less	28	31.1
	Partial	20	22.2
	High	42	46.7
Level of perception	Less	29	32.2
	Partial	40	44.4
	High	21	23.3

Table 2. Constraints faced by respondents during the programme

Constraint	Frequency (n= 90)	Percentage	Rank
Lack of technical information	34	37.8	III
Lack of knowledge about programme	35	38.9	II
Lack of sufficient finance for programme	30	33.3	IV
Lack of interaction with extension officer	18	20.0	VIII
Lack of training/demonstration	25	27.8	VI
Lack of storage facilities of seed	26	28.9	V
Lack of proper market facilities for product	48	53.3	I
Small size of operational land holding	21	23.3	VII

town and other districts of the state. The land holdings of the farmers were also very small. Farmers practiced in semi-subsistence agriculture; they also consumed the harvest. When seed markets were incomplete the demand for planting materials fell on the agricultural produce meant for consumption which lead to insufficient food as well as poor agronomic performance in the field due to genetic and physical impurities of the seed.

Thus the introduction of high yielding Jhum variety in this village could only increase the productivity of rice so as to improve overall condition of the farmers. Initially due to the use of low yielding local variety production of rice was not sufficient for one year consumption because half of the produce had to be saved for sowing. After seed village programme farmers became capable of producing the seed for both consumption and seeds for sowing in

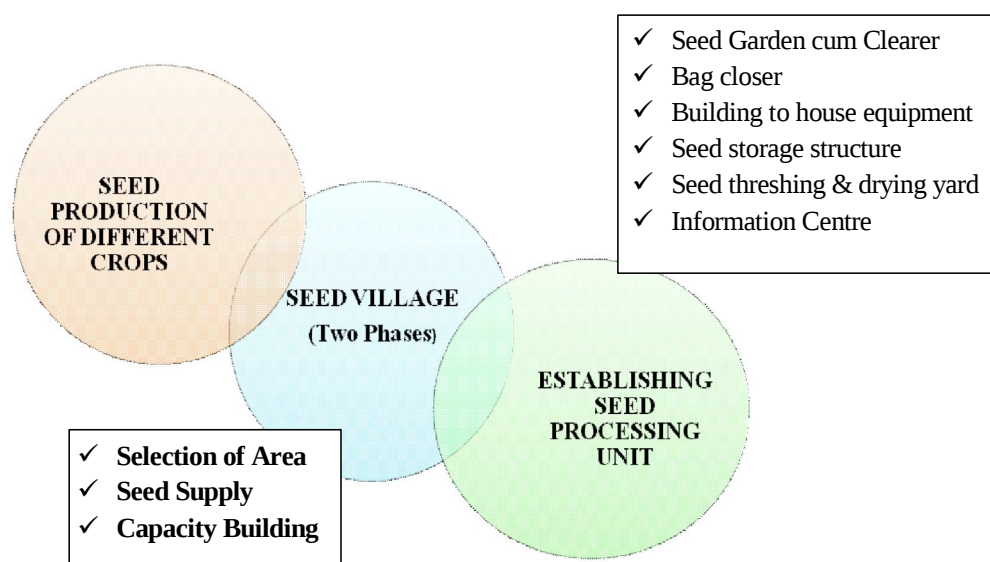


Fig 1. Components of seed village

the next season or exchange with the farmers of the neighborhood in terms of seeds or other basic commodity. Farmers were not able to sell the seed in the market due to lack of facilities but dependency on the external sources for seed was reduced. Hence the extra-financial burden for buying the seed and other inputs fell off.

CONCLUSION

Sufficient food production is an important milestone to achieve the sustainable and economic development as well as socio-economic stability in a

country. To achieve these criteria farmers need to be in control of seed system which is a major determinant in agriculture and this has been made possible via seed village concept. Under this concept farmers were encouraged and trained to grow the improved seed variety in organized clusters in the whole village. Taking the advantage of seed village concept farmers of Lipunamchi village had also been benefitted but they were unable to generate market surplus due to geographical, climatic and infrastructural limitations. The programme has resulted in economic development through reducing the procurement of external seeds.

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