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A STUDY ON LOW BUDGET NATURAL FARMING TECHNIQUE DONE BY GURUKUL KURUKSHETRA (HARYANA)

Dr. Shweta Saini[1]*, Dr. Vijay[2], Dr. Hari Om[3]

[1] Department of Home Science, Dayanand Mahila Mahavidyalaya, Kurukshetra.
[2]Department of Horticulture, CCSHAU, Hisar.
[3]Krishi Vigyan Kendra, Kurukshetra.

Abstract

Natural farming philosophy is working with nature to produce healthy food and to keep the land healthy. However Natural farming differs from Organic farming by not using any organic manure even like FYM(Farm Yard Manure) and Vermi-compost etc. The essence of natural farming is minimizing the external inputs to the farm land, which degenerate the soil nature. Gurukul kurukshetra has been successfully growing the crops like rice, wheat, sugarcane, vegetables (potato, onion, carrot, brinjal, bottle gourd etc.), fruits (guava, zizyphus (ber),singhara), orchids etc. by adopting the low budget natural farming(LBNF) system. Keeping the above in view, a survey was made on the farms of Gurukul kurukshetra to ascertain the benefits and feasibility of low budget natural farming in terms of produce, soil health and methods of farming being used by them. Semi-constructed interview was made up in order to get qualitative information. It was concluded after the study that cow dung and urine is one of basic ingredient for low budget natural farming (LBNF). Besides using natural formulations prepared from the dung and urine of Desi-cow, green manuring, in-situ incorporation of crop residues, mulching, crop rotation are some of the practices which are followed by Gurukul Kurukshetra for taking desirable results.

Index Term- Low Budget Natural Farming (LBNF), Gurukul Kurukshetra.

INTRODUCTION

Conventional farming system is a profit oriented system which stands on the pillars of chemicals or fertilizers, herbicides, insecticides, fungicides or pesticides. Another technique called organic farming in which no components of conventional farming like synthetic fertilizers and pesticides etc. were used and which is done with the help of organic manure(Paul,2010)[1]. Natural farming philosophy is working with nature to produce healthy food and to keep the land healthy.

However, Natural farming differs from Organic farming by not using any organic manure even like FYM(Farm Yard Manure) and Vermi-compost etc. The essence of natural farming is minimizing the external inputs to the farm land, which degenerate the soil nature. In India Zero- Budget Natural Farming (ZBNF) is proposed by Subash Palekar[2]. The philosophy of the natural farming is to nurture the growth of the beneficial microorganisms in the soil without

using external manure and chemical pesticides. In ZBNF, soil is supplemented with the microbial inoculums like Beejamruth and Jeevamruth to accelerate the propagation of soil micro flora, beneficial to soil enrichment. Indigenous pesticide like decoctions of leaves with cow urine viz Neemastram and Bramhastram etc. is being introduced to the soil to kill the pests[2].

The Honorable Governor of Gujrat Acharya Dev Vrat adopted the technique of natural farming on 180 acres of land of Gurukul Kurukshetra long back. Acharya Dev Vrat coined the term low budget natural farming to this farming system instead of zero budget farming because certainly some kind of credit is always require for doing any type of farming. In the low budget natural farming system Gurukul kurukshetra has been successfully growing the crops like rice, wheat, sugarcane, vegetables (potato, onion, carrot, brinjal, bottle gourd etc.), fruits (guava, zizyphus (ber),singhara), orchids etc. Low budget natural farming system requires native breed of cattle and only one cow is sufficient to take up this method of farming on thirty acres of land.

Further, to know more about the low budget natural farming a survey had been made on the farms of Gurukul kurukshetra in which numbers of questions were asked and their responses were recorded.

MATERIAL & METHODS

A survey was conducted on the farms of Gurukul kurukshetra to ascertain the benefits and feasibility of low budget natural farming (LBNF) in terms of produce, soil health and practices of farming being used by them. Semi-constructed interview was made up in order to get qualitative/quantitative information. This type of interview offers greater flexibility in data collection as it allows for more in-depth inquiries on relevant issues and more clarification of some questions.

RESULTS & DISCUSSIONS

The perusal of data in Table 1 reveals the type and number of crops grown per annum at the Gurukul Farm. The main crops produced on the farms comprises: sugarcane, rice, wheat, potato, onion, carrot, brinjal, bottle guard, guava, zizyphus, water chestnut and orchids. For producing these crops different techniques of low budget natural farming (LBNF) (Table 2) like crop rotation, inter cropping, green manuring, mulching biological pest control and compost were used at the farm.

Crop rotation is one of the main constituent for this kind of farming. The main purpose of crop rotation is to enrich the soil health, moisture conservation, better weed control and providing congenial soil environment for microbial and earthworm multiplication. Emphasis is laid on inclusion of leguminous crops in different crop rotations. Leguminous plants in crop rotation through their roots nodules fix nitrogen into the soil to make it fertile(Khan,2007)[3].

Table 1: Cropping Sequences being followed at the Farm

Sr. No.	Cropping Sequence	Time
1.	Rice-Wheat	1 year rotation
2.	Sugarcane-Sugarcane	2-3 years rotation
3.	Inter cropping with Sugarcane	2-3 years rotation
4.	Rice- Vegetables	1 year rotation
5.	Rice/Wheat- Fodder	1 year rotation
6.	Vegetable-Vegetable (2-4 vegetables/year)	1 year rotation
7.	Fruit crops with inter cropping	-

Table 2: Techniques used in LBNF by Gurukul Kurukshetra.

Sr. No.	Techniques of Low Budget Natural Farming	Responses
1.	Crop rotation and Inter cropping	Cereals, Sugarcane, legumes, Fruits, Vegetables & Flowers
2.	Green Manure(Dhaincha/ Green gram)	Prepared by Leguminous residues for Nitrogen Fixation
3.	Biological Pest Control	Mulching, Neemastra, Brahmastra, Agnistra
4.	Compost	Jivamrita(Liquid), Ghanjivamrita(Solid)
5.	Growth Regulators	Beejamriat, Jivamrita, khatti Lassi

In table 3 the composition of the Natural Formulations used by the Gurukul Kurukshetra for LBNF is described. There are two types of formulations prepared in the laboratory of Gurukul Kurukshetra and used as inputs in the crops grown at the farm.

1. Those formulations which fulfill the nutritional requirement of the crops and promote growth and development of the crops i.e. Jivamrit and GhanJivamrit. These formulations enhance manifold multiplication of microbial population, earthworms and natural beneficial bio-agents like frogs etc.
2. Those formulations which control or help in the repulsion of pests and diseases in the crop i.e. Neemastra, Brahmastra and Agnistra. It has been observed that crops like rice and wheat and for the control of mild insects as hoppers, aphids, white fly, Jassid etc., Neemastra alone gives excellent results and there is no need of applying insecticides. For the insects like borers and catter pillar, Brahmastra and under extreme conditions, Agnistra plays vital role in insect control.

In LBNF, it has been observed that there is natural control of most of the pests and diseases. Spray of Jeevamrit, Lassi and Desi-Cow urine remain effective for the control of diseases. These are sprayed as precautionary measures on the crops. For root and seedling diseases, seed treatment with Beejamrit is done as remedial measure (Bishnoi, 2017)[4].

Table3.3 :Natural Formulations used by Gurukul Kurukshetra for LBNF

Sr.	Parameters	Natural Formulations	Composition	Benefits
1.	Nutritional Requirement	Jivamrita, Ghanjivamrita	Water, Cow-dung, cow urine, jaggery, Pulse flour . Cow-dung, cow urine, jaggery, Pulse flour.	Both jeevamrita and Ghanjivamrita are Bacterial inoculums used to increase the bacterial population and earthworms naturally. Both promotes immense biological activity in the soil and makes the nutrients available to the crop.
2.	Plant protection/ Growth regulators	Neemastra Agniastra Brhamastra Saunthastra Khatti Lassi Jivamrita, Ghanjivamrita	Neem leaves or Neem Pulp, Cow-dung, Cow urine, Water. Cow urine, Tobacco powder, Neem leaves, Green Chilli and Garlic. Cow urine, Neem leaves, Mango, Guava and Castor plant leaves. Cow milk, Water and Dry ginger powder (Saunth). 3-5 days old Lassi (Buttermilk)	These are all organic formulations used to control pests. Besides this, all these formulations acts as growth promoting substances.
3.	Weedicide	Mulching: Soil Mulching Green cover mulching Residue mulching	It is done by shallow ploughing of upper layer of the soil. It refers to the cultivation of companion crops as inter crop such as green gram, other pulses or vegetables which tend to cover the soil at the earliest after germination. It refers to covering of soil by dry biomass of crop weeds.	Besides weed control, Mulching enhances the biological activity and replenishes the nutrient base of the soil. Adequate mulching keeps the top and sub soil moist and enhances the water holding capacity of the soil and also reduces water loss due to evaporation(Sharma et al., 2017)[5].

The findings of agricultural scientists of Chaudhary Charan Singh Agriculture University, Hisar revealed that the samples of soil and water of Gurukul Agriculture Farm contain 0.50 to 1.20 per cent organic carbon in soil for which the credit rests with the urine and dung of cows and their formulations used as input on the farms(Dev Vrat,2019)[6].

CONCLUSION

Jivamrit is the backbone of LBNF. LBNF is desi-cow based farming. For the preparation of Jivamrit, only one day dung and urine of desi-cow are required besides other minor constituents as Gur (jiggery), pulse flour and a handful (about 50g) of soil for bacterial innoculum. It takes 4 days for final preparation and applied 4-6 times in a crop through irrigation water. One day (24 hour) desi-cow dung and urine is sufficient for single dose of one acre at a time. Second important input is GhanJivamrit which can be prepared in 3-5 days from decomposed manure of desi-cow or in 10-12 days from fresh desi-cow dung. For plant protection, herbal formulations like Neemastra, Brahmastra and Agristra can easily be prepared with the help of desi-cow dung and urine. Beejamrit, KhattiLassi, cow-urine, Dashparni Ark, SaptdhanyaAnkur are the other natural formulations used in LBNF.

Micro-Organism found in cow's dung and urine enhances the fertility of soil. The formulations used in LBNF also help in triggering the population of earthworm in soil which improve physical and chemical status of the soil. One indigenous (desi) cow suffices the farming of 30 acres of land. The gains and vegetables grown on this land are used for consumption of Gurukul Kurukshetra students to maintain their health, fitness and the stronger immune system. The surplus produce is sold in the market on premium prices.

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