



Review Article

TOOLS FOR UPSCALING PROFIT OF FARMING COMMUNITY IN SUSTAINABLE PRODUCTION SYSTEM

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Abstract: All the stakeholders are now concern with the sustainable agricultural systems. But it has less production potential. The integration of livestock in the farming system would be main determinant for increasing the production capacity to meet up the huge demand of food and profitability of farming community by exploiting natural enterprises in a single unit.

Keywords: Sustainable systems, Livestock, Farming community, Profitability

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Introduction

The majority of people in the developing countries of the world are dependent on agriculture and livestock farming for their livelihood. The livestock has been an inseparable part of agriculture since our civilization. However, since the colonial era there has been a tremendous shift of livestock-based agriculture to mechanical and modernized crop production leading to various agricultural revolutions in the different countries. The green revolution in India has enormous impact on the food grain production mostly through mechanization, application of chemical fertilizers, pesticides, and insecticides. The usage of chemicals and modern equipment has diminished the linkage between livestock and agriculture. As a result of this, the environmental threat has been exaggerated due to pollution arising out of different approaches of agricultural practices. The draught animal power (DAP) used in agriculture was about 72 percent in 1961 that reduced to 23 percent in 1991 due to mechanization. The requirement of DAP shall continue to be 20 percent in the years to come [1]. The three dimensions of sustainable production are environmental, economic and social [2]. The contemporary agriculture generates massive amounts of output within a harvest season but it comes with several devastating problems and remedy for that is sustainable farming practices [3].

Is sustainability being an issue?

Till the last century the world leaders, scientists and intellectuals were almost unaware about the sustainable system of socio-economic development of people. Now-a-days in every sector the issue of sustainable development is a crucial one. The foundation of our civilization was the animal-agricultural practices and it is the essence of human evolution. But this fundamental sector has been dismantled with all possible modern techniques, automation, mechanization, use of pesticides and insecticides. The use of livestock in the agricultural practices has tremendously dropped down. But the sustainable agricultural production system is almost impossible without the use of livestock. In absence of livestock the biological and energy cycle in the mother nature is impossible to run smoothly. Sustainable agriculture is far from mainstream in India. Only 5 sustainable agricultural production systems (SAPSS) such as crop rotation; agro-forestry; rainwater harvesting; mulching and precision farming scaling beyond 5 per cent of the net sown area in India [4]. The most popular sustainable agricultural production system in India is the crop rotation which cover around 30 million

hectares of land and 15 million farmers.

Therefore, the farmers, government and various stakeholders are now thinking for transformation of their modern mechanized agricultural production system towards the livestock based sustainable agricultural production system. In India, Natural farming is promoted as Bharatiya Prakritik Krishi Paddhati Programme (BPKP) under centrally sponsored scheme- Paramparagat Krishi Vikas Yojana (PKVY). The integration of livestock in the farming system plays an important role in natural farming and helps in restoring the ecosystem. Our Hon'ble Prime Minister Narendra Modi Ji, rightly said adopting natural farming is also like serving Mother Earth, by protecting the quality of soil and its productivity [5].

The main challenges for sustainable natural farming are decline in yield, unable to boost productivity, lack of availability of natural inputs and nutrient deficiencies [6]. There is a quandary in the sustainable systems to feed the vast population of about 7.0 billion in the world, particularly in developing and poor countries.

Sustainability and economic viability

There is a question mark for sustainable development with economic growth and progress. However, it may not be impossible to have sustainability and economic viability in tow, at least in agriculture and allied sectors. The word subsistence production would be appropriate rather than greedy economic venture. The meaning of subsistence production is to produce as much as we need in real time framework, rather than excessive production in competitive mode to build up more wealth greedily for the sake of one's lavish expectation. Every one of us must understand that production in excess by the use of artificial means i.e., using modern practices of application of chemicals and mechanical physics have lot of limitations and it is temporary and exhaustive rather than permanent and inclusive for a long period of time. But how to obtain stable economics in a sustainable system? To get more profit out of available assets, it is necessary to discover oneness in a multi-layer production system following vertical paths rather than analogous trespass.

Changeover to a circular economy (CE) has been put forward as a possible solution, and enthusiastically seized upon by both industry and policy makers. The CE appeals three principles [7].

- i) Design out waste and pollution,
- ii) Keep products and materials in use and
- iii) Regenerate natural systems by using renewable materials and energy.

Many questions arise for practicability of CE given practical and environmental constraints and people's economic and quality-of-life expectations.

Augmentation of profit

The farming community is in a dilemma of whether they should go for livestock based sustainable production system or chemicals and growth promoter based modern and mechanized production system. The farming community is always crazy for higher profit from the input they utilize. Ultimately their choice must be optimum income from their farming occupation for a better livelihood. They would welcome the process which is profitable and at the same time would be sustainable and eco-friendly. Instead of using chemical fertilizers, pesticides and mechanized agricultural operations, the profit from a farm can be increased by the following sustainable techniques

- a) Reducing the cost of production (easy for a sustainable system of production)
- b) Wise management decisions for increasing the production
- c) Increasing the price of the products
- d) Value addition of the prevailing level of production

The farmers generally compare the expected benefits from adoption and non-adoption of a practice or system. They decide to adopt if net benefits exceed zero. It can be expressed as by the following equation given in [Table-1].

Table-1

<i>Equation for adoption [8].</i>
$UikZik = \sum \beta Zik + vik$
Where,
Uik = net benefits (or utility) of farmer "i" choosing an alternative combination of agricultural practices (management decision plan) 'k'
Zik = vector of resources and constraints
Uik =expected benefits from adoption
vik = independently distributed error term

Reducing the cost of production

The cost of production can be reduced by alternate input system. In livestock farming large share of expenditure is involved in feeding, which is about 70 per cent of total working expenditure. The use of non-conventional feed, use of various agricultural by-products and improvement of poor-quality roughages will definitely decrease the expenditure. Integrated farming system serves a great role in reducing cost of production and increasing the profit margin. This system does not depend on the external resources, and can be operated by the raw materials within the system. It is a sustainable management system ensuring full use of available resources.

Wise management decisions for increasing the production

The overall management practices greatly affect the production level of any kind of farming system, and are also true for the livestock farming system. Limited automation in the livestock farm can be very good tool for labour savings. But the poor farmers cannot afford such automation and therefore, decision of the owner to use manual labour should be taken very intelligently.

Mostly we need the labour for milking, cleaning, feeding and disposal of excreta and leftover feeds. Skilled milkers, effective drainage system to flush out the dung and urine, combined feeding like total mixed ration (TMR) and having exercise yard for the animal in conventional system of management will improve production of any kind of livestock. The cost of per kg milk and milk products were significantly reduced on TMR feeding of dairy cows [9]. Therefore, such feeding practice would be very good profit making tool for a dairy farm.

Increasing the price of the products:

The market driven pricing policy is a convenient way of increasing income. However, a business can charge a higher price for superior quality products [10]. The farmers should take advantages of market demand for the specific products with higher price rate.

The seasonal variation in the market is very prominent, so production should be enhanced during favourable festival season. In case of small ruminants, breeding should be planned in such a manner, so that marketing of the animal can be done during the festival time. The enhanced price of a product can be fixed for items of high demand.

Value addition to the prevailing level of production

The value addition to the livestock produces is a very easy way to increase profitability of a farming system. Adding value to a product or service helps companies attract more customers, which can boost revenue and profits [11]. It is applicable for both the arable farming and livestock farming system. The milk can be easily converted to paneer and curd instead of selling as liquid milk. The price of both paneer and curd is higher than the liquid milk. One simple example has been mentioned in the [Table-2].

Table-2

<i>The present average market price of liquid milk at Guwahati city is = Rs. 60.00 per kg.</i>
<i>If a farmer make paneer instead of selling liquid milk, how much he will be benifited?</i>
<i>The average yield of paneer is about 18.00 percent (Hussain, 2018b) [12].</i>
<i>Suppose the farmer produced = 20 kg of milk daily.</i>
<i>The price of 20 kg milk @ Rs. 60.00= Rs. 1200.00</i>
<i>The paneer yield @ 18%- 3.60 kg</i>
<i>The market price of paneer at Guwahati city is= Rs. 480.00</i>
<i>The price of 3.60 kg paneer=Rs. 1728.00</i>
<i>Therefore, benefit of paneer making instead of sale of liquid milk =Rs. 528.00 / day.</i>

There are many dairy products that can be made by little effort with least equipment. The value addition can be done in the process of waste disposal and management. The waste materials of the farms and excreta of the livestock can be converted to bio-gas, vermicompost and bio-pesticides to increase the output.

Epilogue

The profit margin is the indicator of a successful farming system. The different tools for increasing profit should be applied according to the prevailing demands and circumstances. On account of maximizing profit, animal welfare should not be compromised. The enhanced animal welfare generally leads to increase production of the species. The sustainable farming system with the different mechanism of input, management, value addition and marketing must be pursued for overall improvement of the farming community. The natural farming is very excellent tool for real-time prosperity at out of box of delusion of artificial, quick and temporary growth and development. The sustainable agriculture is a process of negotiation between the competing interests of an individual farmer [13]. A true sustainable agriculture is good for people, the planet and it is profitable too [14]. Data-driven weather intelligence is the key to sustainability [15].

Conclusion

The global economy during last five decades has grown almost five times. This extraordinary ramping up of global economy would not be sustainable as the resources are finite and the ecology of mother earth is very fragile. We have already degraded about 60 percent of the world's ecosystems [16]. The natural agricultural farming with the help of livestock should be the aim for sustainable development and augmentation of production and profit of the farming community through engagement in different natural components available in a single set of resources. The value addition to the products is very essential to boost up the income. So, the natural farming is a boon to the sustainable development.

Application of research

This review article would draw the attention of different stakeholders to start natural farming with livestock and agriculture as primary enterprise. The new generation will be attracted to the sustainable development instead of modern mechanized development

Research Category: Sustainable development, Livestock

Abbreviations: DAP-Draught Animal Power, BPKP-Bharatiya Prakritik Krishi Paddhati Programme, PKVY-Paramparagat Krishi Vikas Yojana, RKVY-Rashtriya Krishi Vikash Yojana, CE-Circular Economy, TMR-Total Mixed Ration.

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