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Use of Traditional Activities for Organic Farming: An Overview

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Abstract
Organic farming involves a holistic production system that avoids the use of synthetic fertilizers, pesticides and genetically modified organisms, thereby minimizing their deleterious effect on environment. Organic farming has a long history but show a recent and rapid rise. This article explains the traditional activities of organic farming worldwide. For this reason, most traditional cultivation practices and systems evolved are based on indigenous resources without external input. They promoted organic farming and conservation of natural resources. They have the advantages of cohesive cultivation of many plant species, ensuring availability of diverse products, greater yield, economic pest, disease management, improve soil fertility, reduce external dependence, freedom from toxicity ensuring cleaner environment, soil, and water.

Keywords: Organic farming, traditional activities, fertilizers, pesticides

I. INTRODUCTION

Indian agriculture originated around 9000 BCE with early domestication and introduction of plants and animal species of economic significance, followed by settled life and their cultivation in an organized manner. It passed through Indus Valley (including Saraswati) and Vedic (Gangetic) civilizations. Organic agriculture is an integrated production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity (Fig. 1) (FAO/WHO Codex Alimentarius Commission, 2007). It emphasizes the use of natural inputs (i.e. mineral and products derived from plants) and the renunciation of synthetic fertilizers and pesticides.

The goal of organic agriculture is to contribute to the enhancement of sustainability. It should be ecological sustainability, socially sustainability, economically sustainability and have facility for market opportunity. According with IFOAM (2002), the organic agriculture practices are based on the following principles:

a. Principle of health

Is to sustain and enhance the health of ecosystems and organisms from the smallest in the soil to human beings. In view of this, it should avoid the use of fertilizers, pesticides, animal drugs and food additives that may have adverse health effects.

b. Principle of ecology

Organic management must be adapted to local conditions, ecology, culture and scale. The reduction of inputs by reuse, recycle and the efficient management of materials and energy will contribute to improve environmental quality and will conserve resources.

c. Principle of fairness

Natural and environmental resources that are used for production and consumption should be managed in a socially and ecologically fair way and should be held in trust for future generations. Fairness requires systems of production, distribution and trade.

d. Principle of care

This principle states that precaution and responsibility are the key concerns in management, development and technology choices in organic agriculture. Science is necessary to ensure that organic agriculture is healthy, safe and ecologically sound.

Traditional agriculture

Traditional knowledge is holistic in nature due to its multitude applications in diverse fields such as agriculture, climate, soil, hydrology, plants,

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animals, forests and animal husbandry and agriculture are among the oldest practices through which human have been interacting with nature and managing ecosystem services (Fisher et al., 2009). Traditional farming practices contributed a significant role to the building of scientific knowledge in agriculture (Singh et al., 1997).

Traditional activities in organic farming

Farmers working with little external inputs based on traditional practices may grow many different crops organically on the same piece of land. Traditional farmers fulfill some principles of organic farming already by relying on farm-own resources. Traditional agro-ecosystems are receiving rising attention as sustainable alternatives to industrial farming (Fraser et al.,2015).

1. Agroforestry

Trees are well-known sink for carbon dioxide. They fix carbon through the process of photosynthesis and store excess carbon as biomass. The integration of trees with crops is an age-old practice that dates to the beginning of farming and animal husbandry. Agroforestry is a practice of planting trees with crops to exploit the ecological and economic interactions of the different components. It is widely adopted in organic farming practices.

2. Intercropping

Intercropping, the concurrent cultivation of more than one crop species on the same field is a practical application of basic ecological principles such as diversity, competition and facilitation. It is one of the highly productive farming systems. In India, intercropping is an ancient agricultural practice, particularly intercropping of sorghum and pigeon pea (Wang et al., 2010). Intercropping of legumes with cereals optimizes the facilitation under nutrient limited conditions.

3. Crop rotation

Crop rotation refers to the practice of growing a sequence of plant species on the same land. It is an ancient practice that has been used for thousands of years (Hobbs et al., 2008). Crop rotation is an effective approach for carbon sequestration as compared to growing same type of crop continuously. Crop rotation enhances the soil quality and crop productivity through altering soil structure and aggregation, SOC concentration, nutrient cycling and pests and diseases. Soil store more organic carbon than, that of the atmosphere and global vegetation combined.

Traditional nutrient management

The use of composted organic wastes to enhance soil fertility and productivity is gaining huge attention worldwide (Goyal et al., 2005). Composting is a traditional practice that has been used for centuries (Oudartet al., 2015). Composting refers to the natural process of rotting or decomposition of organic matter by microorganisms under controlled conditions (Misra et al., 2003). It is a biochemical process in which microbial degradation of organic waste results into a product known as organic manure or compost (Onwosi et al., 2017). Variety of organic materials are used in composting process such as straw, crop residues, agroindustry by-products, livestock waste, sewage sludge and kitchen waste (Proietti et al., 2016).
Manure and composting have been the major traditional means sustaining plant nutrient in soil throughout history.

1. Manuring by animal at site

This practical in area where herder traditionally migrate their flocks each year for better place. There is mutual advantage to both herders who need a place to settle their sheep each night and farmer who get urine and manure right in their field.
This is of two types:
a) Keeping of cattle and buffalo in open land. After harvesting of crops. This is commonly done in October to November or in March to April. The animal moved from one pad to another pad 2-3 times so as to complete manures the field
b) The other system of in-situ manuring is carried out by using migratory flocks of sheep and goat under Tran's human system A simplified model of traditional organic composting is presented organic composting process begins after putting the organic waste in a pit for several days or months. The heap of organic waste undergoes microbial degradation that converts organic waste into compost. It is widely recognized that animal manure and crop straw enhance the SOM and cropyield (Yang et al., 2004). The use of organic manure can increase soil carbonor nitrogen levels in twofold in about 40 years (Tilman, 1998). India has a long history of using organic manure to enhance soil fertility. The use of composted FYM is a common practice in Indian Himalayan villages (Gopinath et al., 2008). Farmers in Jahrkhand state of India use compressed cakes of plant material and flowers to make organic manure.

2. Manuring with plant materials

From time of immoral, the turning of green crop for improvement of conditions of soil has been a popular farming practical. It consists in growing quick growing crop and plough it to incorporate in to soil. These are not only supply good amount of nutrient to soil but also exercise protective activity against erosion and leaching. Some examples of green manure crops are sesbania, dhaincha, sunhemp, wild indigo, pillipesara, cowpea, cluster bean (guar), green gram (mungbean), berseem and madras indigo.

Integrated crop-animal farming

Crop-animal integrated farming is a well-recognized practice of small holder farmers in Asia (Devendra and Thomas, 2002). Although based on crop production, integrated crop-animal farming is a backbone of small scale Asian agriculture. Integrated rice-fish cultivation is a traditional farming system in Bangladesh (Ahmed and Garnett, 2011). It is based on sustainable utilization of various resources like water and land (Frei and Becker, 2005).

In India, rice fish culture is an age-old practice that dates back to about 1500 years. Besides fish, duck rising in paddy fields is also a prominent practice. Duck-rice-fish culture is an indigenous farming system in China for sustainable utilization of land and water resources (Juanwen et al., 2012). In paddy fields, fishes are reared which eat plant hoppers and weeds while providing nutrient for rice. Fishes also soften the soil and transport oxygen in water by their movement in rice field. Besides fishes, each household also raises ducks in their paddy fields. Ducks eat insects in the paddy field thus ensuring good rice harvest. Use of fresh cow dung used for prevents seepage in fish, bael for ethno-medical cure control of diarrhea by pulp Salt water used for cures diarrhea, treatment of swollen nake. Castor oil used for control of intestinal parasites.Calotropisgigantea used for curing eczema in animal.

Mulching

Mulching is the process of covering the topsoil with plant material such as leaves, grass, twigs, crop residues, straw etc. A mulch cover enhances the activity of soil organisms such as earthworms. They help to create a soil structure with plenty of smaller and larger pores through which rainwater can easily infiltrate into the soil, thus reducing surface runoff. As the mulch material decomposes, it increases the content of organic matter in the soil.

Thus the soil particles will not be easily carried away by water. Therefore,mulching plays a crucial role in preventing soil erosion. Traditional usedmulching material: Crop residues, Grass, Pruning material from trees,Cuttings from hedges and Wastes from agricultural processing or fromforestry.

REFERENCES

[1]. Agrawal A. Indigenous and scientific knowledge: some critical comments. Indigenous Knowledge and Development Monitor.1995; 3:3-5.
[2]. Ahmed N, Garnett ST. Integrated rice-fish farming in Bangladesh: meeting the challenges of food security. Food Secur.2011; 3:81-92.
[3]. Altieri MA, Nicholls CI, HenaoA, Lana MA. Agroecology and the design of climate change-resilient farming systems.Agron Sustain Dev. 2015; 35:869-890.
[4]. Devendra C, Thomas D. Crop-animal interactions in mixed farming systems in Asia. Agric. Syst. 2002; 71:27-40.
[5]. Ellis E, Wang SM. Sustainable traditional agriculture in the Tai Lake Region of China. Agric. Ecosyst. Environ. 1997; 61:177-193.
[6]. Fisher B, Turner RK, Morling P. Defining and classifying ecosystem services for decision making. Ecol. Econ. 2009; 68:643-653.
[7]. Fraser JA, Frausin V, Jarvis A. An intergenerational transmission of sustainability?Ancestral habitus and food production in a traditional agro-ecosystem of the Upper Guinea Forest, West Africa. Glob Environ Change. 2015; 31:226-238.
[8]. Frei M, Becker K. Integrated rice-fish culture: coupled production saves resources. Nat Resour Forum.2005; 29:135-143.
[9]. Gopinath KA, Saha S, Mina BL, Pande H, Kundu S, Gupta HS. Influence of organic amendments on growth, yield and quality of wheat and on soil properties during transition to organic production. Nutr.Cycl.Agroecosyst.2008; 82:51-60.
[10]. Goyal S, Dhull SK, Kapoor KK. Chemical and biological changes during composting of different organic wastes and assessment of compost maturity.Bioresour Technol. 2005; 96:1584-1591.
[11]. Hobbs PR, Sayre K, Gupta R. The role of conservation agriculture in sustainable agriculture.Philos Trans R Soc London B Biol. Sci. 2008; 363:543-555.

[12]. IFOAM, I. IFOAM Basic Standards for Organic Production and Processing, 2002.
[13]. Joint FAO/WHO Codex Alimentarius Commission. Codex alimentariuscommission: strategic plan 2008-2013. Food and Agriculture Org, 2007.
[14]. Juanwen Y, Quanxin W, Jinlong L. Understanding indigenous knowledge in sustainable management of natural resources in China: taking two villages from Guizhou province as a case. For Policy Econ.2012; 22:47-52.
[15]. Kremen C, Miles A. Ecosystem services in biologically diversified versus conventional farming systems: benefits, externalities, and trade- offs. Ecol Soc. 2012; 17:40.
[16]. Linares AM. Forest planning and traditional knowledge in collective woodlands of Spain: the dehesasystem. For Ecol. Manage. 2007; 249:71-79.
[17]. Liu Y, Duan M, Yu Z. Agricultural landscapes and biodiversity in China. AgrEcosyst Environ. 2013; 166:46-54.
[18]. Lowder SK, Skoet J, Raney T. The number, size, and distribution of farms, smallholder farms, and family farms worldwide. World Dev.2016; 87:16-29.
[19]. Misra RV, Roy RN, Hiraoka H. On-farm composting methods. UN- FAO, Rome, 2003.
[20]. Onwosi CO, Igbokwe VC, OdimbaJN, Eke IE, Nwankwoala MO, IrohIN et al. Composting technology in waste Traditional agriculture: a climate-smart approach for sustainable food production stabilization: on the methods, challenges and future prospects. J Environ Manage. 2017; 190:140-157.
[21]. Oudart D, Robin P, Paillat JM, Paul E. Modelling nitrogen and carbon interactions in composting of animal manure in naturally aerated piles. Waste Manag.2015; 46:588-598.
[22]. Paul C, Weber M, Knoke T. Agroforestry versus farm mosaic systems: comparing land-use efficiency, economic returns and risks under climate change effects. Sci. Total Environ. 2017; 587:22-35.
[23]. Proietti P, Calisti R, Gigliotti G,Nasini L, Regni L, Marchini A. Composting optimization: integrating cost analysis with the physical- chemical properties of materials to be composted. J Clean Prod. 2016; 137:1086-1099.
[24]. Shen Q, Wang Y, Chen W, Shi R. Changes of soil microbial biomass C and P during wheat growth after application of fertilizers. Pedosphere.1997; 7:225-230.
[25]. Singh GS, Ram SC, Kuniyal JC. Changing traditional land use patterns in the Great Himalayas: a case study ofLahaul Valley. J Environ Syst. 1997; 25:195-211.
[26]. Tilman D.The greening of the green revolution.Nature.1998; 396:211- 212.
[27]. Wang Q, Li Y, Alva A. Cropping systems to improve carbon sequestration for mitigation of climate change. J Environ Prot. 2010; 1:207.
[28]. Yang C, Yang L, Yang Y, Ouyang Z. Rice root growth and nutrient uptake as influenced by organic manure in continuously and alternately flooded paddy soils. Agric. Water Manag.2004; 70:67-81.