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Natural farming: A way to improve immune system of human and production of quality food for healthy life

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Abstract

A novel coronavirus causing the Coronavirus Disease 2019 has emerged in late 2019, which has posed a global health threat with its ongoing pandemic in many countries and territories. Our daily lifestyle has worked as a fuel for the fire that is burning our body with diseases we could not possibly imagine a century ago. But far from that, the food we intake to fuel our lives has become a slow poison. The latest reports from WHO point that more than 50% of eatables have carcinogenic chemicals. This lifts a serious concern in the industry of Agriculture. The pesticides used to enhance the crop growth are known to mutate the human chromosomes and directly effect on human immune system. Therefore natural farming is a way where the laws of nature are applied to agricultural practices and it may be a possible way to prevention of several diseases in human and animals.

Keywords: Coronavirus, Immune system, natural farming, natural inputs, quality food production

Introduction

Over the past twenty years, coronaviruses are related to illness outbreaks in East Asia and also the Middle East. The severe acute respiratory syndrome (SARS) and also the Middle East respiratory syndromes (MERS) began to emerge in 2002 and 2012, respectively. At present, a novel coronavirus, the severe acute respiratory syndrome coronavirus two (SARS-CoV-2), the Coronavirus disease 2019 (COVID-19), has emerged in late 2019, that has posed a worldwide health threat with its current pandemic in several countries and territories (Morales *et al.* 2019)^[21]. On high of basic illness prevention and real defense against illness may be a strong immune system. People body is better able to fight off illness when the immune system is better than others. this is a time to focus on all the health habits people might have been putting off, Dr. Tom Moorcroft, an osteopathic doctor United Nations agency makes a specialty of World Health Organization says, begin daily activities and food choices that support people's health and switch them into habits that may lead to life-long improvements in health. Throughout this critical situation, get adequate sleep and some fresh air and daylight. People also minimize excessively processed foods and make sure to eat enough micronutrients when they can try their best with what find notice at grocery stores right now (Capritto, 2020)^[22]. Our daily way has worked as a fuel for the fire that is burning our body with diseases we could not probably imagine a century past. But far from that, the food we intake to fuel our life has become a slow poison. The latest reports from the United Nations agency point that quite five-hundredths of eatables have carcinogenic chemicals (Prasad, 2016)^[19]. This lifts a serious concern within the industry of Agriculture. The pesticides used to enhance crop growth are known to change human chromosomes and directly result in the human immune system. Natural farming is a practice where the laws of Mother Nature are applied to farming practices for the cultivation of crops. This method works along with the natural ecological diversity of every farmed area, encouraging the complexity of living organisms, each plant, and animals that form each specific particular to thrive along with food plants. Natural farming is ecological farming as well as nature bases approach proposed by Masanobu fukuoka (1913–2008), a Japanese farmer and thinker, introduced in his 1975 book "The One-Straw Revolution". Masanobu fukuoka practiced natural farming on his family farm on the island of shikoku. In this system of farming, no financial investment on the part of farmers is needed for

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the purchase of seeds, fertilizers, and plant protection chemicals from the market. The farmer can produce his own seed or he may use seeds that available accessible with different farmers. more significantly, there is no place for application of fertilizers and plant protection chemicals in this theme of farming. Dependence on hired labour is additionally reduced to the bare minimum as the system discourages intercultural operations. The whole philosophy behind this system is to make the farmer self- dependent therefore that he is freed from the clutches of money lenders and market dispensed high price inputs. The natural farming concept was force into the sunshine by Shri Subhash Palekar, for which he was honoured with Padma Shri in 2016 (Anon., 2016) ^[20]. In this paper we are review different natural farming ways on the basis of various scientific reports in natural agriculture cultivation.

Principles of natural farming

The basic principle of natural farming is work together with the natural diverseness generally, and particularly to reconstruct and maintain soil productivity with the assistance of native microorganisms. Promotes a natural catalyst of biological activity in the soil and a natural protection from disease. By strengthening the natural microorganism soil surroundings in which crops are grownup, the ecosystem will unfold its full potential for a healthy plant growth. The varied advantages include increases in nutrient accessibility, increased rates of soil organic matter decomposition and improved plant yield, a reduced infective microorganisms and a rise in plant defences. By supporting the natural strength of the crops through increased root development, no external input of fertilizers or plant protection is important. Rather than a complex set of farming mechanisms, natural farming has five basic principles that are adapted from natural culture: no tillage, no fertiliser, no pesticides or herbicides, no weeding, no pruning. Further, nutrients are applied consistent with the requirement of the crops, native micro-organisms are proliferated, inborn natural potential is maximized with fewer inputs, industrial fertilizers and farm animal waste are avoided. Through is easy concept of letting nature do what it can do best, the farmer becomes an observer and engages in supporting the natural processes by applying microorganisms and fermented nutrient solution. By removing weeds from the field, nutrients are extracted also the soil structure and soil processes are disturbed. We were taught that our crops don't seem to be strong enough to compete with weeds, which we have to get rid of all adverse influence so as to grow a correct harvest, rather than learning a way to strengthen the crop in order to be able to compete. Basically, natural farming aims at cultivating plants by promoting independency of farmers while protective the environment and stimulating harmony between humans, animals & plants for a sustainable development. The fundamental principle underlying natural farming is that everything is connected to everything else on earth as every function is served by several components and every element has several functions. The relative placement of elements is a crucial a very important key to the success of this methodology and needs a circumstantially detailed observation of nature in order to recreate within the fields the same kind of symbiosis, of interactivity between the plants.

The principles of nature farming should fulfil 5 requirements:

1. Production of safe and nutritive food that ensures physiological condition
2. Be economically and spiritually helpful to each producers and consumers;

3. Be sustainable and simply practiced
4. Conserve and defend the surrounding environment
5. Produce enough food of prime quality for world population.

In practice, each artificial chemicals and raw waste from animals without treatment are prohibited as fertilizers or soil amendments for crop production. Composts from plant materials are suggested. This can be the most difference with the principles of organic farming, which permits the utilization of animal manure, untreated or composted. Though there are strong needs for nature farming principles, it is one amongst the most idealistic and practicable farming strategies to confirm human health and environmental protection.

Inputs in natural farming

Natural Farming most important aspects is that farmers make what they need. Disease cure, pest controllers, fertilizers and soil improvers, are all made by the farmers themselves using natural materials based on the nutritive cycle theory. Natural farming doesn't need chemicals inputs or organic compost like vermiculture S. Palekar considers these external inputs as harmful as chemicals however promotes a natural catalyst of biological activity within the soil and natural protection from diseases. The nutrients (Nitrogen, Phosphate, Potash, Sulphur, Calcium, Iron) that are within the soil and its unavailable form for the plants. They initial need to be transformed through the action of micro organisms (native earthworms, bacteria, and microbes) that are usually present within the soil similarly. Our important inputes include Indigenous Microorganism, Fermented plant juice, Oriental herbal nutrient, water soluble calcium, and water soluble calcium phosphate. All are produce at home easily and cheaply. However the extreme uses of chemicals have destroyed these micro organisms. It's necessary to reintroduce them through natural ways like application of local cow dung that, according to S. Palekar, contains three 3 millions of such beneficial microbes. Only one cow is required to cultivate 30 acres of lands (most Indian farmers own but 1 acre) as one cow provides about 11 kilograms of dung per day and as only 10 kilograms of local cow dung are required per month to cultivate 1 acre of land. Therefore S. Palekar developed a natural "catalytic agent" called Jivamrit which are promote the formation of humus in the soil by encouraging the multiplication of micro-organisms that decompose the dried. 1.5 - 2.0% of the nutrients are taken from the soil by the plant (the rest is taken from the air, water and solar energy) & there is no need to add fertilizers. These nutrients provided naturally are totally free of cost. The farmer uses its own seeds and protects the crop with natural product that he collects himself in order that he does not need to buy either chemicals or seeds.

Components of natural farming

Jivamrita/jevamrutha

Jivamrita is an organic plant food that enriches the soil and plant & provides all the nutrients needed for the expansion of the plant. It's main source of nitrogen and micro-organisms that naturally increase soil fertility. Jivamrita was popularised by Subhash Palekar and low-cost ecofriendly organic preparations made by cow and other organic product specifically jaggary, Flour of any Pulse, dung, urine, and Soil from same fertilized land. The beneficial effects of Jeevamrut according by Palekar (2006) ^[4], Vasanthkumar (2006) ^[10] and Devakumar *et al.*, (2008) ^[11] was attributed to higher microbic

load and growth hormones which could have increased the soil biomass thereby sustaining the supply and uptake of applied alike as native soil nutrients that finally resulted in higher growth & yield of crops. Jeevamruth contains huge quantity of microbic load that multiply within the soil and acts as tonic to improve microbe activity in soil (Palekar, 2006)^[4]. Beejamruth identified to contain valuable microflora like Azotobacter, Azospirillum, Pseudomonas, phosphobacteria, carboxylic acid bacterium and Methylophils in rich numbers and additionally contain some helpful fungi & actinomycetes (Sreenivasa, 2009 and Palekar, 2006)^[4, 9] and higher P-solubilizers were discovered with jeevamrutha. It is obviously indicates that the jeevamrutha is enhance consortia of native soil small organisms.

Panchagavya

Panchagavya, has been handed all the way down to us from our ancestors and has been used with success over the generations. Panchagavya or panchakavya is formed from the mix of 5 cow-derived products. In Sanskrit Panch mean 5 and gavya means that cow. Panchagavya, a combination of 5 cow merchandise specifically milk, curds, dung, urine, & clarified butter. Panchagavya has uses, not only within the field of agriculture, however can even be used for the improvement to active soil, to protect plants from diseases & animal health. As an example, in plants Panchagavya encourage growth, yield and immunity and is additionally an organic chemical. For animals, Panchagavya vitalize the assembly of anti-bodies increasing immunity. According Reddy *et al.*, (2010)^[5] higher yield levels retrieve with application of Panchagavya to several field crops. Similarly, Siddaram, (2012)^[7] have additionally reported increased yield levels of rice with Panchagavya. Spray of Panchagavya impact considerably on yield of capsicum pepper plant per hectare and nutrients at completely different growth stages of the crop moreover as presence of growth regulators in Panchagavya conducive to higher yield (Sridhar *et al.*, 2001 and Somasundaram *et al.*, 2003 and Natarajan, 2007)^[9, 7, 3]. The foliar spray of panchagavya might have raise microbial activity on the plant components like on shoot, leaves, and fruits. Additionally according to Natarajan (2007)^[3] that the Panchagavya contains macronutrients like N, P and K, essential micronutrients, essential amino acids, several vitamins, growth promoting factors like IAA, GA, which can give nutrition to rhizosphere microorganisms.

Beejamrutha

Bijamrita or beejamrutha is used as a careful treatment for seeds, seedlings, or any planting material from pathogenic microorganisms. It is effective in protect young roots from fungus in addition as from soil-borne and seed borne diseases that generally have an effect on plants after the monsoon period. It's composed of comparable ingredients as jeevamrutha - native cow dung, a strong natural antifungal, and cow urine, a powerful anti-bacterial liquid, lime, soil. Treatment with Beejamrutha has given boost results for successful cultivation of crops and also it provides adequate protection to crops from insects & diseases throughout the initial stages of germination and establishment. The reason behind the better performance of Bijamrita treatment is may be the components and microorganisms associated with it. Swaminathan (2005) showed that naturally occurring beneficial microorganisms mainly bacteria, photosynthetic bacteria, actinomycetes, yeasts, and certain fungi were detected in cow dung which is one of component of Bijamrita. Bijamrita contain macro as well as micro nutrients, many

vitamins, growth promoting factors like Indole Acetic Acid (IAA), gibberellic acid (GA), essential amino acids, and beneficial microorganisms (Natarajan 2007, Sreenivasa 2010)^[8]. Maximum colonies of bacteria, fungi, actinomycetes, N-fixers and P-solubilizers were present in Bijamrita on the day of preparation and later on there was sharp decline in their number as the days elapsed and maximum CFUs of bacteria (623), fungi (22) actinomycetes (2), N-fixers (71) and P-solubilizers (52) were recorded on the day of preparation of Bijamrita. (Devakumar *et al.*, 2014). The presence of beneficial microorganisms in organic liquid formulation might be mainly due to their constituents such as: cow dung, cow urine, legume flour and jaggery and associated microorganisms and their products (Palekar, 2006; Sreenivasa *et al.*, 2010)^[4, 8].

Acchadana –Mulching

Using certain agricultural by product as mulch could be a sustainable practice which may reduce water use and provide different advantages additionally. Wheat straw, grass clippings, and leaf debris are fairly superabundant by products. Several producers already generate these mulching materials, and currently spend resources to get rid of them (Ghosh *et al.*, 2006)^[18]. Mulching enhance the physical conditions, chemical surroundings and biological activities of the soil. Favourable changes of the soil hydrothermal regime, improvement of soil aggregation and retardation of erosion and soil loss enhance the healthiness of soil under mulch (Chalker-Scott, 2007)^[17]. Different analysis result showed mulch increase soil wetness through raise infiltration, reducing evaporation, and modifying water retention capability of the soil (Lal, 1974; Adeoye, 1984)^[11, 13] reported high soil moisture content up to a depth of sixty cm in grass mulched soil. On the opposite hand water holding capability of the soil enhance through mulch decomposition and humus formation (Ji *et al.*, 2001)^[12]. In aqua crop water productivity model by (Raes *et al.*, 2009)^[14], soil evaporation reduction by five hundredth was modelled with one hundred % cover of the soil by organic mulch. This can be in line with (Hatfield *et al.*, 2001)^[15] World Health Organization additionally reported a 34–50 percent depletion in soil water evaporation as results of crop residue mulching. Mulch is any covering material as well as either organic or inorganic applied on the soil surface to decrease evaporation losses. Mulching is one cultural observe which may be wont to addresses this drawback. Covering the bottom with mulch saves water by preventing surface evaporation (Patil *et al.*, 2013)^[16].

Whapasa – Moisture

Whapasa is that the condition where each air molecules and water molecules present in the soil, and encourages reducing irrigation, irrigating only at midday, in alternate furrows natural farmers report a important decline in would like for irrigation. Palekar challenges the concept that plant roots need a lot of water, therefore countering the over reliance on irrigation in green revolution farming, according to him, what roots want is vapour. In Veda's water is defined as a life of the soil. If there is waaphasa within the soil, the water is life. If there is no waaphasa in the soil, water is death of the plant and soil biology. Waaphasa is that microclimate within the soil, by which the soil organisms and roots will live freely with availability of sufficient air and essential wet in the soil. In one sentence, shortly, the Waaphasa suggests that the mixture of 50 to 80 hot water vapours within the cavities between 2 soil particles. Why vapour? Why not water ? as a result of, any root takes the molecules of vapour. 92 Zip

microorganisms and 88 to 95 the foundation hairs are within the eighty eight higher most 10 cm topsoil. So, the air should be current circulating surface layer and vapour molecule should be available in this 10 cm surface layer.

Importance of natural farming

Natural farming improved bulk density, pH, electrical conductivity, and nitrate reductive activity in upper soil and uniform trends were observed in deeper soil. There is an increase in soil fertility year after year and Water requirement is minimized. Natural farming requires much less labour and costs. Techniques of Natural farming management have been shown to reduce soil compaction, restore organic matter, maintain soil erosion, and raise soil biodiversity, which are favourable to soil conditions. Various studies have explain that natural farming can improve biodiversity, Soil properties, and enzyme activity within various agro ecosystems in the world, but little is known about We do not simply buy materials from the market & follow the manual. Makes all inputs of Natural farming from natural materials, observes the law of the nature and respects the rights of crops and livestock. The most essential facet of natural farming is to let nature play a dominant role to the most extent attainable. Hence, Farm multifariousness, integration, no-till, & dependent farm elements and protection of soil cover all have during this methodology of farming. Natural farming positively affects on soil quality & microbial community composition within sustainable farming systems.

Conclusion

Less input and low cost farming practices have appeared in pockets across the globe promising diminished costs of cultivation and provide higher yields for cultivators, chemical-free food for natural farming is one such low-input, climate-resilient type of farming that encourages farmers to use low-cost locally-sourced Inputs, eliminating the use of artificial fertilizers, and industrial pesticides. Under natural farming, diversification of crops through natural farming provides nutritional balance and helps overcoming malnutrition which is rampant in Indian, especially in rural areas and its can give health benefits to improve immunity system of body .Natural farming also free farmers, their family and neighbours from health hazards which were due to contamination by chemicals of the soil. Natural farming may be a way to prevention from different microbial diseases in human and animals. Undoubtedly, it is a triple-win opportunity as it enhances crop productivity and get health benefits by application of natural farming and helps farmers increase their net income and induces climate resilient agriculture.

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