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Women in agriculture play a huge role in preparation of soil for healthy life

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Abstract
Soil testing is one of the most important tools to determine the status of plant nutrients in a farm and quantity of fertilizers to be applied to obtain profitable crop yields. Soil testing is helpful in accessing nutrient supplying power of soil, crop response to added plant nutrients and amendment needs. Assessment and monitoring is an integral activity of any sustainable agricultural development, in turn it will necessitate the increased demand for real time information on resource. Promotion of balanced fertilization is important component of environment management in agriculture. It further reinforces the need for frequent soil testing. Soil testing is the single most important guide to the profitable application of fertilizer and lime. When soil test results are combined with information from the soil profile about the nutrients that are available to the various crops, the farmer has a reliable basis for planning the fertility program on each field.

Keywords: Huge role, Preparation, Healthy life

Introduction
Healthy soil is the most fundamental and basic resource. Healthy soil is a vital resource that provides food, feed, fuel, and fiber. It underpins food security and environmental quality, both essential to human existence. Essentiality of soil to human well-being is often not realized until the production of food drops when the soil is severely eroded or degraded to the level that it loses its inherent resilience. Healthy soil main function has been as a medium for plant growth. Now, along with the increasing concerns of food security, soil has multi-functionality including environmental quality, the global climate change, and repository for urban/industrial waste. World soils are managed meet the ever increasing food demand, filter air, purify water, and store carbon to offset the anthropogenic emissions of CO2. Soil is a non renewable resource over the human time scale. It is dynamic and prone to rapid degradation with land misuse. Thus, widespread degradation of the finite soil resources can severely jeopardize global food security and also threaten quality of the environment. Conserving soil has many agronomic, environmental, and economical benefits. The need to maintain and enhance multi-functionality necessitates improved and prudent management of good soil for meeting the needs of present and future generations. Healthy soil is evaluated in terms of its benefits to increasing crop yields, reducing water pollution, and mitigating concentration of greenhouse gases in the atmosphere. Healthy soil performs multiple functions providing physical support to terrestrial plants, supplying fundamental resources viz., water, nutrients and oxygen required for terrestrial primary production, providing habitat to a variety of soil organisms, with taxonomic identity and functions of several organisms still unknown/lesser known to the scientific and wider community, regulating hydrological and mineral/nutrient cycling, with significant impacts on global climate, detoxification of organic and inorganic substances, leading to purification of water resource and resisting erosion.

Importance of Organic and Inorganic Fertilizers for increasing soil quality
For increasing soil quality some organic fertilizers such as Vermi Compost, Enriched farm yard, Oil cake, Peat, Sewage sludge, Animal waste, Plant waste and inorganic fertilizers such as Urea, DAP.

Objectives

1. To study the Socio economic status of farm women on the basis of land owned.
2. To examine the use of farm inputs to improve soil quality and production of crops from last 5 years.
3. To study the effect of good soil quality on production, environment and healthy human life.

Methodology

The study was conducted in Faizabad district of Uttar Pradesh. Two blocks were randomly selected (Masoddha and Bikapur).10 villages were randomly selected from both blocks. Total sample size 300 farm women were selected. Dependent and independent variables were selected in this study such as age, caste, education, religion, income, land holding, family type etc. and dependent variables were such as soil, soil testing, organic farming, crop production, farm inputs, awareness, knowledge, environment, healthy human life, soil conservation etc. The statistical tools were used such as percentages, mean score, weighted mean, rank, paired 't' test and correlation coefficient.

Results

Table 1: Distribution of farm women according to their education N=300

Education level	Frequency	Per cent
Illiterate	-	-
Primary	110	36.7
High School	65	21.7
Intermediate	40	13.3
Graduate and above	85	28.3
Total	300	100.0

Education is the most important factor in agricultural development. Educational level of women is the main carrier in modern agricultural practices such as transplanting, seed treatment, use of seed drill and modern grain storage methods. The lack of knowledge and education render the majority of women in India vulnerable, as dependents on the growth and stability of the agricultural practices. Generally most of the women working in agriculture areas are uneducated but now days this situation change dramatically. The level of education in women increases gradually. Educated women have done agricultural operations more scientifically as compared to uneducated women. All educated women were easily understood and adopt farming technologies. Education level of women plays a key role in soil conservation and agriculture sustainability also. Illiteracy was the main barrier in adopting new farming technologies. Uneducated women do not easily understand and adopted new technologies of improving soil quality. They are more rigid about their traditional technologies.

Table 2: Distribution of farm women according to soil testing N=300

Sl. No.	Soil testing	Frequency	Per cent
1.	On own farm	255	85.0
2.	Laboratory	45	15.0
	Total	300	100.0

Soil test to one or more of a wide variety of soil analyses conducted for one of several possible reasons. Possibly the most widely conducted soil tests are those done to estimate the plant-available concentrations of plant nutrients, in order to determine fertilizer recommendations in agriculture. In agriculture, a soil test commonly refers to the analysis of a soil sample to determine nutrient content, composition, and other characteristics such as the acidity or pH level. A soil test can determine fertility, or the expected growth potential of the soil, which indicates nutrient deficiencies, potential toxicities from excessive fertility and inhibitions from the presence of non-essential trace minerals. The test is used to mimic the function of roots to assimilate minerals. Tap water or chemicals can change the composition of the soil, and may need to be tested separately.

Table 3: Distribution of farm women according to number of soil testing in a year N=300

Sl. No.	Year wise soil testing	Frequency	Per cent
1.	Every year	165	55.0
2.	Alternate year	95	31.7
3.	Before 5 year	40	13.3
	Total	300	100.0

Soil testing is a management practice that helps identify the variability of nutrient content within a field and among different fields on a farm. Soil analysis is a valuable tool for farm as it determines the inputs required for efficient and economic production. A proper soil testing was helping ensure the application of enough fertilizer to meet the requirements of the crop while taking advantage of the nutrients already present in the soil. Soil testing is also a requirement for farms that must complete a nutrient management plan. Every year soil testing combined with a good record-keeping system for each field serves as a gauge to indicate whether soil fertility is increasing, decreasing, or remaining constant. Soil tests were is completed every 2-3 years for most crops. For crops grown on very sandy soils particularly if the crops remove large quantities of potassium such as corn, farmers was done soil test every 1-2 years. Soil testing is one of the most important practices for crop production in the new millennium. When soil testing done at alternate year it allowing to future productivity and portability. Farmers were
support to use soil testing as a tool for making scientifically sound management decisions about their soil fertility. Soil testing benefits the farmer in many ways. Soil testing was ideally done every 4-5 years, and the best one to take a soil sample is in the fall, but anytime the soil is dry work. When soil testing done at 5 years interval it is important that several sample cores are collected, often more than what is typically the norm in row crops. The reason variability across a pasture can be extreme. Animal activities and habits present a huge source of variation in pastures.
Areas around winter feeders, shade trees and water source have higher soil test level.

Table 4: Distribution of farm women according to crop production in last five years N=300

Sl. No.	Crops	1st year	2nd year	3rd year	4th year	5th year
1.	Cereal					
	(a) Wheat	300(100.0)	300(100.)	300(100.0)	300(100.0)	300(100.0)
	(b) Paddy	300(100.0)	300(100.0)	300(100.0)	300(100.0)	300(100.0)
	(c) Maize	30(10.0)	60(20.0)	30(10.0)	120(40.0)	150(50.0)
	(d) Bajra	15(5.0)	15(5.0)	30(10.0)	6(2.0)	10(3.0)
	(e) Jowar	3(1.0)	-	6(2.0)	12(4.0)	-
2.	Pulses					
	(a) Pigeonpea	300(100.0)	300(100.0)	300(100.0)	300(100.0)	300(100.0)
	(b) Lentil	150(50.0)	180(60.0)	90(30.0)	120(40.0)	30(10.0)
	(c) Greengram	30(10.0)	75(25.0)	90(30.0)	45(15.0)	30(10.0)
	(d) Blackgram	60(20.0)	30(10.0)	6(2.0)	45(15.0)	60(20.0)
	(e) Chickpea	240(80.0)	210(70.0)	180(60.0)	105(35.0)	90(30.0)
	(f) Pea	210(70.0)	240(80.0)	120 (40.0)	45 (15.0)	60 (20.0)
3.	Sugarcane	30(10.0)	12(4.0)	9(3.0)	6(2.0)	45(15.0)
4.	Vegetables	300(100.0)	300(100.0)	300(100.0)	300(100.0)	300(100.0)

(Figures in parenthesis indicate the percentage of respective value)

India is top producer country of many crops. The major crops in India can be divided into four categories such as cereals (rice, wheat, maize, millets), pulses (pigeonpea, lentil, greengram, pea), and other crops sugarcane and vegetables. Soil testing was generally providing farmers with appropriate fertilizer application. Soil testing also allows for determining the micronutrient requirements of cereals. Farmers apply too little fertilizer; crop and returns low yield. Too much fertilizer was waste time and money and risk environmental damage due to nutrient runoff. Consequently, soil testing provides a farm management tool with a potential benefit to the farmer of increased cereals, reduced operating costs and superior environmental risk management. Heavy soil with good drainage is suitable for wheat cultivation under dry conditions. These soils absorb and retain rain water well. Heavy soils with poor structure and poor drainage are not suitable as wheat is sensitive to water logging. Wheat can be successfully grown on lighter soils provided their water and nutrient holding capacity are improved. Soil testing increases cereal production through nutrients balance. Because pH levels are so important to the growth and health of cereals, liming may be a necessity if pH levels are too low. Soil testing gives the opportunity to apply needed lime five to six months ahead of when crops was actually need it, which is ideal because lime takes some time to work into and react with the soil. Soil testing was helpful to ensure sustainable advances in pulses production. Soil testing become even more useful to farmers to the needs of a specific cropping system of pulses. Regular soil testing can help ensure that the correct amount of fertilizer is applied to the soil to satisfy the nutrient requirements of the vegetables. It also removes any risk to the environment by avoiding over-fertilizing. Soil analysis determines the soil's current levels of nutrients. Soil test should be done before the establishing of each
vegetable. Most soil nutrients are available to the crop in the pH range of 5–7. Strongly acid soils require the addition of fine agricultural lime or dolomite to allow better uptake of soil nutrients by the vegetables.

Table 5: Distribution of farm women according to effect of healthy soil on environment

Sl. No.	Effect on environment	Yes	No	Mean score	Rank
1.	Help to maintain healthy natural environment	300(100.0)	-	2.00	I
2.	Healthy soil provide adequate water supply	255(85.0)	45(15.0)	1.85	III
3.	To maintain climate change by maintain its carbon content	270(90.0)	30(10.0)	1.90	II
4.	Maintain or enhance water and air quality	225(75.0)	75(25.0)	1.75	V
5.	Healthy soil managed ecosystem boundaries	240(80.0)	60(20.0)	1.80	IV

(Figures in parentheses indicate the percentage of respective value)

Healthy soil is a vital part of the natural environment. It is just as important as plants, animals, rocks, landforms, lochs and rivers. It influences the distribution of plant species and provides a habitat for a wide range of organisms. It controls the flow of water and chemical substances between the atmosphere and the earth, and acts as both a source and store for gases in the atmosphere. Healthy soils not only reflect natural processes but also record human activities both at present and in the past. They are therefore part of our cultural heritage. The modification of soils for agriculture and the burial of archaeological remains are good examples of this. Soil, together with the plant and animal life it supports, the rock on which it develops its position in the landscape and the climate it experiences, form an amazingly intricate natural system more powerful and complex than any machine that man has created. Soil may look still and lifeless, but this impression could not be further from the
truth. It is constantly changing and developing through time. Soil is always responding to changes in environmental factors, along with the influences of man and land use. Some changes in the soil would be of short duration and reversible, others would be a permanent feature of soil development. Soil health is the ability to perform essential ecosystem functions such as nutrient cycling, water filtration, and habitat provision for plants and animals. Properties that determine soil health include texture, depth, density, water infiltration and holding capacity, amount of organic matter, nutrient holding capacity and respiration.

Table 6: Distribution of farm women according to effect of healthy soil on human life

Sl. No.	Effect on human life	Yes	No	Mean score	Rank
1.	Enhance the availability of nutrients	300(100.0)	-	2.00	I
2.	Synthesizing enzymes, vitamins, hormones and other important substances	255(85.0)	45(15.0)	1.85	II
3.	Healthy soil are the foundation of healthy life	225(75.0)	75(25.0)	1.75	IV
4.	Supply essential nutrients, water, oxygen etc.	240(80.0)	60(20.0)	1.80	III
5.	Reduce organ disease	135(95.0)	165(55.0)	1.45	V
6.	Reduce borne disease	90(30.0)	210(70.0)	1.30	VI

(Figures in parentheses indicate the percentage of respective value)

Soil is fundamental to human life on Earth. Most plants require a soil substrate to provide water and nutrients, and whether we farm the plants directly or consume animals that feed on the plants, this means that we don't eat without soil. It is possible to grow our food hydroponically. In those cases, it is possible to reduce the importance of soil. However, we still have the other reasons that soil is fundamental. It is required for trees. It is possible for humans to live without the need for any soil based product. Soil is important to humans because it provides
much of the food consumed by people. It supports the growth of agricultural crops. Soil is also responsible for maintaining natural and artificial vegetation. Soil supports foundations of buildings, roads and communication infrastructures. Healthy soil is the basis of human life. Healthy societies depend on healthy soil, healthy soil depends on healthy biology and healthy biology depends on healthy soil.

Conclusion

Healthy soil plays a multitude of valuable roles in creating fertile soil, and assisting plants take up balanced and healthy levels of minerals and other micro-nutrients such vitamins that promote healthy plant growth. In healthy living soil biology is the main driver of plant nutrition and health rather than added chemical fertilizers. Healthy soil is rich in all nutrients and produced healthy crops which contain enzymes, nutrients all other important substances. Healthy soil produces healthy food along with vitamins and minerals, enzymes occur in food that is in a natural state. All healthy food contains the proper types and proportion of enzymes necessary to digest it.

Recommendations

1. Government should established soil testing laboratory at village level and give information of soil testing benefits to farm women.
2. Provide technical training, knowledge and skills to farm women for improving soil quality.
3. Government should provide pesticides free of cost to lower income group of farm women and give information about use of pesticides to better agriculture results
4. Agricultural extension efforts should help women improve soil quality and agriculture production.

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