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Review Article

In Terms of Environmental Trends and Ecological Perspective; Soil Management and Pesticide Use and Fertilizer Demand and Ecosystem Diversity Analyzes

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Abstract

Soil management, fertilization, pesticide use and plant density management systems have significantly increased the yield of dry land plants. Land sublayers tend to be less efficient, less insecticide absorbent, fertilizer and other plant nutrients. Surface flow, fertilizer and pesticides on rivers, lakes and reservoirs. In some cases, bacteria, nutrients or synthetic organic compounds at an unacceptable level. Pesticides are usually called pests, depending on the type of pests they control. Pesticides are applied to large areas in agriculture and urban areas. The use of insecticides represents a significant source of common chemical environmental inputs. Pesticide degradation is the conversion of a pesticide to a benign substance that is compatible with the environment in which it is applied. Fertilizers have played an important role in increasing crop yields and will continue to form the basis of science-based agriculture to feed the expanding world population. Ecosystem diversity is related to changes in ecosystems in a geographical location and to the general impact on human beings and the environment.

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Çevresel Eğilimler ve Ekolojik Perspektif Açısından; Toprak Yönetimi ve Pestisit Kullanımı ile Gübre Talebi ve Ekosistem Çeşitliliği Analizleri

Özet

Toprak yönetimi, gübreleme, pestisit kullanımı ve bitki yoğunluğu yönetim sistemleri, kuru kara bitkilerinin verimini önemli ölçüde artırmıştır. Kara alt katmanları daha az verimli, daha az böcek ilacı emici, gübre ve diğer bitki besin maddeleri olma eğilimindedir. Nehirler, göller ve rezervuarlarda yüzey akışı, gübre ve böcek ilaçları. Bazı durumlarda kabul edilemez düzeyde bakteri, besin veya sentetik organik bileşikler. Pestisitler, kontrol ettikleri haşere türüne bağlı olarak genellikle zararlı olarak adlandırılır. Zirai ilaçlar tarım ve kentsel alanlarda geniş alanlara uygulanmaktadır. Böcek öldürücülerin kullanımı, ortak kimyasal çevresel girdilerin önemli bir kaynağını temsil eder. Pestisit bozunması, bir pestisitin uygulandığı ortamla uyumlu iyi huylu bir maddeye dönüştürülmesidir. Gübreler mahsul veriminin artmasında önemli bir rol oynamıştır ve artan dünya nüfusunu beslemek için bilime dayalı tarımın temelini oluşturmaya devam edecektir. Ekosistem çeşitliliği, coğrafi bir konumdaki ekosistemlerdeki değişiklikler ve insanlar ve çevre üzerindeki genel etki ile ilgilidir.

Anahtar Kelimeler
Toprak Yönetimi
Gübre Talebi
Pestisit Kullanımı
Ekosistem Çeşitliliği
Çevresel Etki Analizi

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INTRODUCTION

Agricultural practices need to be made more sustainable for many generations. With the continuous research and development of practical information, producers must take very active measures to reduce the potential adverse effects while using various fertilizers and pesticides in their farms. It is very important that agricultural crops are complementary to the protection of healthy productive ecosystems for human health [1-4].

In the middle of the last century, when chemical fertilizers, pesticides and chemical additives started to be used, the variability in this increase in agricultural production, which was called a "Great Revolution", did not bring a solution to the hunger crisis in the world, on the contrary, it did not bring a solution to the problem of hunger in the world; Individuals and groups who saw that it was corrupting started various researches on this subject. Although the amount of production and yield has increased with these chemical-based pesticides and fertilizers used over time, it has killed beneficial organisms in agricultural areas in the long term, causing a decrease in food quality and soil fertility.

When it comes to today; If we consider today's agricultural production, especially due to the increasing infertility of agricultural lands, chemical fertilizers have tended to turn into slow-release forms by using different techniques. As a result of the changes in nature and climates due to reasons such as global warming, agricultural soils have become incapable of holding the plant nutrients that are effective in plant growth and have entered the process of inefficiency. Among the main reasons for this are the unsuitable soil management, uncontrolled use of fertilizers and pesticides, leaving harmful residues in the environment in terms of both environmental health and living health, and as a result, the decrease in ecosystem diversity and the resulting decrease in the "organic matter" in the soil. In this case, the use of chemical fertilizers alone is no longer sufficient to increase the soil organic matter,

which is even below the level of 5% in general terms, and the use of controlled fertilizer and water with organic-based fertilizer supplementation can only provide a sustainable opportunity for agricultural production.

RESULT AND DISCUSSION

Land use and soil management

Agriculture is no longer just a traditional agricultural operation. Economic and environmental pressures, food and fiber production, processing, packaging, distribution and exports have all formed a highly competitive global agribusiness industry, driven by market and consumer forces. In order to overcome the challenges presented by the agricultural industry, managers need a combination of solid technical, commercial and entrepreneurial skills.

While land use is generally viewed as a local environmental issue, it is becoming global. Worldwide changes in forestry, agricultural land, waterways and air are due to the need to provide food, fiber, water and shelter to more than six million people. In recent years, global crop surveys, pastureland, plantations and urban areas have expanded along with the bustle of biodiversity, along with large increases in energy, water and fertilizer consumption. Such changes in land use have taught people that global resources should be used more rationally. However, ecosystems are potentially weakening capacities for maintaining food production, protecting freshwater and forest resources, regulating climate and air quality, and improving infectious diseases. It has become imperative to manage the balance between urgent human needs and to preserve the capacity of the biosphere to provide goods and services in the long run.

All processes, practices and treatments such as soil fertility or soil mechanics used to manage soil, protect the soil and improve performance. Soil management covers soil

protection, soil remediation and optimal soil health. Main special types of soil management are given in Fig. 1.

In agriculture, a certain amount of land management is necessary for non-organic and organic species to prevent agriculture from becoming less efficient over decades. In particular, organic farming emphasizes optimal land management, because it uses soil health as an exclusive or almost exclusive source of fertilization and pest control.

Soil management is an integral part of land management and can focus on differences in soil characteristics and soil characteristics to identify specific interventions aimed at increasing soil quality of selected land use. Special soil management practices are necessary to protect and protect the soil resources. Special interventions are also available to increase carbon content in the soil to alleviate climate change.

Land management is the process of managing the use and development of land resources include both in urban and rural areas. Land resources are used for various purposes such as organic agriculture, reforestation, water resources management and eco-tourism projects. Land management can have very positive or negative effects on the natural ecosystems of the land. Expiration or abuse of land can reduce and reduce productivity and disrupt natural imbalances [5]. Land management generally involves all operations, practices and treatments used to protect land and to strengthen the services and goods provided by the land ecosystem.

Pesticide use

Pesticides are chemicals used to control pests or weeds. In general, a pesticide is a chemical or biological agent that deters, incapacitates, kills, or otherwise discourages pests. Pesticides are usually called pests, depending on the type of pests they control. Pesticides include: herbicide, insecticide, insect growth regulator, nematicide, termitisitis,

molluscicide, piscicide, avidide, denticide, predacide, bactericide, insect repellent, animal repellent, antimicrobial, fungicide, disinfectant and sanitizer.

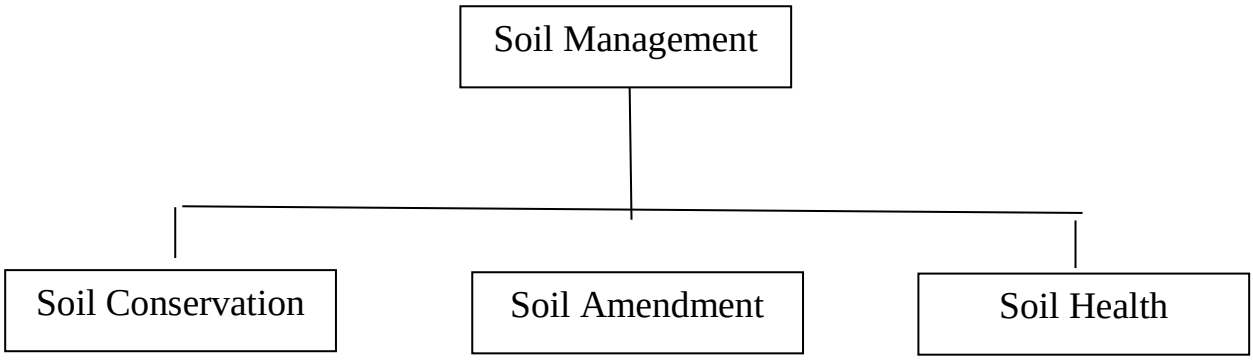

Fig. 1. Main special types of soil management.

Pesticides are applied to large areas in agriculture and urban areas. The use of insecticides represents a significant source of common chemical environmental inputs. The benefits of global pesticide use come at the expense of widespread use in the environment. A number of abiotic and biotic transformations effectively remove pesticides from the environment, but can lead to potentially hazardous conversion products. Although there is a large amount of pesticide degradation data from regulatory testing and over a decade of pesticide research, it is difficult to predict in advance the extent and route of pesticide degradation in specific field conditions [6].

Pesticide degradation is the conversion of a pesticide to a benign substance that is compatible with the environment in which it is applied. In the world, 1 to 2.5 million tons of active insecticides are used each year, primarily in agriculture. About 40 percent are herbicides, followed by insecticides and fungicides. Since their first development in the 1940s, several chemical poisoning drugs with different uses and modes of action have been used [6]. The human health and environmental costs of pesticides in the United States are estimated at $ 9.6 billion, offset by $ 40 billion for increased agricultural production [7].

Pesticides can cause acute and delayed health effects in exposed people [8]. Exposure to pesticides can cause a variety of adverse health effects ranging from simple irritation of the skin and eyes to more serious effects such as affecting the nervous system, mimicking the hormones that cause reproductive problems, and causing cancers [9].

To prevent contamination of the pesticide spot source, it is recommended to use a nurse tank to fill a sprayer with the product. Using a nurse tank, a sprayer will remove the problem of siphoning a water source from a reservoir. Spillage of herbicides during landfilling can also contaminate water sources. To avoid this potential problem, the concentrate pesticide product should be added to the tank at a distance from the water source.

Fertilizer demand and use

Optimum crop production depends on inputs of commercial fertilizer and herbicides. The management and use of fertilizers, manure and pesticides vary widely depend on tthe soil properties and climatic conditions [10].

Commercial fertilizers and animal manure are used to increase crop yields and to replace soil nutrients removed with harvested crops. Both have been valuable in reversing the trend of declining soil productivity and soil nutrients [11].

Nitrogen in various fertilizers and manure is converted by soil microbes to nitrate-nitrogen substances, the form that plants take up. Nitrate is negatively charged and is not held by soil particles. Therefore, higher levels of nitrate in soil combined with excess rainfall or irrigation can result in leaching through the soil root zone into groundwater. High nitrates in soil occur when manure or commercial fertilizers are applied in spring before significant crop uptake has occurred during the growing season or when applied at rates greater than crops require. Basic synthetic fertilizer nutrient shown as ($N + P_2O_5 + K_2O$). Table 1 shows the essential plant nutrients and their chemical symbols.

A simple model can be developed to describe the relationship between total biomass production and the fertilizer density used. The fertilizer density can be expressed as a fraction

of the total biomass production. From animal waste, nutrient inputs from plant nutrients, from plant nutrients, from precipitation and other nutrient sources are skipped, so total nutrient input for plant production can be taken. The fertilizer density is correlated with total biomass production from all crops per unit area.

Fertilizers have played an important role in increasing crop yields, especially in grain yields, and will continue to form the basis of science-based agriculture to feed the expanding world population.

It is estimated that the consumption of world synthetic fertilizer nutrient ($N + P_2O_5 + K_2O$) will reach 186 900 thousand tons in 2014 with an increase of 2.0 percent in 2016. World fertilizer demand is estimated to increase by 1.8 percent annually between 2014 and 2018. Nitrogen, phosphate and potassium requirement are estimated to increase by 1.4, 2.2 and 2.6, respectively, during the period. Over the next five years, the global capacity of fertilizer products, intermediates and feedstocks will increase further [10].

As a percentage of N fertilizer demand, the difference between the N available and the N available for fertilizer is expected to increase steadily in the forecast period up to 5.4 percent in 2015 from 3.7 percent in 2014. 6.9 percent in 2016, 8.8 percent in 2017 and 9.5 percent in 2018 will reach. Global potential balance is expected to increase from 2 700 000 tons in 2014 to 3,700.000 tons in 2018 or 6.4 percent in total demand. Global potential balance potassium is expected to rise significantly. 8,700,000 tons in 2014, 12,700,000 tons in 2018, it is estimated that the total demand will decrease from 25 percent to 33 percent [10].

Table 1. Essential plant nutrients and their chemical symbols

Nutrients Supplied by Air and Water	**Nutrients Supplied by The Soil System**		
Non-Mineral	**Primary or Macronutrients**	**Secondary**	**Micronutrients**
Carbon-C	Nitrogen-N	Calcium-Ca	Zinc-Zn
Hydrogen-H	Phosphorus-P	Magnessium-Mg	Chlorine-Cl
Oxygen-O	Potassium-K	Sülfür-S	Boron-B
			Molybdenum-Mo
			Copper-Cu
			Iron-Fe
			Manganes-Mn
			Cobalt-Co
			Nickel-Ni

Ecosystem diversity

Ecosystem diversity is related to changes in ecosystems in a geographical location and to the general impact on human beings and the environment. Ecological diversity is a kind of biological diversity. Variation in ecosystems in a region or change in ecosystems around the world. Ecological diversity involves changes in both ecosystems, both terrestrial and water [12-14].

The relationship between species diversity and ecosystem functioning attracts attention not only because of the potentially significant consequences for conservation, but also because of the relevance of the relative importance of processes contributing to various ecosystem functions, such as productivity [15-17].

Species diversity can affect ecosystem functions, such as the productivity of a system or the stability of that production. If the effects of loss of biodiversity are anticipated and the

management of ecosystems is changed to protect the ecological processes required, the disclosure and analysis of these relationships are important [18-20].

The relationship between diversity and stability demonstrated by recent studies is clear. The increase in diversity of species or functional groups improves the stability of biomass production, ecosystem improvement by enriching plant communities by increasing soil carbon accumulation and resistance to pests [21-25].

Understanding the role of biodiversity in ecosystem functioning has been developed both through tropical nets and by complementing the flow of energy and matter and the functional diversity of species in ecosystems [26-28]. The diversity of functional diversity in the soil is strongly linked to efficiency.

Biodiversity reflects the growing hierarchy of organization and complexity in ecological systems; so it's at the level of genes, individuals, populations, species, communities, ecosystems and biomes. They are communities of living organisms interacting with the abiotic environment that make up and characterize ecosystems. Ecosystems are both varied in size and possibly complexity, and may be intertwined. The relationship between biodiversity and ecosystem functioning cannot be excluded by ecological studies that focus on the structure and behavior of species and populations in a region. In addition, studies involving the flow of energy and matter through the ecosystem are also necessary [24-32].

CONCLUSION

Soil management, fertilization, pesticide use and plant density management systems have significantly increased the yield of dry land plants. Land sublayers tend to be less efficient, less insecticide absorbent, fertilizer and other plant nutrients. Surface flow, fertilizer and pesticides on rivers, lakes and reservoirs. In some cases, bacteria, nutrients or synthetic organic compounds at an unacceptable level.

According to FAO, the global economic growth and financial situation are affecting various sectors including agriculture. The yield of agricultural crops rationally increases with adequate fertilizer support and fertilizer is the indispensable power of modern agriculture.

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