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The aim of this study is to study the effect of integrated nutrient management on the growth and yield of kharif Maize and to work out the economics of different nutrient management treatments. As the chemical’s fertilizers play an important role in plants life so that these chemicals should not be avoided completely as they are the potential sources of the high amount of nutrients in easily available forms. These fertilizers greatly affect enzymatic activities in the soil profile but poor management of the chemical fertilizers has a key role in lowering the yield productivity and deteriorate the soil health also. So, to achieve optimum crop production, there is a need to use the combination of organic sources, inorganic sources, bio-fertilizers. Maize (Zea mays L.) requires the nutrients i.e., macronutrients as well as micronutrients for obtaining the higher crop growth and yield. The micronutrients content in organic manure may be sufficient to meet the crop requirement but the low soil fertility is the major problem to maintain sustainability in production. The application of organic manure do not produce optimum yield due to low nutrient status but they play a direct role in plant growth by the mineralization they provide the essential nutrients which furthermore improves the physical and biological properties of the soil. The use of organic plays an important role in maintaining soil health due to the build-up of soil organic matter, beneficial microbes. ”Biofertilizer” is a substance that contains living organisms. It promotes growth by increasing the supply or availability of primary nutrients to the host plant. These are not fertilizers because fertilizers directly increase soil fertility by adding nutrients. They add nutrients through the natural processes of fixing atmospheric nitrogen, solubilizing phosphorus, and stimulating plant growth through the synthesis of growth promoting substances. Azotobacter is dominant among the free-living forms of nitrogen fixers. It has been used extensively as a production technology in many countries and there were 20-29 percent increase in yield. Hence, the judicious application of these combinations can sustain soil fertility and productivity. In general, scheduling of fertilizers is based on the individual nutrient requirement of the crop and the carry-over effect of manure and fertilizer applied to precede crop is ignored.

Agriculture is the main occupation in India and about 75% of its population depends directly or indirectly on agriculture for their livelihood. It is the dominant sector that contributes 18% of the gross domestic product. Thus, agriculture is the foundation of the Indian economy. The maximum share of Indian exports is also from the agriculture sector. As the population of the country is increasing tremendously, approximately at the rate of 19 million every year over the existing population of more than 1 billion (approximately 1.18 billion), the food grain production must necessarily be increased. This can be done by increasing crop production to match the population growth rate of 2.2% per annum, which is expected to stabilize at 1.53 billion around 2050. There is no doubt that the Green Revolution in India during the late 1960s brought self-sufficiency in food grain production, mainly through the increase in rice and wheat crop yields—the two main crops of the country which play an important role from food security point of view. However, the excessive use of fertilizers and pesticides, and the neglect of organic manures for these crops, has resulted in the deterioration of physical, chemical and biological health of the rice- and wheat-growing soils. Owing to the deterioration of the health of these soils, the productivity of the rice- wheat cropping system has now either got reduced or in some places has become constant for the last decade.
investigation entitled “Effect of integrated nutrient management on late sown mustard under Punjab conditions (Brassica campestris L.)” was conducted during the rabi season of 2018-19 with the objective to find out the impact of integrated nutrient management on growth, yield, nutrient content, nutrient uptake and economics of mustard. The soil of experimental field was clay loam texture, alkaline in nature with pH (7.91), EC is (0.59) and available nitrogen (205.5) kg ha⁻¹, available phosphorus (12.7 kg ha⁻¹), available potassium (231.5 kg ha⁻¹), available sulphur (7.50 kg ha⁻¹), available zinc (0.94) and boron (0.72 mg kg⁻¹). The experimental results revealed that significantly maximum growth parameters (plant height, branches plant⁻¹, dry matter accumulation, and leaf area index), yield attributes (siliqua length, siliquae plant⁻¹, seeds siliqua⁻¹, test weight), yield (grain and stover), nutrient uptake (N, P, K, S, Zn and B) by grain and stover and available soil nutrient (N, P, K, S, Zn, and B), were noticed under the application of 100% NPK + 40 kg S + 1.5 B + 20 kg Zn ha⁻¹ as compared to rest of the treatments. The increment in seed yield under application of 100% NPK + 40 kg S + 1.5 B + 20 kg Zn ha⁻¹ was 25.32 % over 100% NPK. Likewise, maximum gross return, net return and B:C ratio were also recorded with the application of 100% NPK + 40 kg S + 1.5 B + 20 kg Zn ha⁻¹. Besides, this combination also improves the quality of produce and physico-chemical properties of soil. The results revealed that among nutrient management practices, the application of 75% RDF + FYM 10 t ha⁻¹ being at par with 75% RDF + vermicompost 5 t ha⁻¹ recorded maximum growth and yield attributes, grain (24.14 and 21.74 q ha⁻¹, respectively), stover (81.75 and 75.24 q ha⁻¹, respectively) & biological yield (104.82 and 99.44 q ha⁻¹, respectively), nutrient content and NPK uptake of mustard. In contrast, the application 75% RDF + FYM 10 t ha⁻¹ exhibited maximum net return (43228.5 ₹ ha⁻¹) and B: C (1.05) of mustard.

Corn or maize (Zea mays L.) plays an important role in global food security. The many uses of corn make it a central commodity and a great influence on prices. Because of its worldwide distribution and relatively lower price, corn has a wider range of uses. It is used directly for human consumption, in industrially processed foods, as livestock feed, and in industrial nonfood products such as starches, acids, and alcohols. Recently, there has been interest in using maize for the production of ethanol as a substitute for petroleum-based fuels. It is an important source of carbohydrate, protein, iron, vitamin B, and minerals. Climate change, however, is a growing concern among corn growers worldwide. Scientists estimate that corn production will need to be increased by 15% per unit area between 2017 and 2037. To increase corn yields, advanced and new production technology needs to be developed and distributed among corn growers. The advanced technology to boost corn yields and counteract climate change is important for food security for the growing global population. Nutritionally, maize seeds contain 60-68% starch and 7-15% protein. Maize oil is widely used as a cooking medium and for manufacturing hydrogenated oil. The oil has the quality of reducing cholesterol in the human blood similar to sunflower oil. Corn flour is used as a thickening agent in the preparation of many edibles such as soups, sauces, and custard powder. Integrated nutrients management improves corn growth, leaf area index and light interception, dry matter accumulation and distribution, grain and fodder quality, yield components, grain and biomass yields, harvest index, and shelling percentage, and reduces the problem of food insecurity.

This book addresses in detail multifaceted approaches to boosting nutrient use efficiency (NUE) that are modified by plant interactions with environmental variables and combine physiological, microbial, biotechnological and agronomic aspects. Conveying an in-depth understanding of the topic will spark the development of new cultivars and strains to induce NUE, coupled with best management practices that will immensely benefit agricultural systems, safeguarding their soil, water, and air quality. Written by recognized experts in the field, the book is intended to provide students, scientists and policymakers with essential insights into holistic approaches to NUE, as well as an overview of some successful case studies. In the present understanding of agriculture, NUE represents a question of process optimization in response to the increasing fragility of our natural resources base and threats to food grain security across the globe. Further
improving nutrient use efficiency is a prerequisite to reducing production costs, expanding crop acreage into non-competitive marginal lands with low nutrient resources, and preventing environmental contamination. The nutrients most commonly limiting plant growth are N, P, K, S and micronutrients like Fe, Zn, B and Mo. NUE depends on the ability to efficiently take up the nutrient from the soil, but also on transport, storage, mobilization, usage within the plant and the environment. A number of approaches can help us to understand NUE as a whole. One involves adopting best crop management practices that take into account root-induced rhizosphere processes, which play a pivotal role in controlling nutrient dynamics in the soil-plant-atmosphere continuum. New technologies, from basic tools like leaf color charts to sophisticated sensor-based systems and laser land leveling, can reduce the dependency on laboratory assistance and manual labor. Another approach concerns the development of crop plants through genetic manipulations that allow them to take up and assimilate nutrients more efficiently, as well as identifying processes of plant responses to nutrient deficiency stress and exploring natural genetic variation. Though only recently introduced, the ability of microbial inoculants to induce NUE is gaining in importance, as the loss, immobilization, release and availability of nutrients are mediated by soil microbial processes.

Both nutrient scarcities and surpluses alike can threaten this balance.

Maintenance of soil health is an essential prerequisite for sustaining agricultural productivity. The continuous cropping coupled with low and imbalanced fertilizer use results in the deterioration of the native soil fertility and poses a serious threat to long term sustainability of the crop production. This situation can possibly be retrieved only through combined use of all sources of plant nutrients and by taking appropriate steps to increase the nutrient use efficiency. Integrated nutrient management (INM) is presently a seriously thought concept for proper plant growth, together with effective crop, water, soil, land and pest and disease management.
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managements critical for agriculture over the long term. At present, much attention is given to the integrated use of organic and mineral nutrition for meeting the economic needs of farmers as well as for sustainability in terms of productivity and soil fertility. Thus, considering it of paramount significance, an attempt has been made, in this book, to provide relevant information on the effect of integrated nutrient management on soil properties and crop yields in rice-niger sequence.

Seminar paper from the year 2017 in the subject Biology - Botany, grade 3, course: HORTICULTURE, language: English, abstract: This work focuses on horticulture, more precisely on integrated nutrient management in underground vegetable crops. Vegetable comprises large number of plants, consumed as leaf, fruits, flowers, stem, roots etc. They are rich in nutrients like carbohydrates, proteins, fats, minerals and vitamins. They are mostly cultivated around the year throughout the country. India is the second largest producer of vegetables next to China in the world. It is cultivated in an area of 9575 (‘000’ ha) with production of 166608 (‘000’ MT) with the productivity of 17.40 MT/ha (NHB, 2016). Nowadays, modern agriculture depends heavily on use of chemical fertilizers for boosting crop yield. However, indiscriminate use of fertilizers has an adverse effect on long term soil health and environment which has global attention. The realistic solution is Integrated Nutrient Management system are the combined application of chemical fertilizers, alongwith organic manure, green manure, bio-fertilizer and other organic recyclable materials for crop production. Vegetable comprises large number of plants, consumed as leaf, fruits, flowers, stem, roots etc. They are rich in nutrients like carbohydrates, proteins, fats, minerals and vitamins. They are mostly cultivated around the year throughout the country. India is the second largest producer of vegetables next to China in the world. It is cultivated in an area of 9575 (‘000’ ha) with production of 166608 (‘000’ MT) with the productivity of 17.40 MT/ha (NHB, 2016). Vegetable growing is the most remunerative enterprise as it is adopted on small and marginal holding with high production in short duration. Being a source of farm income, it creates impact on the agricultural development and economy of the country. Vegetables are cheaper source of minerals, vitamins and fiber with high calorific values. There is an increasing demand of vegetables both for domestic as well as for export, which can earn valuable foreign exchange for country.

Soils comprise the largest pool of terrestrial carbon and therefore are an important component of carbon storage in the biosphere-atmosphere system. Structure and Organic Matter Storage in Agricultural Soils explores the mechanisms and processes involved in the storage and sequestration of carbon in soils. Focusing on agricultural soils - from tropical to semi-arid types - this new book provides an in-depth look at structure, aggregation, and organic matter retention in world soils. The first two sections of the book introduce readers to the basic issues and scientific concepts, including soil structure, underlying mechanisms and processes, and the importance of agroecosystems as carbon regulators. The third section provides detailed discussions of soil aggregation and organic matter storage under various climates, soil types, and soil management practices. The fourth section addresses current strategies for enhancing organic matter storage in soil, modelling techniques, and measurement methods. Throughout the book, the importance of the soil structure-organic matter storage relationship is emphasized. Anyone involved in soil science, agriculture, agronomy, plant science, or greenhouse gas and global change studies should understand this relationship. Structure and Organic Matter Storage in Agricultural Soils provides an ideal source of information not only on the soil structure-storage relationship itself, but also on key research efforts and direct applications related to the storage of organic matter in agricultural soils.