

Agriculture Management using Organic Margosa (NFE): A Sustainable Agri-management Approach

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Abstract – Over-application of chemical inputs in the agriculture fields is the key source of soil as well as water pollution. Present agriculture practices required coordinated management system to overcome the environmental concerns as a result of the same. Therefore, development of management practices that not only undertakes such environmental concerns, but also promotes towards the productivity of crops will be required. Organic farming, Green manuring and Biodynamic agriculture are the fewever alternatives against this but economic viability and acceptance are the some limitations that have to be investigated in more detail for wider implementation of such practices. Therefore, there is a need to think sustainable so as to limit the frequent use of chemical fertilizers in agriculture fields as a preliminary step. Organic margosa (brown coloured crushed powder of *Pongamia pinnata* and *Azadirachta indica*) act as a Nitrogen Fertilizer Enhancer (NFE) that increases the availability of chemical fertilizers to the plants from soil thus limits the over-application of chemical fertilizers.

Keywords: *Organic Margosa, Pongamia pinnata and Azadirachta indica, Chemical inputs, NFE, Organic farming, Green manuring and Biodynamic agriculture.*

I. INTRODUCTION

Organic farming, Green manuring and Biodynamic agriculture are the few upcoming alternatives, offering against conventional farming practices based on chemical Inputs. The major concern behind such kind of introduction includes a decrease in soil fertility, ground water contamination, acid rain and depletion of the ozone layer, etc. [1]. Additionally, agricultural production releases residuals that may degrade the quality of the water resources and impose costs on water users [2]. However, applications of these practices are in their beginning phase and their wider acceptability is a big question due to economic as well as other concerns like lack of skilled persons, awareness, and market for organic products, etc. Therefore, understanding the real situation of agriculture market with special reference to developing countries needs an alternative. The concept of major understanding is to trace the probable reasons behind the environmental deterioration caused by chemical agents used in the agriculture fields. The prominent reason behind this is an over-application of chemical fertilizers in lieu of higher productivity that raises environmental concerns due to their recalcitrating nature [3].

II. LITERATURE REVIEW

Presently complete replacement of chemical fertilizers with organic inputs is a challenging task, thus alternative to this effort can be made to introduce such type of botanical agents that can increase the bioavailability of these chemical inputs [3]. A/c to Wallace and Knausenberger (1997), Inorganic fertilizer use must be combined with other agronomic management practices for efficient nutrient utilization [4]. A/c to FAO, Organic management practices include soil management, Pest management and post harvest practices [5]. In the line of same Sustainable agriculture practices/ Best Management Practices (BMPs) could offer a better alternative. Sustainable development deals with the development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" [6]. Concept of Sustainable development relies on the concept of social, economic, environmental and institutional dimensions with three main goals, i.e., environmental health, economic profitability, and social and economic equity [7]. Sustainable cropland management practices include Agronomy, Integrated Nutrient Management, Tillage & Nutrient Management, Water management and Agroforestry [8]. Key components of Sustainable Agriculture management practices include Farming and Natural Resources (*Water quality, supply and use; Wildlife; Energy; Air; Soil etc.*); Plant Production Practices (*Site, Species and Variety selection; Soil management; Efficient use of inputs etc.*); Animal Production Practices (*Animal selection, nutrition and reproduction; Grazing management; Confined livestock production and Herd health*) and The Economic, Social & Political Context (*Food and Agricultural policy; Rural Community Development; Land use, and Labor etc.*) [9].

A set of management practices to reduce the potentially negative impact of agricultural operations (like IPM, Water management, good housekeeping and Safety related to chemical uses) are termed as Best management practices [10]. A/c to Brown et al., the major objective of BMPs is management of inputs (like pests, nutrients & wastes; coupled with tillage practices and structural practices) to provide for economic, environmental and agronomic efficiency [11]. Agricultural BMPs are site specific and economically feasible those are applied by farmers while accounting for environmental and public health impacts [12]. Agricultural BMPs are cost-effective actions that can be adopted by

agricultural producers in order to reduce the amount of pesticides, fertilizers, animal waste, and other pollutants entering into water resources [13].

After reviewing the current status of agriculture farming practices, we came up with a bioformulation (Organic Margosa) as a sustainable alternative [3] that increases the availability of chemical fertilizer in the crop field, thus limits the over-application of such chemical Inputs.

III. RESULTS AND DISCUSSION

Margosa” a purely Organic and Natural Eco-friendly Nitrogen fertilizer enhancer (NFE) is an extensive research based Novel Organic product with Neem (*Azadirachta indica*) and Karanj seeds (*Pongamia Pinnata*) as its major constituents. Organic Margosa have following attributes in the agriculture field: Nutrient supplement for different macro and micro-nutrients; Soil binder; Eliminates denitrifying bacteria; pH mordant; accelerates NPK uptake; Effective insecticidal/pesticidal and plant parasitic anti-Nematodal agent; an ideal candidate for alkaline, acidic, black cotton, light soil and submerged conditions when applied with chemical fertilizers due to its natural pH mordant activities; reduces leaching of essential nutrients in soil, etc. and also provides additional benefits associated with biomimetic Nanoparticles, Mycorrhizal and Trichoderma spores. Organic Margosa can be applied as Basal application, Top dressing, Plough sole placement, deep placement, localized placement, Hill placement, row placement, and pellet application.

IV. CONCLUSION

Agriculture is one of the important sources of income for developing countries like India, which is an agriculturally primed nation. Thus the economic status of the farmers majorly relies on the agricultural production. Therefore, there is a need to think sustainably and strong implementation towards managing agricultural practices will be requisite.

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