RESEARCH PAPER | Biotechnology | Volume : 5 | Issue : 2 | Feb 2015 | ISSN - 2249-555X

Organic farming management for vegetable production in rural areas

KEYWORDS: organic agriculture, farm yard manure, biofertilizer, biopesticide,

RenuYadav
Amity Institute of Science Innovation & Technology, Amity University, Noida

ArchanaYadav
Amity Institute of Biotechnology, Amity University, NOIDA

ABSTRACT *Growing populations and a constrained fossil-manufactured energy supply present a major challenge for society and there is a real need to develop forms of agriculture. It has been suggested that organic agriculture can provide a more energy efficient approach due to its focus on sustainable production methods. The economics of organic vegetable production is difficult to assess fairly, since the value of certain indirect benefits, such as an improvement in soil structure, or a reduction in risks associated with pesticide use, are hard to quantify and are never reflected in enterprise budgets.Organic vegetable production is important for economic uplifting of farm community. Different biofertilizers, farm Yard manure and biopesticides had differential effects in yield and disease suppression of vegetables but mixture of more than one will be effective in controlling major diseases and better yield of crops. Thus, this study showed that there is wide scope for use of farm yard manure, biopesticides and biofertilizers in organic vegetable production.*

Introduction:
Vegetables are great significance source of vitamins, minerals and plant proteins in human diet all over the world. Vegetable cultivation is one of the more efficient and major branches of agriculture& of economic values as well. At the same time vegetable cultivation is becoming costly due to increasing use of purchased inputs such as fertilizers, pesticides etc. Lack of adequate nutrient supply & poor soil structure are the main constraints to low productivity of vegetables. High value vegetable crops provide poor farmers the opportunity to derive additional income and increase enterprise stability through crop diversification High value crops generally refer to non-staple agricultural crops such as vegetables, fruits, flowers, ornamentals, condiments and spices. Most high value agricultural crops are those known to have a higher net return per hectare of land than staples or other widely grown crops. They therefore generally have a monetary value higher than staple crops in emerging and expanding local, national, regional and global markets. High value crops and products present an ideal opportunity for the poor in many developing countries to increase their income by participation in commodity value chains, provided there is effective rdination to ensure that supply is in relative balance with demand.

The production of vegetable crops would have been much higher if proper attention was paid to soil fertility by application of organic manures. Chemical fertilizers are not the most appropriate solution to overcome these constraints especially as vegetable crop have short season and are consumed fresh. Uses of chemical fertilizers are also expensive and threat to human health. So it is suggested that there should be more emphasis on finding alternative to chemical fertilizers such as farm yard manure, vermicompost and bio-fertilizers.

The growers, out of ignorance, and with the motive to get instant results with high yield are at times compelled to switch on to applying toxic chemical pesticides which result in damaging the health of soil with reducing the beneficial microbes as well. The proposed study aims to constitutes an ideal, eco-friendly alternative to the conventional, expensive and hazardous chemical-based farming that is still in practice today. In recent years, there has been world wide swing in the use of organic farming. The striking feature of all the above components is environment friendly and easily biodegradable there by resulting in lower pesticide residue and pollution problems associated with chemical farming. The proposed study is an attempt for evolving bio organic package against pest and diseases as an alternative to the conventional chemical based farming to achieve the mission by including all the sustainable components in the management programme.

Farm yard manure
Farmyard manure is a varying mixture of animal manure, urine, bedding material, fodder residues, and other components – is the most common form of organic manure applied in the field. The high organic matter content and the active soil life improve or maintain friable soil structures, increase the cation exchange capacity, water holding capacity, and infiltration rate, and reducing the risk of soil pests building up.

Vermicompost
Vermicompost has found to effectively enhance the root formation, elongation of stem and production of biomass, vegetables, ornamental plants etc.(Grappelli et al., 1985; Bano et al., 1993; Atiyeh et al., 1999). One of the unique features of vermicompost is that during the process of conversion of various organic wastes by earthworms, many of the nutrients are changed to their available forms in order to make them easily utilizable by plants. Therefore, vermicomposts have higher level of available nutrients like nitrate or ammonium nitrogen, exchangeable phosphorous and soluble potassium, calcium and magnesium derived from the wastes (Buchanan et al., 1988). These distinctive properties can be utilized in considering vermicompost as a suitable carrier for the bioformulation and as a important soil fertilizers.

BiopesticideWith the increased environmental awareness and the pollution potential and health hazards from many of the conventional pesticides, the demand for nature-based biopesticides has been increasing steadily worldwide.Biological control agents colonize the rhizosphere the

Volume : 5 | Issue : 2 | Feb 2015 | ISSN - 2249-555X

site of requiring protection and leave no residue as opposed to chemicals (Chet and Baker, 1981). As potentional antagonistic fungal bio agents, the filamentous Deuteromycetes fungi *Trichoderma sp.*, The species of *Tricoderma*have been evaluated against wilt , root rot fungi and root knot nematode under glass house and field conditions and reported to give results (Chet, 1987, Kaur and Mukhopadhay 1992, Goswami et al 2005). Several isolates of *Tricoderma* against the all pathogenic soil borne fungi and root knot nematode showed outstanding results in combating soil borne diseases problems (Shankar and Jeyarajan, 1996).

Oil seed cakes:
Neem (Aradirachtaindica), widely used for management of root knot nematodes infecting vegetables and pulses (Goswami and Swarup, 1971;) and also soil borne fungi viz wilt, root rot etc (Sharma and Bedi, 1988) combinations of oil seed cake and nematicides in reducing nematode population and improving plant health.(Bhattacharya and Goswami, 1988;) neem oil seed cake have also been recorded to be fungicide, oil seed cake was reported to enhance the prolification of the spores of Glomus fasiculatum (Lingaraju and Goswami, 1995).

Simply substituting organically-allowed fertilizers and pesticides for conventional materials does not create a more ecologically stable farming system. The 'substitution approach' usually raises production costs and reduces marketable yield since organic inputs often cost more and don't work as quickly as their synthetic counterparts. To succeed with organic farming you've got to 'buy into' a farming system that values long term yield stability and pest avoidance over maximum short term production. The attributes of a such a farming system include: plant diversity, healthy soil, reliance on cultural practices for pest control, and minimal use of least-toxic external inputs. Essential organic vegetable production practices include: crop rotation, use of green manures and compost, pest prevention, and mechanical weed control. Crop rotation is at the core of ecological stability on vegetable farms. Yet most vegetable growers, including many organic growers, do not practice rigorous crop rotation. Instead, they tend to follow a minimal rotation with the goal of moving plant families around the farm so that a field rests for a few years between related crops. In most cases this is done using a flexible 'seat of the pants' plan rather than a systematic one, so the rules get bent as needed to accommodate production constraints like weather, labor and equipment. In addition, rotation is mostly among the cash crops - little land is ever taken out of crop production. Maximizing the rotation effect - which benefits soil fertility as well as insect, disease and weed control - is essential to successful organic vegetable production over the long-term. Cover crops and cash crops must be intentionally integrated into the rotation, ideally in equal proportions. At a minimum, I'd suggest that a quarter of a farm's tillable land should be 'resting' from vegetable production at any given time if an organic system is to succeed over the long-term. Putting together a clear and workable rotation plan that suits the farm's market, climate, and available equipment and labor is essential to 'going organic'. Obviously, a rotation plan must have flexibility in terms of which cash crops and cover crops get planted in a given year, and sequences will be refined and improved over time, but the basic rotation should never ignored.Organic residues are those that contain carbon: cover crops or green manures, animal manures, crop residues, and off-farm residues such as yard waste, aquatic weeds, food by-products, etc. Compost is produced from a mixture of these ingredients. Ideally, an organic vegetable farm utilizes a variety of cover crops as well as a variety of other residues that have been composted to stabilize nutrients and minimize weed seeds and pathogens. Which residues are utilized depends of the cost of acquisition and handling, and the nutrient needs of the crops. Organic farms often have considerable expenses associated managing organic residues. As with conventional management, managing the mineral nutrition of crops is critical to successful organic management. Organic farms should soil test regularly, lime to the proper pH, and broadcast phosphorus, potassium and magnesium as required. A variety of cost-effective materials are generally allowed under organic standards. Limestone is a source of calcium and magnesium, gypsum can be used to supply calcium, sul-po-mag supplies potassium and magnesium, mined potassium sulfate supplies potassium. Correcting a severe phosphorus deficiency can be costly since rock phosphate is the material most likely to be applied in large quantities, although this is often a one-time expense. When soil organic matter and/or mineralization is low, it may be necessary to sidedress organic nitrogen fertilizer. This can also be expensive, since approved materials such as dried blood, alfalfa meal, or pelletized chicken manure cost more than synthetic sources. However, properly timed applications of small quantities are often sufficient to supplement the release of nitrogen from soil organic matter and added residues. Trace elements such as copper, iron and zinc are generally permitted to be applied as chelates if needed, and boron can be applied as borax or solubor. Disease management on organic farms relies on a combination of preventative techniques. Along with rotation, sanitation through the prompt removal of disease plants and the incorporation of crop residues is important. Practices that enhance prompt drying of foliage, such as wide row spacing and drip versus overhead irrigation, are desirable. Promoting drainage of soil though raised beds and subsoiling is helpful on heavy soils. Use of resistant varieties is obviously desirable, too. Fungicides that may be allowed organically include many copper and sulfur compounds, and some newer materials including potassium bicarbonate, hydrogen dioxide, and a variety of biological fungicides containing species of *Trichoderma, Bacillus, Gliocladium, Streptomyces* and other beneficial microbes. In addition, the price premium that growers may receive for producing a wholesale commodity organically is about as volatile as vegetable prices in general. For the long term of organic agriculture management protect the environment, minimize soil degradation and erosion, decrease pollution, optimize biological productivity and promote a sound state of health, maintain long-term soil fertility by optimizing conditions for biological activity within the soil, maintain biological diversity within the system, recycle materials and resources to the greatest extent possible within the enterprise, provide attentive care that promotes the health and meets the behavioural needs of livestock , prepare organic products, emphasizing careful processing, and handling methods in order to maintain the organic integrity and vital qualities of the products at all stages of production and rely on renewable resources in locally organized agricultural .

Volume : 5 | Issue : 2 | Feb 2015 | ISSN - 2249-555X

REFERENCE

• Buchanan, D., Boddy, D. & Mc Calman, J. (1988) Getting In, Getting On, Getting Out and Getting Back, In Bryman, A. ed. Doing Research in Organisations, pp. 53-67, London: Routledge | • Chet I (1987)Trichoderma: application, mode of action and potential as a biocontrol agent of soilborneplantpathogenic fungi, p. 137–160.InI. Chet (ed.), Innovative approaches to plant disease control. John Wiley & Sons, New York | • Kaur N.P. and Mukhopadhyay, A.N.(1992).Integrated control of chickpea wilt-complex by Trichoderma and chemical methods in India. Trop.pest Management 38: 20-23. | • B. N. Goswami and Prince K. Xavier ENSO control on the south Asian monsoon through the length of the rainy season .Geophysical research Letter Vol.3210;1029. | • Sankar P. and Jeyarajan, R. 1996 Biological control of sesamum root rot by seed treatment with Trichodermaspp and Bacillussubtilis. Indian Journal of Mycology and Plant Pathology. 26: 217-220 | | • Sharma J.R., Bedi P.S. 1988. Effect of soil amendment with oil cakes on wilt of cotton.J. PUNJAB AGRIC. RES 23:414-416 | | • Goswami,B.K. and G.Swarup: (1971) effect of oilcakes amended soil on the growth of tomato and root knot nematode population.IndianPhyt-opath.,24,491. | | • Lingaraju, S. and Goswami, B.K.Studies on the effect of neem and mustard oil-seed cakes on cowpea in Glomus fasciculatumRotylenchulusreniformis interaction. Indian Phytopath. 51 (1) | : 33-37, 1995 | • Bhattacharya,D., Goswami,B.K. (1988) a study on the comparative efficacy of neem and groundnut oil cakes against root knot Meloidoygne incognita as influenced by microorganism on sterilized and unsrelized soil. Indian Journal of nematology 17(1):81-83 | • Grappelli ,A.Tomati, V. Galli,E&Vergari,B. (1985) Earthworm casting in plant propogation.Horticulture science,20;874-876. | • Chat,I.&baker,R. (1981) Isolation and biocontrol potential of Trichodermahamatum from soil naturally suppressive to Rhizoctoniasolani.Phytopathology 71:286-290. |