e-ISSN: 2347-226X
p-ISSN: 2319-9857

Research & Reviews: Journal of Agriculture and Allied Sciences

Bio Pesticides Approach for Pest Management

Gautami J[1*], Sandhyasree M[2], Revathi B[3]

1Department of Pharmaceutics, SRM University, Chennai, Tamil nadu, India
2Department of Pharmacology, Nagarjuna university, Guntur, Ap, India
3Department of Pharmaceutcial Chemistry, Osmania University, TS, India

Commentary Article

Received: 11/04/2015
Revised: 15/04/2015
Accepted: 28/04/2015

***For Correspondence**

Gautami J, Department of Pharmaceutics, SRM University, Chennai, Tamil Nadu, India,
Tel: 09177292836

Email: gautamijampa@yahoo.com

ABSTRACT

Agricultural practices such as application of fertilizers and pesticides were developed long ago but with great progress. Modern agricultural practices like chemical pest control will yeild good production. So we have to protect our environment from the harmful chemicals. Biopesticides was used as a component of Integrated Pest Management programs these bio pesticides can greatly decrease the use of conventional pesticides, while crop yields remain high. Bio pesticides are usually inherently less toxic than conventional pesticides and are effective in very small quantities and decompose quickly resulting in lower exposures, no residues and environment friendly. Safer to use for plants and animals.

INTRODUCTION

Bio pesticides are certain types of pesticides that are derived from natural materials like plants, bacteria, fungi and virus, and certain minerals. Integrated Pest Management (IPM) is an effective, long term, environmentally sensitive approach to pest management.[1-3]

2.1 Classes of Bio Pesticides: [4-7]

- Microbial pesticides
- Plant-Incorporated-Protectants (PIPs)
- Biochemical pesticides

2.2 Advantages: [8-15]

- Bio pesticides often are effective in very small quantities and often decompose quickly.
- They generally affect only the target pest and closely related organisms.
- Bio pesticides can greatly decrease the use of conventional pesticides, while crop yields remain high.

DISCUSSION

Microbial pesticides comprise of a micro organisms the dynamic ingredient it can control various sorts of pests. The most generally utilized microbial pesticides are subspecies and strains of *Bacillus thuringiensis*.[16-20]

Plant-incorporated protectants are pesticidal substances created by plants and the hereditary material important for the plant to deliver the substance. For instance, researchers can take the gene for a particular the *Bacillus thuringiensis*pesticidal protein, and bring the quality into the plant's own hereditary material and control the pest .Biochemical pesticides characteristically controls pest by non toxic mechanism.[21-30]

Synthetic pesticides are used for pest control but synthetic pesticides will leave undesirable residues in food and water, alternative to synthetic chemical pest control includes Natural Control, Cultural Control, Biological Control, Alternative Chemicals, pheromone traps, and trap crops. These techniques will suppress the pests over time and they can reproduce themselves and keep growing, but for using this techniques more knowledge and attention is required cost is higher. To overcome the disadvantages of these techniques IPM was used to control pests.[31-38]

Integrated Pest Management: Is an effective and environmentally sensitive approach to *pest management.*IPM is used in agriculture, horticulture and pest control.[39-40]

Advantages [41-45]

- Long term prevention of pests
- Natural pest control mechanism
- Growth of healthy crops with least disruption to ecosystem.
- IPM is used at any level of agriculture
- Minimize pesticide use and less toxic

Four steps included in IPM [46-50]

- Action Thresholds
- Monitoring and Identifying Pests
- Prevention
- Control-Cultural controls, Biological control, Mechanical and physical controls, Chemical Management tools.

CONCLUSION

Biopesticides which can be effectively used in agriculture at a large scale. Also increasing health consciousness of Indian citizens have created a demand of organic food. This indicates huge scope for Bio Pesticides for pest management and enhancing crop productivity.

REFERENCES

1 Tang S. Developing and Analysing Pest-natural Enemy Systems with IPM Strategies. J BiofertilBiopestici. 2012 ; 3:e101.

2 Brar SK, Kaur S, Dhillon GS, Verma M. Biopesticides - Road to Agricultural Recovery. J BiofertlBiopestici. 2012; 3:e103.

3 Alarcón A, Hernández-Cuevas LV, Ferrera-Cerrato R, Franco-Ramírez A. Diversity and Agricultural Applications of ArbuscularMycorrhizal Fungi in Mexico. J BiofertilBiopestici . 2012; 3:115.

4 Densilin DM, Srinivasan S, Manju P, Sudha S. Effect of Individual and Combined Application of Biofertilizers, Inorganic Fertilizer and Vermicompost on the Biochemical Constituents of Chilli (Ns - 1701). J BiofertilBiopestici. 2011; 2:106.

5 Pandit NP, Ahmad N, Maheshwari SK. Vermicomposting Biotechnology: An Eco-Loving Approach for Recycling of Solid Organic Wastes into Valuable Biofertilizers. J BiofertilBiopestici. 2012; 2:113.

6 Ritu A, Anjali C, Nidhi T, Sheetal P, Deepak B. Biopesticidal Formulation of BeauveriaBassiana Effective against Larvae of HelicoverpaArmigera. J BiofertilBiopestici . 2012; 3:120.

7 Maiti D. Improving Activity of Native ArbuscularMycorrhizal Fungi (AMF) for Mycorrhizal Benefits in Agriculture: Status and Prospect. J BiofertilBiopestici. 2011; S1:001.

8 Singh A, Khare A, Singh AP. Use of Vegetable Oils as Biopesticide in Grain Protection -A Review. J BiofertilBiopestici. 2012; 3:114.

9 Kumar S .Biopesticide: An Environment Friendly Pest Management Strategy. J BiofertilBiopestici. 2015; 6: e127.

10 Jhala YK, Shelat HN, Vyas RV, PanpatteDG . Biodiversity of Endorhizospheric Plant Growth Promoting Bacteria. J Biofertil Biopestici.2015; 6:151.

11 Bindhu VR, Ganga S, DayanandanS . Mortality Effects of Some Medicinal Plants on the Pulse Beetle Callosobruchuschinensis (Coleoptera: Bruchidae). J Biofertil Biopestici.2015; 6:150.

12 Navaneetha T, Prasad RD, RaoVL . Liquid Formulation of Trichoderma Species for Management of Gray Mold in Castor (Ricinuscommunis L.) and Alternaria Leaf Blight in Sunflower (Helianthus annuus L.). J Biofertil Biopestici.2015; 6:149.

13 Pras ad , Har ees h, D ' s ouza, Manjunat h, Jaya ram a. E valu at ion of Bio -inoculants Enriched Marginal Soils as Potting Mixture in Coffee Nursery. J Biofertil Biopestici.2015; 6:148.

14 Sreerag, Jayaprakas . Management of Two Major Sucking Pests Using Neem Oil Formulation. J Biofertil Biopestici.2015; 6:147.

15 Elbanna K, Gamal-Eldin H, Abuzaed E. Characterization of Egyptian Fluorescent Rhizosphere Pseudomonad Isolates with High Nematicidal Activity against the Plant Parasitic Nematode Meloidogyne Incognita. J Biofertil Biopestici.2010; 1:102.

16 Densilin DM, Srinivasan S, Manju P, Sudha S. Effect of Individual and Combined Application of Biofertilizers, Inorganic Fertilizer and Vermicompost on the Biochemical Constituents of Chilli (Ns - 1701). J Biofertil Biopestici.2011; 2:106.

17 Pandiarajan G, Balaiah NT, Kumar BM. Exploration of Different Azospirillum Strains from Various Crop Soils of SrivilliputturTaluk. J Biofertil Biopestici.2012; 3:117.

18 Al-shannaf HM, Mead HM, Hassan Sabry AK. Toxic and Biochemical Effects of Some Bioinsecticides and Igrs on American Bollworm, Helicoverpaarmigera (hÃ¼b.) (noctuidae: lepidoptera) in Cotton Fields. J Biofertil Biopestici.2012; 3:118.

19 Torres JB . Insecticide Resistance in Natural Enemies - Seeking for Integration of Chemical and Biological Controls. J Biofert Biopest.2012; 3:e104.

20 Praveen Kumar G, Desai S, Leo Daniel Amalraj E, Mir Hassan Ahmed SK, Reddy G .Plant Growth Promoting Pseudomonas spp. from Diverse Agro-Ecosystems of India for Sorghum bicolor L. J Biofert Biopest.2012; S7:001.

21 Kumar S Biopesticides: A Need for Food and Environmental Safety. J Biofertil Biopestici.2012; 3:e107.

22 Balac ha nd arD . Bi ofert ili ze rs â€ " Wh at N ext ? J Biofert il Bio pest ic i.2 0 1 2 ; 3 : e10 8 .

23 Khan AM, Khan AA, Afzal M, Iqbal MS .Wheat Crop Yield Losses Caused by the Aphids Infestation. J Biofertil Biopestici.2012; 3:122.

24 Pindi PK, SatyanarayanaSDV . Liquid Microbial Consortium- A Potential Tool for Sustainable Soil Health. J Biofertil Biopestici.2012; 3:124.

25 Poopathi S. Current Trends in the Control of Mosquito Vectors by Means of Biological Larvicides. J Biofertil Biopestici.2012; 3:125.

26 Khan AA, Abbasi AB, Bibi R, Iqbal MS, Sherani J, et al. Assessment of CalotropisProceraAiton and Datura alba Nees Leaves Extracts as Bio-Insecticides Against TriboliumcastaneumHerbst in Stored Wheat TriticumAestivum L. J Biofertil Biopestici.2012; 3:126.

27 Raja N .Biopesticides and Biofertilizers: Ecofriendly Sources for Sustainable Agriculture. J Biofertil Biopestici.2013; 4:e112.

28 Paul N, Cruz PC, Aguilar EA, Badayos RB, Hafele S. Evaluation of Biofertilizers in Cultured Rice. J Biofertil Biopestici.2013; 4:133.

29 KarunamoorthiK . Medicinal and Aromatic Plants: A Major Source of Green Pesticides/Risk-Reduced Pesticides. Med Aromat Plants.2012; 1:e137.

30 Sarkar M, KshirsagarR.Botanical Pesticides: Current Challenges and Reverse Pharmacological Approach for Future Discoveries. J Biofertil Biopestici.2014; 5:1000e125.

31 Bekele D, Petros B, Tekie H, AsfawZ .Larvicidal and Adulticidal Effects of Extracts from Some Indigenous Plants against the Malaria Vector, Anopheles Arabiensis (Diptera: Culicidae) in Ethiopia. J Biofertil Biopestici.2014; 5:144.

32 Selvakumar G, Panneerselvam P, GaneshamurthyAN .Biosafety of Novel Bioinoculants. J Biofertil Biopestici.2014; 5:145.

33 Chandra KK. Growth, Fruit Yield and Disease Index of Carica papaya L. Inoculated with Pseudomonas straita and Inorganic Fertilizers. J Biofertil Biopestici.2014; 5:146.

34 Pavan Kumar P, Satyanarayana SDV .Soil Microbial Exploration for the Efficient Exploitation of Unknown Culturable PGPR for Geographically Similar Crop Lands. J Biofertil Biopestici.2014; 5:e118.

35 Vinale F. Biopesticides and Biofertilizers Based on Fungal Secondary Metabolites. J Biofertil Biopestici.2014; 5:e119.

36 Das RK, Sarma SJ, Brar SK, Verma M (2014) Nanoformulation of Insecticides - Novel Products. J BiofertilBiopestici 5:e120.

37 Deivasigamani S. Influence on Certain Herbicides for the Control of Water Hyacinth (EichhorniaCrassipes (Mart.) Solms) and its Impact on Fish Mortality. J BiofertilBiopestici .2013;4: 138.

38 Kasiotis KM (2013) Biopesticides Analysis: An Editorial. J BiofertilBiopestici 4:e115.

39 Kumar S .The Role of Biopesticides in Sustainably Feeding the Nine Billion Global Populations. J Biofertil Biopestici.2013; 4:e114.

40 da Silva CV, Schneider LCL, Conte H .Toxicity and Residual Activity of a Commercial Formulation of Oil from Neem, Azadirachtaindica A. Juss. (Meliaceae), in the Embryonic Development of Diatraeasaccharalis F. (Lepidoptera: Crambidae). J Biofertil Biopestici.2013; 4:131.

41 Namasivayam KR, Bharani RSA, Ansari MR. Natural Occurrence of Potential Fungal BiopesticideNomuraeaRileyi (Farlow) Samson Associated with Agriculture Fields of Tamil Nadu, India and it â€™s Compat ib ilit y wit h Met allic N anopa rt ic les . J Bi ofert il Bi op est ic i.2 0 1 3 ; 4 :1 32 .

42 Gandhi A, Sundari US. Effect of Vermicompost Prepared from Aquatic Weeds on Growth and Yield of Eggplant (Solanummelongena L.). J Biofertil Biopestici.2012; 3:128.

43 Messele B, Pant LM. Effects of Inoculation of Sinorhizobiumciceri and Phosphate Solubilizing Bacteria on Nodulation, Yield and Nitrogen and Phosphorus Uptake of Chickpea (Cicerarietinum L.) in ShoaRobit Area. J Biofertil Biopestici.2012; 3:129.

44 Lulie N, Raja N. Evaluation of Certain Botanical Preparations against African Bollworm, HelicoverpaarmigeraHubner (Lepidoptera: noctuidae) and Non Target Organisms in Chickpea, Cicerarietinum L. J Biofertil Biopestici.2013; 3:130.

45 Fettig CJ, Bulaon BM, Dabney CP, Hayes CJ, et al. Verbenone Plus Reduces Levels of Tree Mortality Attributed to Mountain Pine Beetle InfestationsinWhitebark Pine, a Tree Species of Concern. J Biofertil Biopestici.2012; 3:123.

46 Elumalai LK, Rengasamy R. Synergistic Effect of Seaweed Manure and Bacillus sp. on Growth and Biochemical Constituents of Vignaradiata L. J Biofertil Biopestici.2012; 3:121.

47 Hongzhang C, Yumei W, Shuhua D. Production of Protein Feed from Sweet Sorghum Stalk by the Two-Step Solid State Fermentation. J Biofertil Biopestici.2010; 3:112.

48 Alarcón A, Hernández-Cuevas LV, Ferrera-Cerrato R, Franco-Ramírez A. Diversity and Agricultural Applications of ArbuscularMycorrhizal Fungi in Mexico. J Biofertil Biopestici.2010; 3:115.

49 Agrawal S, Pathak RK. Response of Phosphate Solubilizing Microorganism on Quality of Wheat (TriticumAestivum L.) Plant Grown Conventionally in Temperate Climate. J Biofertil Biopestici.2010; 3:110.

50 Leo Daniel AE, Praveen Kumar G, Desai S, Mir Hassan ASK. In vitro Characterization of Trichodermaviride for Abiotic Stress Tolerance and Field Evaluation against Root Rot Disease in Vignamungo L. J Biofertil Biopestici.2011; 3:111.

1.