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Ecofriendly insects and importance in agriculture

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Abstract
Many more beneficial insects found in agriculture land those are not threat to the crop production but beneficial to the farmers in different aspects, as natural enemies, pollinators, productive insects, scavengers, weed killer and soil builders in present scenario to motivate the farmers in agriculture doubling income sources. To prevent harmful insecticide spray and manage pests resurgence and effects of insecticides in farmer health reduce. Uses many tactics to increases the natural enemies or beneficial insects in very useful to agriculture.

Keywords: motivate, farmer health, doubling income, natural enemies, weed killer

Introduction

Beneficial insects very helpful to food produce in agriculture. They help crop pollination and as a important roles in natural enemies. Enhance the natural enemies to helpful in ecosystem, environment. Natural enemies to reduce the cost of plant protection against the harmful insect pests. Beneficial insects to regular monitoring the harmful insect pests population and conserve farmer time. They produce natural products, and they also dispose the waste and recycle the organic nutrients. Some beneficial insect to provide large amount of beneficial products to very useful to human.

Requirements for Enhancing Beneficial Insects

Generally broad spectrum pesticide spray to reduce the natural enemies and flare back or resurgence of harmful insect pests and reduce the diversity of organisms. The enhance agro ecosystem appears to be one of the best ways in which we can decrease the use of chemical pesticides for pest and disease control. So, will be proper uses of pesticides and other harmful chemical.

Different type of beneficial insects

European honey bee (*Apis meliffera* L.) is broad area covered in pollination. Non-*Apis* bees also are important pollinators of crops, especially for crops in which honey bees are inefficient pollinators (e.g. alfalfa, squash). A few non-*Apis* species are managed for crop pollination. Examples of managed non-*Apis* species include bumble bees, *Bombus impatiens* Cresson (Hymenoptera: Apidae) managed for cranberry (*Vaccinium* spp.) and greenhouse tomato (*Solanum lycopersicum* L.) pollination. Although bees are considered the most effective insect-pollinator of most plant species, other insects have been recognized for their contributions to pollination. Flower visiting flies (Diptera) have been documented as proficient pollinators of several crops including carrot (*Dacus carota* L.), mustard (*Brassica* spp.), leek, (*Allium ampeloprasum* L.), and almond (*Prunis dulcis*) (Gitanjaly *et al.*, 2015) [4].

Pollinators: Pollinators are most important role in pollination to different crops and increase the crop yield. They pollinate the flowers to give him a pollen and nectar. Flower visit to the insects to carried flower to flower pollen and very useful to seed filling and increases the yield. Insect-mediated pollination is an essential step in reproduction for the majority of the world's flowering plants, including numerous cultivated plant species *i.e.* Sunflower, Cucurbitaceous vegetables, Alfalfa, Coriander, etc.(Gitanjaly *et al.*, 2015) [4]. Many crops depend on pollination for seed production and fruit set to achieve good yield. Globally, an estimated 35% of crop production is a result of insect pollination.

Weevil (*Elaeidobius kamerunicus*) plays important role in pollination of Oil palm. Fig wasps are responsible for the pollination in both Smyra and Capri Fig Plantation (Hilton, 2000) [5].

Soil Builders: Many insect make soil tunnels, creating channels for smaller organisms, water, air, and roots to travel through. Insects improves soil aeration, and earthworm activity
can enhance soil nutrient cycle, the soil physical properties and others. Excreta of insets also enrich the soil. Examples- Ants, Termites, Beetles, Cut-worms, etc.

Natural Enemies: Insect predators and parasitoids that attack and feed on other insects also known as natural enemies. Through predation of predators to regulation insect population. All sense known as biological control. Natural enemies responsible nearby 33% of the natural pest control in cultivated systems. Predaceous natural enemies belong to two orders hymenoptera and diptera. several insect orders and are generally characterized as free-living, mobile, larger than their insect prey, and are able consume several preys throughout their life cycle. All predators and parasitoids is the age or stage specific. Beyond natural biological control, natural enemies can be manipulated as part of integrated pest management programs through the importation and establishment of exotic natural enemy species (classical biological control), direct manipulation of populations (augmentative biological control), and, more pertinent to this

research, through manipulation of their environment (conservation biological control) (Pickett and Bugg, 1998) [7].

Scavengers: Insects which feed on dead and decaying matter of plants and animals are called as scavengers. Examples: Bark beetle, water scavenger beetle, etc (Ross *et al.*, 1982) [8].

Weed Killers: Many insect feeds on different weeds plants. In many cases the occurrence of these insects has contributed much towards eradication of the weeds.

Products of Beneficial Insects

Honey and Bee Wax

Honey is the food material for the bees and their larvae. It is also collected from fruit juice, cane juice etc. Chemically, honey is a viscous water solution of sugar. Nectar is sucked from flowers and mixed with saliva. It is swallowed into a special region of the gut, called honey stomach. Inside the hive the workers regurgitate the processed nectar. The honey produced initially is very dilute, hence after placing it in storage cells of the hive, the bees "fan" it with their wings to evaporate the excess water and bring the honey to its required concentration. In present, the developing markets are available for the other two products (Bee pollen and royal jelly) from honey. The bee pollen collect by pollen trap from ingoing pollen foragers. It is rich protein source. Bee pollen is a "complete" and good supplement in diet. It is available in health food stores. The royal jelly is secreted by gland of nurse bees when the glands are fully active. It is very nutritious food and is fed to the young workers larvae and queen larvae and adult. Royal jelly is milky and light pale in color. And it is also a good ingredient of some expensive skin care products, which helps in reducing wrinkles and works as anti aging.

Royal jelly

It is used as a medicine for the treatment of human influenza, high blood pressure and respiratory infections. It is used a component in some skin care products. It is believed to have some anti-aging properties. The single protein royal- actin present in royal jelly is responsible for developing a queen bee.

Bee venom or Apitoxin

The poison of honey bee is used in the treatment of rheumatism, arthritis, etc. of man.

Silk

A unique natural fiber silk cloth, which usually derives from silkworm, *Bombyx mori*. Cloth of Silk is warm in winters, cool in summers, light in weight, and resistant to wrinkling. This "domestic" silk is famous for its finishing and light colors. Silk can be dyed, spun, in to thread and woven in to fabric (Gitanjaly *et al.,* 2015) [4].

Shellac

Lac is the scarlet red resinous secretion of a number of species of lac insects, of which the most commonly cultivated species is *Kerria lacca*. It is only known commercial resin of animal origin. Lac produced is a mixture of resin, dye and wax. Rearing of lac insects for commercial production of the lac is called as lac culture. Cultivation of Lac not only provide livelihood to millions of Lac growers, but also helps in conserving vast stretches of forest and biodiversity associated with lac insect complex. For qualitative and quantitative production of lac it is important to know the biology and behavior of the insect, it's strains and natural enemy complex which is the major constraint in lac production. One gram of Lac is extracted from Up to 200 insects. In present the synthetic material such as Polyurethane and vinyl has been taken place of Lac, even after Lac is still in use as dyes, inks, polishes, sealing waxes, and as stiffening agents in the fabrication of felt hats (Gitanjaly *et al.*, 2015) [4].

Cochineal

The first time it was used by Aztec Indians as medicines, body paints and as textile dye. A scale insect *Dacylopius coccus* found in Mexico and Central America on prickly pear cacti. Cochineal pigments use in Painting. Cochineal pigment is extracted from these scale insects. The cochineal pigment was important for the intensity and permanency of colors. It was very costly because of its scarcity, so it was used in only the finest fabrics. Now a day's aniline dyes have taken place of Cochineal in textile industries which is very economic. But the cochineal pigment is still giving the colors in foods, beverages, cosmetics (lipsticks) and art product (Gitanjaly *et al.*, 2015) [4].

Tannic Acid

Tannic acid first produced by an abnormal pant growth found on oak trees. Its Asia known as Allepo gall. Tiny wasps (Family Cynipidae) secrete some chemical and in response of it the tree produces gall tissues. Tannic acid is used for the dying, in leather industries, for tanning and in the manufacture of some inks. It can also be extracted economically from Quebracho tree (Gitanjaly *et al.*, 2015) [4].

Food as a insect

Human ancestors were used to get nutrition from Insects. Even today, the insects are being used by people as food in many countries. Used as food purpose in grasshopper markets of Mexico. Insects are mixed with flour. Wood-boring beetle's larvae can be boiled or roasted over a fire. Thailand the pupa of silkworm is used as food for human.

Medicines

Maggots and honey showed healing property in chronic and post-surgical wounds. Honey is also being used to treat burns. Royal jelly is used to treat post-menopausal symptoms. Blister beetle cantharidin is used in treating Skin diseases (Eraldo and Costa, 2005) [3].

Beneficial insects attracts for garden

The larva of many beneficial insect predators e.g. Predators such as hover flies, lacewings, lady beetle, and parasitic wasps feed on large number of harmful insect pests. But adult of these feed on pollen and nectar. Pesticides kill many beneficial insects (Cicero, 1993; Colley and Luna, 2000; Jones and Gillett, 2005) [1, 2, 6].

Conclusion

Different products of economic importance and use of beneficial insects. Very typical methods for a maintaining for a beneficial insects. It is the broad area in agricultural entomology. Very helpful to many training and awareness programs to improvements the knowledge in the farmer. Better understanding

of the benefits can make conservation more effective and more harmonious land use with effective crop production.

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