The threats for pea cultivation in pakistan

Food & Diet, Organic Food

Pea (Pisum Sativum L.) belongs to Leguminosae family as well as a popular winter vegetable cultivated in various parts of the world. This crop is cultivated annually that grows from 45cm to over 2m tall, with an average spread of 23cm. On basis of vegetable pea is considered as remarkable human food stuff. Naturally it is constituted of 27. 80% protein, 42. 65% multifaceted carbohydrate, antioxidant compounds, nutritional fibers, mineral deposits and vitamins .

In Pakistan the annual production of pea is 71, 792 tons grown on area of about 10, 478 hectares with an average yield of 6. 9 t hac-1. Punjab contributes about 71% of its total production and being third biggest producer of peas. While in Baluchistan total production of 8611 tons or 10983 kg ha-1 is grown only in area of 784 hectares. Many biotic as well as abiotic threats during pea production is observed in Pakistan along with this biotic diseases represent the most important factor that diminish average yield by direct attack on grains of crop.

Due to pest causing diseases and susceptible cultivars a major decrease has been observed in production of pea. The key reasons for low yield are farming on marginal land plus excessive fertilizer application, attack of diseases as well as insect pests. During its vegetative and production phases peas are infected by a number of insect pest attack this crop included thrips, aphids, leaf beetle, Mexican bean beetle, Vegetable leaf miner, leafhopper, spider mite, Corn earworm, European corn borer, Stink bugs, Lima bean vine borer and Seed corn maggot.

Amongst all other peas chickpea faces the attack of more than 60 insects–pests right from germination to maturity. Among them, gram pod borer, Helicoverpa Armigera Hubner is considers as key pest causing 29% yield losses in chickpea at national level. Severe warning too many crops of economic importance, Helicoverpa armigera (Lepidoptera: Noctuidae) is a polyphagous, sophisticated pest. The most important host crops of H. armigera are cotton, tomato, chickpea, pigeon pea, maize, okra, potato, sunflower, tobacco, and cabbage in Pakistan, and it is rarely the cause of total crop failure. It is a major problem across its Old World distribution due to its great mobility, productiveness, hungry larval feeding, and its well recognized ability to develop resistance to insecticides deployed against it. Different chemical, physical as well as biological methods are being used for prevention of insect control in plants. Plants comprise a rich source of bioactive chemical compounds, botanical insecticides may present attractive alternatives to currently used artificial chemical insecticides for pest management. In addition to insecticidal potential, they have been reported to cause little threat to the environment or to human health as compared to synthetic pesticides. Integrating all these approaches with biological control has shown some encouraging results for sustainable pod borer management and has resulted in high. For managing pest in locations with similar H. armigera all these approaches can be explored as reproducible practices, conclude that an integrated approach is most effective for long-term sustainable management programs.

To meet increasing food demand the key goal of plant breeding is to increase yield potential. New varieties through better agronomic qualities have been major contributing factor to increase yield potential.

During escape, avoidance, tolerance, or by the up-regulation of defensive genes plants adapt different mechanism to cope up with abiotic stresses. When compared to other major constraint to crop production such as low soil fertility and salinity, insect pest can be minimize successfully through host plant resistance. As a defense mechanism against insect attacks several secondary metabolites are present in plants and it has been recognized that the pesticidal properties of plant chemicals can be definite to particular target species, biodegradable to non-toxic products and potentially suitable for use in an integrated pest management (IPM) program. Salt tolerance is subjective by many plant, soil, and environmental factors and their interrelationships. For improvement of agricultural productivity of pea, the wild associations of crop species acquire greater genetic diversity and measured as a source of important genes.

By means of high morphological as well as narrow genetic variation salinity tolerant plant is affected in chickpea breeding. Immense numbers of drought as well as salinity-responsive ESTs have been generated from the root tissue of chickpeas. Phenotypic qualities, for example leaf chlorophyll content, root traits, competence of water usage, leaf size along with shape, might be researched to measure drought tolerance in the peas. High salinity towards adjustment of plant cells involves osmotic adjustment plus the compartmentation of toxic ions. A range of dissolved salts contribute toward

salinity stress, the most widespread as well as significant salt for improving salinity tolerance is the NaCl. According to both growth stage and genotype complexity of connection with abiotic and biotic stress factors is the variability of NaCl in soil profile. Changes in response toward salinity under controlled atmosphere designate that pulse species are generally much more sensitive than other major dryland crops. Certainly, the threshold salinity level for pea has been expected to be very low at 1. 5 dS m-1. It is extremely expected that salinity levels significantly limit grain yield of pulse crops such as field pea in low rainfall environments.

Acclimation to salinity might be achieved by enhancing the antioxidant defense system. Several reports recommend that exogenous use of H2O2 may lead to plant acclimation to salinity, cold or heat stresses, and the cell’s capacity to scavenge excessive reactive oxygen species (ROS) and protect cell structures is considered to be absolutely essential for salinity tolerance. Plants pre-treatment through temperate levels of H2O2 may increase the synthesis of a wide variety of antioxidant compounds; make plants more prepared for the oncoming oxidative stress imposed by salinity. This phenomenon is termed “ cross-tolerance” and is widely reported in the literature.