"I want to discover something new" Impact of wildly available plant (Calotropis Procera) on Cotton Corps

Food and Cotton crops face a threat from hazardous insects, which is an important issue that affects our environment and lives in many ways. One of the major constraints to food and cotton production is the damage caused by pests, weeds and plant diseases. Most of the world's food supplies are estimated to be lost before and after harvesting due to pests and diseases. The chemical control of plant diseases has been significant in history. However, these chemicals are hazardous to human beings and the environment. Moreover, these pesticides are not affordable by poor farmers. As such, new locally produced and safer alternative pesticides should be made available.

"I want to discover something new; I looked around and from the experience of my parents and grandparents using Calatropis Plant to treat infection of wound/acne problems, made me think that why aren't the compounds present in this plant able to kill Pests/Insects present in crops" said Usman.

With this thought in mind, a boy from a small village *Shahzada, Tehsil Pasrur, Sialkot,* Usman Ali Bajwa studied at Govt. Quami High School, Sialkot participated in Intel[®] International Science and Engineering Fair (Intel[®] ISEF) affiliated fair in Pakistan.

With the help of his teacher, Mr. Ehsan Ali Awan, Usman began doing research and found Calatropis Procera (Asclepiadaceae), locally know as AAK, which is a wildly growing plant native to Pakistan, Indonesia, Malaysia, Philippines, Thailand, Srilanka, India and China.

"Farmers are not able to afford expensive pesticides so now they are using Calatropis Procera to remove maggots and harmful insects from cotton crops" said Mr. Ehsan.

During the Lahore Science Olympiad, a scientist Dr. Anjum Nasim Sabre form Punjab University, Depatment of Micro Biology and Molecular Genetics took this project for further research with Usman.

Dr Anjum says "This plant is also acting as green manure. It promoted plant growth under lab conditions in small pots. On the basis of lab experiments, it is confirmed that the extracts of different parts of Calatropis plant are effective as a Biopesticide. Further work is needed (which is in progress) in the field, as well as under natural environmental conditions. Only after doing controlled/well designed field experiments, can we determine whether it can be applied to crops."



EFFECT OF PLANT EXTRACT AND LATEX ON THE GROWTH PARAMETERS OF PLANTS



Experiments were performed in a controlled environment by Usman, under the guidance of Dr Anjum and team on wheat plant leaves, and field experiments were performed on cotton plants. All the tested plants exhibited bio-insecticidal activity and 100% mortality of larva, adults of different species and also many pests like Tribolium castaneum (rust red flour beetle), common insects of chickpea and cotton plants.

'When we did these experiments, the results were amazing! 100% mortality of larva and other insects was achieved and the mixture of leave, stamp and root also promoted plant growth', said Usman.

To meet the challenges of increasing levels of pests and environmental pollution caused by synthetic pesticides, the discovery of non- hazardous alternative like *Calatropis Procera* for management of pests is needed. Its natural presence makes it environmentally friendly because there is no adverse affects on plants. In cotton fields, where other insecticides cause cancer in cotton pickers, *Calatropis Procera* does not have any adverse effects and hence it is also human friendly. The study of Usman opened eyes towards the potential use of wildly available plant Calatropis Procera as an eco friendly bio-insecticide to control the devastating damage caused by different insects and insecticides.

I used this treatment for cotton plant against termite attack on fields and the results are beyond expectations. This treatment as compared to poisonous chemicals available in the market is not only cheaper but also human and environment friendly. This natural treatment gave us a huge relaxation from using expensive and dangerous insecticides. said Zafar Khan, cotton farmer

A thought which does not result in an action is nothing much, and an action which does not proceed from a thought is nothing at all (Georges Bernanos). Since the past 5 years, Intel has been promoting the thoughts of our young generation and

providing them a platform to share what they think. Through research, students identify and tackle challenging scientific questions, using authentic research practices thereby looking for solutions to the problems of tomorrow

Usman's research is only one example of how the brilliant students of Pakistan are working towards making their homes, and country, a better place to live.

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