

"Demystifying conjectures against pesticide use"

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"Demystifying conjectures against pesticide use in agriculture"



About Author: With 45 years of experience in field crops in general and soybean in particular, Dr Bhatnagar was National Project Coordinator of All India Coordinated Research Project on Soybean. During his tenure he contributed in development and release of 62 soybean varieties through inter disciplinary, multi-location trials. He has over 20 books and bulletins and 400 research papers to his credit.

Agriculture is the lynchpin of the Indian economy and contributes nearly 18% to country's GDP. Today India has achieved a fivefold increase in food grain production, to an all-time record of 257.4 million tons in 2011-12. Ensuring food security for more than 1.27 bn Indian population with diminishing cultivable land resource is a herculean task. A number of factors take a heavy toll on the agricultural produce including insect pests, diseases, weeds, rodents etc. It is estimated that losses due to these factors account to Rs. 90,000 crores as reported by the 37th Standing Committee of the Ministry of Chemicals & Fertilizers in the year 2002.

In the process of protecting the crops from such damages and achieving the target, pesticides play an important role in Indian agriculture. The use of pesticides is so common that the term pesticide is often treated as synonymous with plant protection product. Undoubtedly, this has increased crop yield and reduced post-harvest losses.

The use of a wide range of chemicals to destroy pests and weeds is an important aspect of agricultural practice. Several research studies have shown significant positive contribution of recommended use of chemical pesticides for increase in productivity and production of food grains. It is estimated that on an average one rupee spent on pesticide use gives an ROI of approximately five rupees (IARI, 2008). Now as the cultivable land becomes a scarce and inelastic commodity, due to population growth, the situation will be aggravated in the years to come especially in highly populated countries like India and China.

The use of pesticide in India is lowest (0.57 Kg/ha) among all the developed and most of the developing countries (Japan - 11.0 kg; Netherlands- 9.4 kg; Republic of Korea 6.6 kg; France-4.6 Kg; Italy - 4.17 Kg; Germany-2.5 Kg; Austria -2.4 Kg USA- 2.25 Kg and Pakistan -1.3 Kg per hectare)*It may be noted that, U.S.A. is known to be most health conscious country, but as is scientifically required, per hectare use of pesticides in USA is nearly four times higher than that of India and the productivity of all crops in that country is much higher than India.

It is important in the present context to mention that the Ministry of Agriculture, Government of India has set-up a Division "Monitoring of Pesticide Residues at National Level", which continuously monitors pesticides residue in fruits and vegetables available in the markets across the country. A scheme implemented by Government of India draws random samples of food articles regularly and takes penal action in cases where the samples are found not conforming to the provisions of Food Safety and Standards Act, 2006.

It needs to be understood that 'Pesticide Residues' are inevitable by-product of pesticides use. They are specified substances in food, agricultural commodities or animal feed resulting from the use of pesticides. The term includes the derivatives of a pesticide such as conversion products, metabolites and reaction products which are considered to be of toxicological significance. What is important is that the pesticide residue must not be above the prescribed limit MRL (Maximum Residue Limit).

In the context of pesticide residues, it may be mentioned that the subject is highly technical and is based on some fundamental principles and procedures of toxicology. It may be noted that when a Maximum Residue Limit (MRL) is set for any product, it is for the raw agricultural commodity. The regulators ensure that the MRL coming from all sources in food chain do not exceed 80% of the Average Daily Intake (ADI). Therefore, the mere presence of pesticides in trace or in amount below MRL does not mean that the product is unhealthy.

However in India, some people and institutions are still calling for the non-use of pesticides for raising crops as they have a serious effect on public health. Thus it is these emotional pronouncements to ban the use of pesticide that have left the public confused regarding the role of pesticides in agriculture. Pesticides have also been cited as one of the causes of cancer. However, the scientific facts do not support this conjecture as well. Not even one pesticide product is listed as a human cancer causing chemical in Group I in the Registry of International Agency on Research on Cancer (IARC).

Pesticides and Pharmaceuticals products are manufactured under strict quality control guidelines of the Government of India. As the medicines are for control of diseases in human beings, the pesticides are for control of pests (insects and diseases) on plants. Even some pharmaceuticals and pesticides have commonality, for example Streptocycline Sulphate, and Tetracycline.

We are aware that, all innovations responsible for making human life comfortable such as the use of radiation in medical sciences, electricity in every walk of life, life-saving medicines, mosquito repellants, deodorants, cooking gas, new generation high speed cars (to name a few), without which life in present day cannot be thought of, cannot be used without observing prescribed precautions. If the due precautions are not used then these too could be fatal, but the question that arises is, 'Can we think of banning any of them?'

Similarly, to cope up with the growing food and nutritional demand of India, we should not get swayed by mere conjectures against pesticide use in agriculture. The bottom line is that we cannot do away with chemical pesticides in today's growing world to protect agricultural commodities from target insects, diseases and weeds for meeting the severe challenge on food front. Banning pesticide use for agriculture on mere assumptions will be very much against the much called- for growth of agriculture and food security in India.