



Stakeholders Dialogue on Challenges and Way Forward for Pesticides Management

Concept Note

Background

Plant protection is an important requirement for sustainable agriculture and household food and nutrition security. It is an important option for the farmers to combat existing pest problems in India. In this context, for more than 60 years, the chemical pesticides have been the best options adopted by farmers to protect their crops. In view of food safety issues now gaining prominence, concern for chemical residues in food is receiving greater attention. Hence, it is important that farmers use only the right kind of pesticides to increase their production while protecting environmental, human, and animal health. It is also well recognised that pesticides have contributed significantly towards increasing agricultural production globally, more so in India, and it has helped farmers to increase their income.

Presently, there are more than a thousand pesticide molecules of both chemical and biological origin which are used around the world. In India, less than 100 pesticides are commonly used in agriculture. Moreover, domestic production has not only made our nation self-sufficient but enabled India to become an important exporter of pesticides. Yet the fact remains that research on new pesticides has mostly taken place outside India due to the fact that the cost of development of new molecule is invariably very high, whereas investments on pesticides research are invariably quite low in India.

The generic pesticides command about 80 per cent of the market share and the 27 pesticides (8 fungicides, 12 insecticides, 7 herbicides) recently proposed for ban, constitute almost 25 per cent of the total pesticide market in India. These are used for pest control on around 75 important field and horticultural crops. Some of these are also used against household pests, stored grain pests and in public health programs against vectors of human and animal diseases. Additionally, these are also used on high value crops including spices, certain vegetables, fruits, herbs, specialty crops, minor millets, oilseed crops, pulses, etc. Besides, substantial quantity of these pesticides is exported.

India is the fourth largest producer of pesticides in the world. According to a report by Database Research and Markets, the Indian pesticides market was worth INR 214 billion in 2019. Pesticide market is further projected to reach a value of INR 316 billion by 2024, growing at a compound growth rate (CAGR) of 8.1 per cent per annum during 2019-2024. It is reported that eight states consume more than 70 per cent of the pesticides used in the country. Amongst the crops, paddy accounts for the maximum

share of consumption (26-28%), followed by cotton (18-20%). There are 292 pesticides registered for use on various crops in India which include 104 pesticides that are banned in two or more countries. The pesticide industry has a business of over INR 20,000 crores in India. The increased use of herbicides lately is a major factor for increased pesticide use in India. It is expected to increase further in view of higher cost of manual weed control due to increased labour wages and often their non-availability at the critical times of field operations. In India, estimated annual production losses due to pests and diseases are around US\$ 12.02 billion despite the use of 60 thousand tons of pesticides. The impact of pesticide use on soil and environment, and the presence of residue in food products are now a matter of concern despite the fact that per hectare use of pesticide in India (<0.5 kg/ha) is one of the lowest in the world compared to other countries like China (13.06 kg/ha), Japan (11.85 kg/ha), Brazil (4.57 kg/ha) and some Latin American countries (FAOSTAT, 2017).

Constraints and Challenges

Non-judicious use of pesticides could pose a potential risk to humans and other life forms. It could lead to unwanted side effects on human health and environment. Often the farmers are not protected against exposure to pesticides which leads to serious health effects. Therefore, it is important that we have a calibrated approach for the use of chemical pesticides in India.

Pesticides are regulated by the Insecticides Act 1968, which is under the purview of the Central Insecticides Board and the Pesticides Registration Committee. The protection of Intellectual Property is controlled by the Indian Patent Act through either the Product Patents or Process Patents.

Major challenges faced by the pesticide industry and pesticide users are the required environmental regulations across the world, relatively less efforts on R&D by the domestic manufacturers, lack of incentives for innovation such as IPR and product diversification, lack of awareness about safe use of pesticides, long gestation period for registration of new products and the product quality assurance. The additional challenge arises from the use of registered pesticides only on 80-85 high volume crops (out of 554 crops), and vulnerability of other crops on account of lack of labels. In order to protect the farmers from sub-standard products, greater attention is needed for post-registration monitoring mechanisms for weeding out 'fly by night' operators, production of high quality pesticides, and safe use of pesticides.

Biopesticides have the potential to control crop losses and reduce negative environmental externalities. It is reported that use of biopesticides in integrated pest management can reduce pesticide use by 66 per cent in cotton and by 45 per cent in cabbage. However, biopesticides constitute only around 3 per cent of pesticide market in the country. So far 14 biopesticides have been registered under the Insecticide Act 1968. Consumption of biopesticides has increased from 219 tons in 1996-97 to 683 tons in 2000-01, and further to current volume of around 27,000 tons licensed production which is a miniscule production compared to a large arable area of 142 mha, However, the pace of development of market for biopesticides is rather slow due to lack of farmer awareness, slow pace of action unlike chemical pesticides, faith and confidence in use, poor quality and self-life constraints, danger of being spurious, and counterfeit

biopesticides often laced with chemical pesticides and also the cost of registration. Also, there are hardly any fiscal incentives for promotion and use of biocontrol agents.

The issues emanating from the Insecticides Act, 1968 are administrative in nature. However, to ensure sustainable food production systems, important for house hold food and nutritional security of the country and to adopt resilient agricultural practices (as envisaged under Sustainable Development Goals), there is an urgency to redefine the role of chemical pesticides for greater efficacy and biosafety. Other options such as organic farming and integrated pest management need to be explored aggressively in future.

It is also evident that climate change will pose new threats of pest emergence. Continuous use of some of the pesticides also leads to building of pest resistance. Hence, we need a portfolio of chemicals with diverse modes of action. Introduction of modern biotechnology has changed the dynamics between chemical pesticides and biotech seeds. Insect tolerance and herbicide tolerance are now built into seeds through GM tools in some of the crops. Use of weedicides is going up due to shortage and increasing cost of labour.

Increased globalisation and trade liberalisation have lately resulted in spurt of invasive pests. During the last five years, major destructive pests and diseases have invaded Indian agriculture, viz., South American pin worm (2014-15), TR4 race of Panama wilt (2015-16); coconut spiralling white fly (2015-16), wheat blast like disease (2016-17), maize fall army worm (2018-19) and most recently desert locust (2020) have posed considerable food and biosecurity threat besides leading to major economic losses to the country. For such exigencies, pesticides are essentially required to combat new situations arising due to emerging pests.

Banning of Pesticides

The recent Gazette Notification dated 18 May, 2020 issued by the Government of India proposing blanket ban on the use of 27 generic pesticides has come as a surprise and in fact, caused real concern among the farmers, scientists and the industry alike. Apparently, only 27 pesticides (8 fungicides, 12 insecticides, 7 herbicides) are banned but along with them go 134 formulations containing these pesticides that are widely registered on 74 crop plants for protection against wide array of pests and diseases. As such, sudden ban on some commonly used generic pesticides in the absence of suitable alternatives are bound to have negative effects on the management of various crops.

Conventionally, pesticides are classified based on their toxicity levels and categorised under red, yellow, blue and green colour triangles, red being the most toxic. Undoubtedly, it is desirable to phase out the most toxic pesticides and replace them with safer products in the best interest of our farmers and the consumers. However, such a process needs to be based on scientific evidence, logical and gradual rather than abrupt.

Further, the list of 27 pesticides covered under the Gazette has only 3 red triangle products as most hazardous. Further, some of the pesticides included in the list are those which are used in small quantities for treating seeds to protect against the seed

borne and soil borne pathogens. It is understood that the notified pesticides are based on Dr. Anupam Varma Committee report, submitted almost 3 years ago, which seemed to have suggested ban based on review of additional data generation by the Industry. Somehow, such a review has not been undertaken for want of data that was supposed to be generated by the Industry. Despite this, the major reasons cited in the draft notification include additional data submission on bioefficacy and toxicity, ban in other countries, availability of alternative chemicals, ecotoxicity, etc.

In this context, any registered pesticide is supposed to meet all the requirements of bio efficacy, toxicity, and risk to human life, animals and the environment. Further, most of the pesticides are in use for a long time and scientific data on their metabolism, mode of action, activity spectrum, etc. have been generated over time. Moreover, no untoward happening seemed to have been reported so far due to use of these pesticides being banned. Also there is hardly any logic for banning and restricting a product for production based on decisions taken in some other countries. In fact, India has different edapho-climatic conditions and the pesticide behaviour, degradation pattern, residue depletion and residue persistence would differ under existing tropical and sub-tropical conditions prevailing here.

Codex Alimentarius Commission and Codex Committee on Pesticides Resistance (CCPR), a body constituted by FAO and WHO, assesses biosafety and approves pesticides, including those possessing endocrine disrupting (ED) properties, through risk based assessment, unlike that insisted by EU on hazard basis for pesticides having ED characteristics. The biosafety of pesticides, notified for ban, and are now reported to possess ED properties were registered on risk based assessment, as per international principle. Thus, rejecting the once registered pesticides questioning safety assessment principles of FSSAI (MoH & FW) will certainly require a review first by the Health Ministry.

Presently, the farmers are already passing through a difficult phase due to COVID-19 pandemic, facing real problems related to agricultural operations, transportation and marketing. At present, the *kharif* season is in progress and the farmers need critical inputs including pesticides for seed treatment, for raising *kharif* crops especially to guard against the pest attack which invariably is higher in rainy season. Accordingly, it is argued that ban is likely to affect adversely country's production targets and may result in crop losses by the farmers.

The pesticide industry has argued that any sudden ban will not only affect adversely the industry's growth, manufacturing and export capabilities but also make all the investments made in the manufacturing of these products redundant. It is expected to affect adversely around INR 10,000 to 12,000 crores of estimated revenues thus giving a big setback to our 'Make in India/ *Atamnirbhar Bharat*' initiatives. Furthermore, due to cost-effective domestic production of generic pesticides, the cost of plant protection in India has so far remained low compared to other countries in the world. Also, the ban is likely to affect India's hard earned image of a reliable exporter of pesticides in the global market. Moreover, no untoward happening has been reported so far due to use of these pesticides. It is also argued that credible alternatives are neither available nor suggested.

Pesticides Management Bill - 2020

The union cabinet has recently placed the Pesticides Management Bill, 2020 (PMB 2020) in the Parliament. The Insecticides Act, 1968 embraces the provision of regulating the import, manufacture, sale, transport, distribution and use of insecticides and pesticides in order to prevent risk to human beings and animals. The new PMB 2020 should be seen as an opportunity to set right many shortcomings of the existing regulatory regime around pesticides in India. Though the draft PMB 2020 includes specific refinements, there are still some concerns which need to be addressed before the statute is enacted. NAAS Policy Brief No. 6 projects specific recommendations based on an expert interaction meet with stakeholders including scientists and the pesticide industry. The other points that deserve consideration include: i) all statutory appointments to the Central Pesticides Board and the Registration Committee should clearly specify that members should be independent, completely devoid of any conflict of interest with the pesticide industry; ii) registration-related provisions should clearly include a need and alternatives assessment before a pesticide registration application is processed; iii) registration procedures should lay down some terms and conditions wherein applicant has to specify whether a particular pesticide has been banned or severely restricted in two or more countries; iv) registered pesticide should automatically come-up for a review every 5-7 years with regard to baseline toxicity and bioefficacy, resurgence of pests, critical gap in MRL and additional concerns; a separate review committee should be set-up under the Act, consisting only of biosafety experts, different from the Registration Committee; v) all registrations should be based on long-term, independent and transparent biosafety assessment, without any conflict of interest; vi) state governments should be entrusted with the power to prohibit the use of a pesticide in their jurisdiction; vii) agricultural labourers, farmers and ordinary citizens should not be forced to take recourse to the Consumer Protection Act to seek compensation if 'affected'; viii) a compensation fund should be created by collecting a cess from the industry and it should not depend only on penalties collected for possible contraventions of the Act; ix) penalties for contraventions of the Act should be deterring enough ; x) pesticides industry should be brought under a regulatory regime that makes it accountable for the entire product cycle including disposal and container management; xi) the regulation should cover advertising and aggressive marketing since pesticides are toxic substances; xii) the use of a pesticide should be based on a prescription by a government approved competent authority, xiii) possible provision of contract application of pesticides by Govt. contractor; xiv) enforcement of requirements of pesticide handling diploma/ certificate by pesticide dealers in pattern of pharmaceutical Industry as the farmers are largely guided by dealers; xv) provision to label pesticides with IRAC/ FRAC mode of action number to prevent repeated use of pesticides with same mode of action, xvi) create enabling conditions label expansion to curb off-label use and label expansion of pesticides across high value, speciality and minor crops to ensure biosafety and remove trade barriers; xvi) provisions of fast track registration of pesticides in case of exigencies live invasive pest outbreak and new molecules; xvii) provision for data protection for new molecules and formulations; xviii) curb the menace of 'fly by night' operators by inspecting pre-registration infrastructural facilities; xix) already registered pesticides under Insecticides Act 1968 may be exempted from re-registration under PMB 2020 on transition, unless there are specific

issues and concerns; and xx) penal provisions applicable to all defaulters including pesticide inspectors and industry for genuine reasons.

The Prime Minister has also given a clarion call to farmers in his Independence Day speech in 2019, asking for a reduction in the use of toxic chemicals. This is possible, if the PMB 2020 is passed with above mentioned provisions incorporated. As already mentioned, although Indian average consumption of pesticide is far lower than many other developed economies, the problem of pesticide residue is not yet resolved and is often a concern for consumers as well as exporters of agricultural produce. Pesticide safety, regulation of pesticide use, proper application technologies, and integrated pest management are some of the key strategies for minimizing human exposure to pesticides. Besides, there has been a growing demand for good quality and safe food in the recent past. Therefore, there is need to review the existing strategy of pesticides use in India and suggest a Way Forward for the rational use of pesticides that ensures proper plant, animal, human and environmental safety as well as food and nutrition security. Also, there exists considerable scope for promoting organic farming for which IPM approach be seen a better option. This, however, would require considerable support from the pesticide industry to produce and make available good quality biopesticides to the farmers.

Strengthening Research and Development

In spite of a large R&D base, somehow India has not been able to evolve and release new chemical pesticide molecules, which is a matter of concern. There seems to exist a policy paralysis and lack of coordination between academia and Industry in this area. A review of country's R&D output reveals that though a large number of potential bioactive synthetic molecules were reported from time to time yet unfortunately none could reach the production/ commercial scale in partnership with Industry. On the contrary, considerable efforts were made to develop alternate cheaper routes to many pesticides but due to WTO and requirement of international intellectual property norms, the expected benefits could not be harnessed.

In this context, need for clear policy direction and support is critical to move forward, like we now have about 'Make in India'. Earlier, a clear direction from the Government to go ahead to register and release biopesticides such as *neem*, Bt, Trichogramma, etc. led to desired successes for integrated pest management (IPM). Today, the development of *neem* based pesticides in India is a good example. However, the progress on biopesticide front is not all that encouraging due to required industry support and enabling policy environment. Fortunately, there is a significant shift in the thinking of multinationals now which may be a game changer in near future. Fortunately, India has done remarkably well in pesticide formulation and the safety evaluation aspects. Therefore, what we need now is to develop a clear Road Map for disruptive innovation in the field of chemical pesticides and biopesticides through greater investment in R&D both by public and private sector and through building of centres of excellence to achieve defined mission and goals. .

Policy Implications

The Insecticides Act (1968) and Insecticides Rules (1971) regulate import, registration, production, sale, transport, distribution and use of pesticides with a view to prevent risk to human beings or animals. All pesticides have to necessarily undergo the registration process with the Central Insecticides Board and the Registration Committee (CIB&RC) before production or sale. The Central Insecticide Laboratory (CIL) is mandated to test the referral samples submitted by any officer or agency of the Central or State Government, while State Pesticide Testing Laboratories (SPTL) mainly test the samples taken at the manufacturing and point-of-sale for quality control.

The Pesticides Industry should also take certain proactive measures like withdrawing products which are categorized as most hazardous by WHO. Appropriate policies and strategies need to be put in place to phase out the red triangle products. Specific product-wise decisions could be taken for implementation in a phased manner so as to have safer alternatives for the farmers and the interests of the industry are also protected. In fact, an enabling environment is likely to generate win-win scenario to realize 'Make in India' in the field of pesticides.

In view of above, the Trust for Advancement in Agricultural Sciences (TAAS), a neutral Think Tank for strengthening agricultural research and innovation for development (ARI4D), in collaboration with the Society of Pesticide Science (SPS), Indian Phytopathological Society, and the Entomological Society of India will be organizing an **“Stakeholders Dialogue on Challenges and Way Forward for Pesticides Management”** on 24 July, 2020. The consultation will bring together diverse stakeholders from Central and State Governments, scientific societies and institutions, pesticide industry and farmers on one platform to discuss above issues holistically and suggest a way forward for efficient and more effective management of pesticides in India.

Objectives

- To discuss major constraints and explore solutions for phasing out banning of certain pesticides
- To seek views of stakeholders on proposed 'Pesticides Management Bill 2020' and suggest possible alternatives for accelerated growth of pesticides in India
- To review and suggest reorientation of pesticides management, present regulatory system and existing policies to promote pesticides research and development in the country

Expected Outputs

- The draft 'PMB- 2020' revisited and recommendations made for needed improvements in the existing regulatory system of pesticides.
- Strategy suggested for possible phasing out of hazardous pesticides.
- Way forward for strengthening pesticides research, management, policy and regulatory systems suggested

Organizers

- Trust for Advancement of Agricultural Sciences (TAAS), New Delhi
- The Society of Pesticide Science (SPS), New Delhi
- Indian Phytopathological Society, New Delhi
- The Entomological Society of India, New Delhi

Participants

Around 70 participants from the National Agricultural Research System (NARS), scientific societies, private sector, Department of Agriculture, Cooperation and Farmers' Welfare (DAC&FW), entrepreneurs, progressive farmers and policy makers are expected to attend.

Venue

Webinar

Date: 24 July, 2020

Time: 2.00 - 6.00 pm