

Stakeholder's Dialogue on 'Restrictions in use of Glyphosate: Implications in weed management'

The Context

Glyphosate is a widely used non-selective, systemic herbicide for broad-spectrum weed control in agriculture, plantations, forestry, industrial areas, etc. With the introduction of roundup-ready crops (soybean, cotton, corn and canola), use of glyphosate increased many folds (from 51 million kg in 1995 to 750 million kg in 2014-nearly 15-fold jump) worldwide. Because of its indiscriminate and large-scale use, contradictory results on adverse effects on human health and environment, and development of glyphosate-resistant weeds were reported by many researchers worldwide. In March 2015, the World Health Organization's International Agency for Research on Cancer (IARC) classified glyphosate as "probably carcinogenic in humans" (category 2A) based on epidemiological studies, animal studies, and *in vitro* studies. In contrast, the European Food Safety Authority concluded in November 2015 that "the substance is unlikely to be genotoxic (i.e. damaging to DNA) or to pose a carcinogenic threat to humans", later clarifying that while carcinogenic glyphosate-containing formulations may exist, studies "that look solely at the active substance glyphosate do not show this effect. The WHO and FAO Joint committee on pesticide residues issued a report in 2016 stating the use of glyphosate formulations does not necessarily constitute a health risk, and giving an acceptable daily intake limit of 1 milligram per kilogram of body weight per day for chronic toxicity. The European Chemicals Agency (ECHA) classified glyphosate as causing serious eye damage and as toxic to aquatic life, but did not find evidence implicating it as a carcinogen, a mutagen, toxic to reproduction, nor toxic to specific organs.

In India, glyphosate is in use since 1980s. It is a very popular herbicide with the farmers, and is currently one of the largest selling herbicides in the country. Glyphosate-based herbicides are registered and approved in India for weed control in tea gardens and non-crop areas. However, it is used in more than 20 field crops (16 of them are food crops), conservation agriculture, as well as in non-crop areas. In India, seven formulations of glyphosate [Glyphosate 41% SL, 20.2% SL, 5%SL; Glyphosate ammonium salt 71% SG, 5% SL(FI), 20% SL; Glyphosate Isopropyl amine salt (IPA) 41% SL] are registered under Insecticide Act 1968, for commercial use (<http://ppqs.gov.in/divisions/cib-rc/registered-products> as on 01-07-2021, cited on 27-07-2021). Glyphosate usage has increased independently, especially after the introduction of illegal herbicide-tolerant GM cotton seeds, and rise in farm labour wages. As per the Statistical Database, Pesticide Monitoring and Documentation Unit, PPQ&S, Ministry of Agriculture, Government of India, glyphosate usage has increased from 435 MT technical grade in 2010-11 to 765 M.T. in 2018-19. Due to rising issues related to health and safety of the environment at many forum due to illegal and indiscriminate use of Glyphosate, some of the State Governments had attempted stringent regulations and/or a temporary ban of glyphosate-based herbicide formulations in their jurisdiction in the past few years (such as Kerala, Andhra Pradesh, Telangana, Punjab). However, the State Governments can't ban the sale, distribution and use of pesticides beyond 60 days (Section 27 of the Insecticide Act, 1968). The decision to ban the sale and use of agrochemicals can be taken only by the CIB&RC, Govt. of India. The Central Government has received a report in 2019 from the Government of Kerala for prohibiting the distribution, sale and use of Glyphosate and its derivatives. The Ministry of Agriculture & Farmers Welfare, Government of India, after considering the report of the State Government of Kerala, and after consultation with the CIB& RC, issued a notification on 6th July, 2020 in the form of draft Order called as the **Restriction on use of Glyphosate Order**,

2020 for further suggestions and objections, if any. Since then, the pesticide industries and other organizations have submitted their view in use of glyphosate to CIB & RC for consideration.

Recently, the ICAR also received a letter dated 5th April 2021 from Dr. Kalyan Goswami, Director General, Agro-Chem Federation of India, requesting to recommend adoption of pragmatic and practical approach to address the concerns by advocating the in-depth scientific review of the Glyphosate and discussion involving various key stakeholders.

The Dialogue

In view of above, the ICAR-Directorate of Weed Research (ICAR-DWR), Jabalpur and the Indian Society of Weed Science (ISWS) jointly organized a virtual Dialogue on “Restrictions in use of Glyphosate: Implications in weed management” on 20-07-2021. The major objective of this Dialogue was to have more scientific discussions and clarifications on the proposed “Restrictions on use of Glyphosate through PCOs” by the Government of India (Draft Glyphosate order 2020). A total of 56 stakeholders/participants on one platform from CIB&RC, ICAR, State Agricultural Universities, private sector dealing with herbicides, and progressive farmers deliberated holistically science-based farmer-centric strategies on safe use of glyphosate in agriculture for sustainable food production, human health and environmental safety.

Recommendations

1. The Glyphosate, one of the largest selling herbicides in India, at present has the label claim only for use in Tea plantations and non-cropped areas. However, its unauthorised use as a broad-spectrum non-selective herbicide by the farmers in conservation agriculture, and as directed spray in widely-spaced crops, orchards and plantations. In view of this, it is recommended that the herbicide industry should generate adequate data for expansion of its label claim in situations where it is being widely used, so that the farmers should not be deprived of the benefits of this herbicide.
2. Very few short-term studies have been done in India on the effect of Glyphosate on non-target organisms such as soil microbes, earthworms, fishes and other flora and fauna, water quality and environment with variable results in different ecologies (such as reduction in the initial microbial population but recovered later on, reduction in earthworm’s cocoons numbers and their migration from the applied site, lethal effects on fish in aquatic environment, etc.). Hence, long-term scientific studies on the environmental impact of glyphosate on human and animal health, pollinators & other non-target organisms and ecosystems, and other risks involved in its use in Indian conditions need to be carried out. Environmental impacts of adjuvants/surfactants and other ingredients in the glyphosate formulation and their metabolites need to be properly studied.
3. The indiscriminate and illegal use of glyphosate need to be regulated till its expansion of label claims in other crops and situations. The herbicide industry should come up with alternate herbicides to glyphosate for the benefit of the farmers. The weed control experts in the State Agricultural Universities/ ICAR Institutes, etc. need to be consulted by the State Governments before issuing an order to ban or restrict the usage of glyphosate or any other herbicide in their states.
4. The Government initiative to use glyphosate through PCOs seems to be an appropriate step to check the indiscriminate and illegal use and safe application of this molecule. However, the availability of trained PCOs in the country is limited. The availability of PCOs/trained rural youths/*Krishi mitras*/extension functionaries of the Government in rural areas needs to be ensured by the Government at the cheaper costs. Therefore, it is

recommended to strengthen the availability of PCOs in terms of number and knowledge involving Government institutions like SAUs, KVKs ICAR institutes, etc.

5. Farmers need to be made aware of the harmful effects of the herbicides, Do's and Don'ts in herbicide use, safety measures, safe disposal of herbicide containers, etc., through organizing more number of trainings and awareness programmes.

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