Effect of different weed control practices on weed flora in soybean - A review

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Abstract

Weeds are mainly responsible to cause competition with soybean crop resulting in reduction of the crop yield by mean of various type of crop weed competition. There are a number of methods employed for managing the weed problems in the crops. Among all the methods, chemical weed control method is more suitable and lower in cost. Number of herbicides are used in soybean crop for controlling the weeds. Imazethapyr, metribuzin and fluazifop-p-butyl are the more useful herbicides which reduce the weed population in field thus enhancing the yield of the crop.

Key words: soybean, weed, imazethapyr, metribuzin, fluazifop-p-butyl etc

Introduction

Soybean (Glycine max L. Merill) is popularly grown in kharif season in India. It is also known as “wonder crop” of twenty first century. Soybean is an important oilseed crops as well as a rich source of protein. It is known for its dual purpose uses as it is grown as an oilseed crop and also as an pulse crop. It contains approximately 18-22% oil and 40-45 % protein and is a rich source of minerals and vitamins. Soybean also helps in maintaining soil fertility by fixing atmospheric nitrogen symbiotically. The ecological conditions of the Punjab state are congenial for cultivation of soybean but the yield is substantially low, despite of the best management practices. Being a rainy season crop, the environment is more conducive for excessive weed infestation in soybean. Severe weed competition is one of the major constraints for low productivity of soybean. Weeds in general, cause competition stress on soybean growth, especially during kharif season. The poor weed management practices deprive the crop of its major requirement of nutrients, soil moisture, sunlight and space which results poor crop growth and yield. Being a rainy season crop, it has high yielding capacity but weed infestation is one of the major constraints in soybean cultivation. Simultaneous emergence and rapid growth of large number of weed species causes severe crop-weed competitions and reduction in soybean yield up to 30-80% depending upon the type of weed flora and weed density.

Literature:

Abusteit (1993) resulted that significantly higher soybean yield were produced by weed-free durations for 6 WAF up to all season (3.229—3.545 t/ha). Weed competition for the entire season caused 56.1 % reduction in soybean seed yield.
Kumar et al. 2004 resulted that the Application of metribuzin and supplementation of imazethapyr at 22 DAS to metribuzin treatments attributed to their effective weed killing capacity during the early crop growth period.

Amuri et al. 2010 reported that total weed density due to glyphosate was greater under Conventional Tillage (CT) than under No Tillage (NT) early in the growing season in 2006, but was greater under NT than CT late in the season in 2007.

Kundu et al. 2011 reported that two hand weedings done at 20 and 40 days after sowing was the most effective for maximum suppression of all the weed density, weed biomass, and highest weed control efficiency. While Among the herbicidal treatment imazethapyr 150 kg ha\(^{-1}\) recorded the highest herbicide efficiency index

Habimana et al. 2013 indicated that combined and sequential application of herbicides (PRE followed by (fb) POST) provided more consistent weed control than single (alone) application.

Singh et al. 2014 recorded that fluazifop-p-butyl + fomesafen controlled grasses and non-grassy weeds effectively and recorded 29.3 weeds/m\(^2\) in 500 g/ha against (171.17/m\(^2\)) in untreated check. Thakare et al. 2015 indicated that application of Imazethapyr 0.100 kg a.i./ha + Quizalofop ethyl 0.075 kg a.i./ha recorded significantly lower weed dry weight, maximum weed control efficiency and lowest weed index.

Singh et al. 2016 reported that two hand weeding (20 & 40 DAS) recorded lowest weed density (4.9/ m\(^2\)), weed dry matter (22.35 g/m\(^2\)) with highest weed control efficiency of 59.67% and found at par with the application of Chlorimuron Ethyl 9gm /ha + Quizalofop-p-ethyl 50 g /ha.

Sridhara et al. 2016 indicated that, Flumioxazin 50% SC at 125 g a.i./ha provided significant reduction in weed density and dry matter thus increased the WCE at 30 and 60 days after application of herbicides in both the years.

Gare et al. 2016 revealed that significantly lower weed population and its dry matter was recorded with Imazethapyr 10% SL 1250 ml/ha which was at par with those of Imazethapyr 10% SL 1000 ml/ha.

Harasim et al. 2016 revealed that diversity of weed sp. a soybean crop grown under no-tillage with mulch from winter rye, particular increased the values of the general diversity (\(H^'\)), species richness (\(d\)), and evenness (\(J^'\)) indices relative to the control treatment. Apart from this study indicating strong decrease in the value of the dominance index (\(c\)).

Yadav et al. 2017 revealed that application of pendimethalin alone or followed by hand-hoeing/quizalofop-p-ethyl/ imazethapyr +imazamox provided 100% control of goosegrass and 65%–100% control of crowfoot grass/large crabgrass in soybean crop as compared to other treatments.
Bagotiya et al. 2018 indicated tank mix application of imazethapyr 75 g/ ha + propaquizafop 75 g/ha as post-emergence at 21 DAS recorded significantly lower weed density, weed dry weight, maximum weed control efficiency and significantly improved the growth characters, yield and yield attributing characters.

Kadam et al 2018 indicated that The lowest weed count for dicot and monocot weeds was recorded with PoE application of Fluazifop-p-butyl + Fomesafen 250 g a.i /ha and was comparable with weed free.

**Conclusion:**

It can be concluded from the literature cited above that the application of Flumioxazin 50 % SC 125 g.a.i./ha, imazethapyr 75 g/ ha are the most useful herbicide and weed flora in soybean is controlled by them in a better way, thereby enhanced the grain yield in soybean. However, these herbicides also reduce the weed growth, weed population and also reduce the competition of crops and weeds.

**Reference**


Habimana et al. 2013 showed that inter-cultivation fb hand weeding at 20 and 40 DAS recorded significantly lower weed population and their dry weight while application of pre-emergence metribuzin 70 WP gave lower weed population, dry weight as compared to other treatments.


Kumar, D., Bhati, H. P., Kumar, S., Kumari, N., & Kumar, P. 2004 Biosorption of malachite green dye by mycomass and phytomass influence by industrial effluent heavy metals. *Invited/Lead Papers*


