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## Herbicide banding in *Zea mays*-A sustainable weed management practice?

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Conventional weed management programs in *Zea mays* L. provide close to complete weed control. Field experiments at grower-locations were conducted in West Virginia, USA, from 2010 to 2013, to compare banded and broadcast applications of residual herbicides. A herbicide pre-mixture containing atrazine, metolachlor, and mesotrione was applied either as broadcast applications or as bands 38 cm wide over corn rows spaced 75 cm apart. While broadcast applications provided the active ingredients at 0.84, 2.24, and 0.224 kg.ha<sup>-1</sup>, banded applications kept the same herbicides at half the application rates per hectare. At all locations, corn yields recorded were similar between banded and broadcast plots. Banding herbicides may not only reduce herbicide use but may also provide other benefits such as reduced soil erosion and nutrient runoff, habitat for beneficial insects and natural enemies, and increased levels of floral biodiversity and resultant levels of carbon sequestration. Buildup of weed seed bank remains to be the primary concern among growers. An integrated approach may be necessary to address this. Herbicides may be band-applied only when expected weed populations are below a certain threshold, and mechanical methods may have to be implemented to reduce the buildup of weed seed bank. Services provided by vascular plants to the ecosystem are affected by reductions in floral diversity and strategies to restore the same in cornfields without affecting yields significantly may be worthwhile. If determined to be a viable practice following further research, this approach may have the potential to provide sustainable solutions to modern cropping systems.

### Biography

Rakesh S. Chandran is an Extension Specialist and Professor at West Virginia University. He received a BSc in Agriculture from Kerala Agricultural University, MS in Environmental Horticulture from the University of Florida, and Ph.D. in Weed Science from Virginia Tech. He carries out outreach and applied research in weed science for all commodities in West Virginia, teaches two courses, and coordinates the IPM program. His publications include 3 book chapters, 13 peer-reviewed journal articles, and numerous extension articles. He is currently the President-Elect of the Northeastern Weed Science Society (NEWSS), and a member of the editorial board of 'Agronomy'.

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