

# CONTROL OF *AMARANTHUS* SPECIES USING DICAMBA AS A PRE- AND POST-HERBICIDE IN MISSOURI

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## ABSTRACT

The auxinic herbicide dicamba has been used traditionally as a selective post emergent (POST) herbicide for control of broadleaf weeds in monocot cropping systems. Dicamba resistance is an emerging technology that will permit the use of dicamba POST in broadleaf cropping systems such as soybeans. The objectives of this study were to A) evaluate the efficacy of soil applied dicamba at multiple rates for suppression of common waterhemp and B) determine the response of common waterhemp and Palmer amaranth at various growth stages to different rates of dicamba and 2,4-D. Research was conducted from 2011 to 2013 at multiple locations in Missouri. When applied pre-emergent (PRE), 0.56 kg ha<sup>-1</sup> dicamba reduced overall waterhemp emergence by 37% compared to the untreated control; waterhemp emergence with the same rate of 2,4-D was similar. Treatments containing the conventional PRE herbicide acetochlor reduced waterhemp emergence ≥80%. Across all site years, treatments with acetochlor reduced total biomass 77% more than growth regulator treatments. When applied POST, waterhemp and Palmer amaranth control was optimal at 91 and 79% with 0.84 kg ha<sup>-1</sup> dicamba, respectively. Control of both species with 2,4-D at 1.12 kg ha<sup>-1</sup> was statistically equivalent to 0.84 kg ha<sup>-1</sup> of dicamba. For plants 5 to 10 cm, visual control was 63

to 98% for both species across all rates at 28 days after treatment; as plants exceeded 12 cm in height, visual control ranged from 36 to 86% for Palmer amaranth and 57 to 99% for waterhemp. Both dicamba and 2,4-D can effectively manage waterhemp and Palmer amaranth; a use rate of 0.84 kg ha<sup>-1</sup> on *Amaranthus* plants up to 18 cm resulted in optimal control.