Currently glyphosate-resistant (GR) soybean are planted on 93% of soybean acres in the U.S. Over the past decade, glyphosate has been used as the primary herbicide for post-emergence control of problematic weeds such as giant ragweed or waterhemp. Continuous use of glyphosate for weed control has resulted in the selection of weeds that are naturally resistant to glyphosate. Soybean varieties resistant to the herbicide dicamba are currently under development by Monsanto and are intended to provide growers with additional options for the control of GR broadleaf weeds and to delay the spread of GR weed biotypes. The objectives of these experiments were to: 1) determine the influence of application timing, dicamba rate, dicamba plus glyphosate combinations, and sequential dicamba applications on the visual control and biomass reduction of GR giant ragweed and GR waterhemp, and 2) to evaluate herbicide programs for the management of GR giant ragweed and GR waterhemp in dicamba-resistant (DR) soybean. Results from these experiments suggest dicamba effectively controls GR giant ragweed. Conversely, the results suggest control of GR waterhemp with dicamba is considerably less effective. However, acceptable GR waterhemp control was observed with a variety of herbicide programs utilized in DR soybean.