IMPACT OF BLACKBIRD DAMAGE TO SUNFLOWER: BIOENERGETIC AND ECONOMIC MODELS

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We constructed bioenergetic models to assess the economic impact on sunflower production from a regional population of blackbirds (Icteridae) consisting of three species: red-winged blackbirds (*Agelaius phoeniceus*), common grackles (*Quiscalus quiscula*), and yellow-headed blackbirds (*Xanthocephalus xanthocephalus*). Values generated from the bioenergetic models were used to perform a cost-benefit analysis to determine efficacy of a proposed avicide baiting program to manage red-winged blackbirds residing in the Central Lowlands and Northern Great Plains regions of North America. The bioenergetic model included metabolic rates, caloric value and moisture content of achenes, and percentage of sunflower in the diets of males and females of each species. The following estimates of annual sunflower consumption are per male and female, respectively: red-winged blackbird 265 g (9.3 oz) and 159 g (5.6 oz); common grackle, 257 g (9.1 oz) and 220 g (7.8 oz); and yellow-headed blackbird, 237 g (8.4 oz) and 132 g (4.6 oz). Based on the average price of sunflower from 1993-1997, male red-winged blackbirds damaged $0.09 and $0.18 (respective annual and lifetime damage per bird), females $0.05 and $0.21; male common grackles $0.08 and $0.12, females $0.07 and $0.22; and male yellow-headed blackbirds $0.08 and $0.15, females $0.04 and $0.14. The population of all three species combined impacted production by $5.2 million, annually. Lifetime damage was $13.3 million. The annual cost of baiting 2 million red-winged blackbirds with avicide would be $65,000. A baiting program would yield savings of $73,000 based on annual damage estimates and $325,000 based on lifetime damage estimates.