Waterfowl damage and control methods in ripening grain: an overview.

Abstract
Damage to swathed grains by ducks, geese, and cranes is a long-standing problem in many parts of central North America. We describe the history of the problem, its nature and extent, its causes, and control tactics used; we also make recommendations for research and management. The problem was first recognized in the early 1900’s from a growing conflict involving increased agricultural use of the land, a perceived reduction of waterfowl habitat, and increasing populations of birds. The most damage occurred to swathed grain and frequently coincided with waterfowl migration and changeable weather conditions. Damage occurs by direct consumption, contamination by feces, and trampling of swaths. More grain is trampled than consumed by waterfowl, the ratio being as much as 5:1. One Canadian researcher has estimated Canadian prairiewide losses of $6-$10 million annually. Losses to waterfowl on the northern Great Plains of the United States are largely undetermined. Waterfowl tend to select high points of large rolling fields that provide unobstructed views near bodies of water. Most grain farmers never suffer waterfowl damage; those that do usually tolerate it within reason. Tolerance to damage seems to be declining in a depressed farm economy. Most farmers are willing to alleviate the problem themselves unless a local situation becomes too severe. Many methods are available to reduce losses, but success varies. Methods include permanent and temporary diversionary feeding programs such as baiting stations (United States and Canada) and lure-crops (Canada) on government and private land; hazing with exploders, shotguns, rifles, and pyrotechnic devices; scarecrows of many descriptions, and aircraft. Chemical agents such as repellents and soporifics have been tested sparingly and with limited success. New farming practices, such as planting overwintering grains, straight-combining standing grain, delayed plowing of grain stubbles, and no-till farming, show potential for reducing losses to waterfowl if birds are allowed to feed in these fields undisturbed. Public relations should include better use of the media for disseminating information about scare methods and tactics and forecasting migratory waterfowl movements. These forecasts would alert farmers to the potential for damage so they can implement scare tactics at the earliest possible time, thereby increasing their chances of success. We summarize the background of depredation insurance and damage compensation programs in Canada, their successes, and pitfalls. Both methods seem to be relatively expensive and controversial even though they serve a need. Several potential sources of revenue are suggested to cover the cost of waterfowl damage prevention and damage abatement or mitigation programs, including use of the U.S. Federal Crop Insurance Program. Foremost among recommendations made for wildlife managers and researchers in the United States are problem definition and quantification, use of the media to relay information to the agricultural community, implementation of lure-crops and bait stations, possible changes in farming practices, and research to further develop an environmentally safe and cost-effective chemical deterrent to minimize depredation by waterfowl.
Control: Devise a plan for controlling the problem (integration of all possible means to achieve good, cheap and safe pest control). Monitoring tools for infestation detection. The easiest way to avoid damages by insect pests is to prevent their occurrence and spread. Presence of either of the following states in the sample of grain is an indication of the presence of insects: Clustering of grains. Decay or powder. Methods of controlling birds from causing damage on sorghum crop. Factors influencing bird damage in. Control strategies of bird damage in grain sorghum. The effectiveness of the control strategy varies with the bird species involved and optimum bird control. Weeds influence Red-Billed Quelea. damage to ripening wheat in Tanzania. J. Wildlife. Manag.