

Avian depredation to planted cereal crops

There is a growing level of bird damage to planted corn, sunflower, canola and rice seed. National statistics on the damage is not tracked by NASS or other government agency because birds have not been classified as an agricultural pest. Certain species are used instead as monitors for pesticide safety by regulatory bodies. As a result of the extensive testing done on birds, several well known pesticides used to control insects have been removed from use because of avian toxicity. (Measurol, Furadan, Lindane).

Several states have monitored significant changes in bird damage. Wisconsin observed a direct correlation between increased corn field damage due to cranes with the loss of lindane from use as an insecticide treatment. Crane populations also continue to grow as a result of aggressive restoration of breeding flocks and habitat. Cranes are now back in newly planted corn fields in Wisconsin that are within 1 ½ kilometers of a wetland where reports of 20% or more of the crop is destroyed. Of the 3.5 million acres of corn planted in Wisconsin, 2.7 million acres are within the potential feeding range of cranes.



Juvenile and sub adult cranes in a marauding flock feed heavily in early morning and early evening

South Dakota is dealing with a pheasant population that continues to grow with successful habitat restoration. The cropland reserve program has set aside significant land areas adjacent to corn fields. Cover and nesting sites have been provided in the process and with the loss of lindane and measurol, there is no longer an effective way to keep planted corn seed off the pheasant's menu. Early spring does not offer birds much dietary diversity and the liquid starch found in corn seed is essential to birds reproductive health. In 2008, around 20% of the corn fields in South Dakota had noticeable bird damage that could vary from 5% stand loss to over 50%. Replanting in the Dakotas is a risky venture due to the short season. The economic impact of reduced stand is compounded by the necessity of additional weed control as well as yield loss.

Mississippi has increased corn acreage substantially in the last two year at the expense of cotton. With over 750,000 acres in corn now, migrating blackbirds, grackles, crows and cowbirds have found corn seed to be a very attractive source of starch for the energy needed during the migration north. The narrow planting window in the delta region is perfectly timed for the spring migration and losses to birds have now been estimated by the state to be high. Twenty five percent of the planted corn is experiencing from 10-15% stand loss and 5 % of the corn is experiencing greater than 25% stand loss. Tillage practices plus narrow planting timing work against any replanting in Mississippi so crop yield is directly affected. As in South Dakota, increased weed control adds to the input cost of field experiencing bird depredation.

Crop Loss summaries for representative states 2008-2009

State	Bird Species	% affected acres	Stand Loss %	Replant Cost per acre
Mississippi	Blackbird	25%	10-15%	\$100-\$120
	Grackle	5%	>25%	
	Cowbird			
	Starling			
	Crow			
South Dakota	Pheasant	15-20%	8-10%	\$50
Wisconsin	Crane	74%	5-20%	\$50

Bird Damage in the Field

More attention will be paid to bird damage to fields planted with corn, rice, sunflower, canola, sorghum and other cereal grains in 2010. Identification of damage caused by birds as compared to rodent damage can be difficult to differentiate. The following photos can be used as representative samples of damage caused by different species.



Damage caused by cranes in Wisconsin. Notice how only one plant was missed in a row. Cranes seem to learn the planting distance of seed and often do not wait for the seed to sprout. With a large powerful bill, cranes have no problem penetrating any soil type to dislodge the seed and squeeze the seed to swallow the soft endosperm. Discarded seed without the endosperm can often be found in the vicinity of the damage.



Pheasant damage in South Dakota often shows a large hole where the pheasant has dug the seed first with talons prior to squeezing the endosperm down their throat. Notice the damage continues down a row for some distance. Much of the pheasant damage occurs at the borders with CRP land. When using Avipel only on the field borders, pheasants have gone deeper into the field in search of untreated seed.



Blackbird damage in Mississippi often has a lot of probing and breaking of the soil surface on the side of the seed. Blackbirds in great numbers will concentrate on patches of unprotected fields. The dry Avipel hopper box formulation has worked well to protect these fields.

Avipel Mode of Action

Seed treated with Avipel causes a gut reaction in birds. Rows of treated seed adjacent to untreated sections of field are protected. Birds learn quickly by observing other birds to avoid treated seed in a process called learned avoidance as studied in the early 1980's by Mason and Reidinger. Using Avipel to protect planted seed has been successfully used in over a million acres of treatment in 8 states since 2006. The label is currently still under emergency exemption section 18 use and the full section 3 label is ready for submission to EPA in early 2010.



The damage in this field was done by cranes on untreated seed. The protected half of the field was left alone by the birds as they determined the limits of the treatment with Avipel.

