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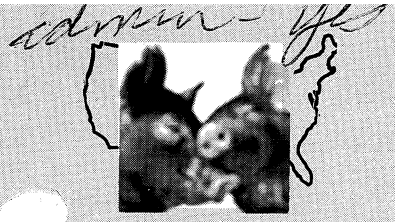

SWINE NUTRITION

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FEEDING BLIGHTED CORN TO HOGS

by James R. Foster

Southern corn leaf blight is a fungus disease caused by *Helminthosporium maydis*. Although this disease has been present in corn fields for many years, it has never caused widespread damage. However, a new strain of the fungus emerged in 1970 resulting in a massive outbreak of southern corn leaf blight. Wet, humid conditions and high temperatures further contributed to the problem. The fungus, *H. maydis*, produces a toxin that causes damage to plants but not necessarily to animals. Swine producers are concerned about the effect of the blight on the feeding value of corn.

Experiments Show Little Reduction in Feeding Value

Research conducted with swine and laboratory animals in a number of states indicates very little adverse effect on the feeding value of blight-infected corn. The degree of blight damage in the corn used in these experiments ranged from mild to severe. The blighted corn in most of the trials could be characterized as having lower test weights and containing slightly more crude protein and fiber and somewhat less energy compared to normal corn.

One Indiana feed manufacturer has reported the chemical composition of 15 samples of blighted corn harvested in late September and early October. Table 1 shows a summary of these analyses in comparison to the average composition of No. 2 shelled corn.

Table 1. Nutrient Content of Normal and Blighted Corn

Ingredients	Type of corn		
	Normal (No. 2 corn)	Blighted	
		Average	Range
	%	%	%
Moisture	15.0	15.0	------
Crude protein	8.5	8.9	7.4-10.1
Fat	3.7	3.7	2.6- 5.0
Fiber	2.2	2.7	2.1- 4.4
Ash	1.2	1.6	0.9- 2.1
Nitrogen-free-extract (NFE)	69.4	68.1	63.5-70.0
Total digestible nutrients (TDN)	79.9	79.3	77.6-79.9

The lower NFE and TDN values for the blighted corn indicate a slightly reduced energy value.

Blighted corn has been evaluated in swine experiments at a number of universities including Florida, Georgia, Illinois, Kentucky, Ohio State and Purdue. A description of the corn used in these trials is presented in Table 2.

A brief summary of the results of swine trials at various universities follows. The name of an animal scientist associated with the research is listed for each State.

Florida (G.E. Combs): Two trials were conducted—one with heavy hogs and another with light hogs. The control group in each trial was fed corn with slight blight infestation and compared with similar hogs fed corn with considerable blight damage. Gain and feed efficiency were essentially identical on the two corns in both trials.

Georgia (R.W. Seerley): Blighted corn and normal corn were compared in a swine experiment. After 10 weeks on experiment there were no significant differences in either rate of gain or feed efficiency between the two groups.

Illinois (A.H. Jensen): Young pigs fed blighted corn gained slightly slower, but converted feed more efficiently (2.16 vs. 2.06 lb. feed per lb. of gain) compared to pigs fed normal corn. In a second trial when pigs were given the choice of normal corn or blighted corn on a free-choice system, they consumed about three times as much of the blighted corn as normal corn.

Kentucky (M.D. Whiteker): Pigs were fed various levels of blighted corn for seven weeks. In the five ration treatments normal and blighted corn were blended so the blighted corn made up 0, 25, 50, 75

Table 2. Description of Normal and Blighted Corn in Experimental Rations

University	Test weight		Crude protein	
	Normal	Blighted	Normal	Blighted
	lbs.	lbs.	%	%
Florida	55	55	11.0	13.0
Georgia	—	54	—	9.8
Illinois	55	51	8.5	7.7
Kentucky	—	52.5	—	9.6
Ohio State	57	48	8.6	9.0
Purdue	55.3	50.1	8.4	10.5

and 100 percent of the total corn in the ration. There were no significant differences between any ration treatments in rate of gain or feed conversion.

Ohio State (R.F. Wilson): Pigs were on test from 65 to 175 pounds. Pigs fed blighted corn ate less feed (6.2 vs. 5.7 lb. per day), gained slightly slower (2.1 vs. 2.0 lb. per day) but were somewhat more efficient in feed utilization (2.90 vs. 2.84 lb. feed per lb. gain) than pigs fed normal corn. The blighted corn, by mold analysis, had the *H. maydis* fungus as well as *Fusarium moniliforme* in about the same concentration of colonies with some nigrosporia and other fungi in limited numbers.

Purdue (H.W. Jones): Pigs fed blighted corn for five weeks gained slightly faster (1.45 vs. 1.38 lb. per day) and required less feed per pound of gain (3.28 vs. 3.35). These pigs weighed 55 pounds initially. Fourteen sows were divided into two groups. One group was fed blighted corn starting 10 days prior to breeding and the other group was fed normal corn. No breeding problems were noted in the group fed blighted corn.

Potential Danger from Secondary Mold Infection

Once the corn stalk, leaves and ear are infected with *H. maydis,* the way is open for infection by many other organisms. Some of these organisms, such as other ear molds, could present animal feeding problems. Preliminary research with swine and rats at several experiment stations have failed to show any reproductive abnormalities when blighted corn was fed. However, plant pathologists have cautioned that blight-damaged corn may be susceptible to certain molds that produce aflatoxin. Swine producers should watch for signs of estrogen stimulation among hogs receiving moldy corn. These signs include abnormal swelling of the vulva, extra teat growth, and, in severe cases, prolapses. Even if moderate symptoms are observed, the affected corn should not be fed to breeding animals prior to breeding or during pregnancy.

Recommendations for Feeding Blighted Corn

1. Since research has indicated no toxic effects from blight-infected corn, it may be fed to growing-finishing swine. If mold is not present, it can also be fed to young pigs or sows.
2. If mold is present on the corn, do not feed it to sows prior to or during pregnancy. If in doubt, test-feed the corn to some open, sexually mature gilts, and if any swelling of the vulva is noted, do not feed to breeding animals.
3. Young pigs are affected more by mold than older finishing hogs. Therefore, do not feed moldy corn to pigs under 75 pounds.
4. If only a small precentage of the kernels are damaged, a complete mixed ration will result in the most efficient utilization of the corn. If corn is badly damaged and palatability reduced considerably, consider feeding it free-choice on a concrete floor and hand-feed supplement. This will allow pigs to refuse the worst corn.
5. If the corn is severly damaged you may want to consider substituting some wheat, milo or barley in the ration for a portion of the corn.
6. Since internal hemorrhage is often associated with mold toxicity, adding 2 to 4 grams of menadione sodium bisulfite (vitamin K) per ton of feed may lessen the problems from molds.
7. Even though the protein level of blighted corn is usually higher than that in normal corn, no change in ration formulation is recommended.

Summary

Research to date has clearly demonstrated there are no toxic effects from feeding blighted corn to hogs. The only potential danger appears to be the possibility of secondary mold infection on the blight damaged corn. If molds are present, avoid feeding the corn to young pigs under 75 pounds or to breeding animals. Blight damaged corn is usually slightly higher in fiber and protein and somewhat lower in energy than normal corn. However, no change in ration formulation is recommended.

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