

**Use of Integrated Pest Management  
to Improve Arkansas Corn and Grain Sorghum Production  
2004 Annual Summary**

**P.J. McLeod, (coordinator and insects); J. Kelley and J. Ross (hybrid performance);  
and T.L Kirkpatrick (nematodes)**

**Objectives:**

Brief summary of current results

**1. To determine the impact of insects on conventional and Bt field corn. (Ross, McLeod)**

Conventional and Bt lines were documented for corn borer damage at the Cotton Branch Station (CBS) and three additional locations. Damage from first generation SWCB was moderate to heavy in non-Bt lines. Subsequent corn borer damage at harvest was heavy and in May planted corn, corn borers reduced yields by greater than 100 Bu/A. No significant damage was observed in Bt lines during 2004.

**2. To develop management systems for early season insects and nematodes, and determine the economic benefits of in-furrow insecticides/nematicides. (McLeod, Kirkpatrick)**

One soil insecticide test was completed at the CBS. Insect populations were low and no significant differences in pest numbers were detected among the treatments. Soil samples have been obtained from eight corn fields throughout Arkansas and nematode sampling is underway at the Hope Research and Extension Center.

**3. To establish the benefits of foliar insecticides applied for corn borer management during mid-season. (McLeod)**

Small plots located at the CBS and three large fields were sprayed (Intrepid and Capture) in early July for corn borers. All tested insecticides significantly reduced stalk and shank tunneling. Damage in non-treated plots was much greater in May planted corn than in the April planting. Insecticides did not significantly increase yields in large fields. Lodging was reduced.

**4. To establish information on the biology and management of overwintering corn borers in Arkansas field corn.(McLeod)**

The second year of the study of impact of cultivation on overwintering corn borers was completed this past spring. Although no significant differences in initial SWCB mortality were detected among the types of cultivation (mowing, discing, stale seed bed) it appears that each cultivation method increases the impact of the harmful effects of winter when compared to no stalk destruction. White grub populations were much higher in plots with no stalk destruction.

**5. To develop management systems for insects attacking grain sorghum in Arkansas (McLeod, Ross)**

Grain sorghum fields at Des Arc and Marianna were monitored for insect pests. Chinch bugs were detected in low numbers in several fields but impact on grain sorghum was minor. Additional insect pests (corn earworm, fall armyworm, and sorghum webworm) were observed in numbers below economic thresholds during the 2004 season.

**6. To establish information on the basic biology of the principal insect pests of grain sorghum in Arkansas.(McLeod)**

Grain sorghum fields at Des Arc and Marianna were sampled on a weekly basis for insects. Damaging insects included corn earworm, fall armyworm, sorghum webworm, sorghum midge and stink bugs.

Evaluation of field corn cultivars for resistance to insects, Marianna, Arkansas, 2004

Cultivar	% of plants with corn borer damage	% of plants with more than 2 internodes damaged	% of internodes damaged	% shank damage	ear damage rating *	yield bu/A
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**Early planting (April)**

1. Pioneer 3245	72.5 ab	25.0 ab	13.2 a	20.0 a	1.0 de	164.2 bcd
2. Pioneer 3223	70.0 ab	5.0 c	8.8 b	20.0 a	1.8 ab	161.7 cd
3. Pioneer 31B13 Bt	2.5 c	0.0 c	0.2 c	0.0	0.9 ef	219.3 a
4. Pioneer 33J56	77.5 a	30.0 a	16.2 a	27.5 a	1.2 bcde	158.6 cd
5. Pioneer 33J57 Bt	5.0 c	0.0 c	0.5 c	0.0	0.3 f	198.5 abc
6. Pioneer 34B97	60.0 b	12.5 bc	9.2 b	27.5 a	2.2 a	117.1 d
7. Pioneer 34B98 Bt	2.5 c	0.0 c	0.2 c	0.0	1.2 cde	150.7 cd
8. Dekalb 697	80.0 a	22.5 ab	15.5 a	25.6 a	1.7 abc	199.0 abc
9. DeKalb C6970 Bt	5.0 c	0.0 c	0.5 c	0.0	1.6 abcd	213.2 ab

**Middle planting (May)**

1. Pioneer 3245	95.0 a	52.5 a	22.8 b	37.5 b	2.6 a	89.4 cd
2. Pioneer 3223	92.5 a	55.0 a	29.5 a	42.5 b	2.2 a	62.9 d
3. Pioneer 31B13 Bt	0.0 b	0.0 b	0.0 c	0.0 c	1.8 a	163.6 ab
4. Pioneer 33J56	92.5 a	55.0 a	26.3 ab	85.0 a	2.3 a	124.0 bc
5. Pioneer 33J57 Bt	2.5 b	0.0 b	0.2 c	0.0 c	2.3 a	179.0 a
6. Pioneer 34B97	97.5 a	65.0 a	31.0 a	71.8 a	2.5 a	92.8 cd
7. Pioneer 34B98 Bt	5.0 b	0.0 b	0.3 c	0.0 c	2.2 a	124.1 bc
8. Dekalb 697	90.0 a	52.5 a	23.2 b	25.0 b	2.4 a	160.3 ab
9. DeKalb C6970 Bt	5.0 b	0.0 b	0.3 c	0.0 c	2.2 a	172.3 ab

\* Damage ratings are 0 (none) to 5 (extensive).

Column means within a planting followed by the same letter are not significantly different (P=0.05, LSD).