Pest Management Needs Assessment for Oklahoma Peanut Producers

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Peanut has been a traditional cash crop for Oklahoma growers; however Oklahoma has experienced a downward trend in production in recent years. Peanuts are predominantly grown in southwestern Oklahoma. Acreage devoted to peanut production has dramatically declined during the past 10 years. Nearly 100,000 acres of peanut were planted in 1995, while 35,000 acres were planted in 2005 (NAAS, 2008). Meanwhile, yields have increased from 2,230 pounds per acre during 1996 through 2000 to 2,900 pounds per acre during 2001 through 2005 (NASS, 2008). In 2006, producers harvested 22,000 acres of peanuts in Oklahoma, which produced an average yield of 2,850 pounds per acre. The top four counties for peanut production included Beckham, Caddo, Tillman, and Custer (NASS, 2008).

A self-administered mailed survey was developed (Dillman, 2007) by T. Franke and K. Kelsey in consultation with OCES faculty who had expertise in entomology, plant pathology, and plant and soil sciences. The objective of this survey was to identify pest management needs of Oklahoma peanut producers to guide Oklahoma State University's research and Extension programs in addressing their most critical needs. The survey asked Oklahoma peanut producers to report information regarding their production management practices in regard to soil fertility, disease, insects, and weeds. The population for the study consisted of 1,100 Oklahoma peanut producers in 2006, while the sample consisted of a randomly stratified sample (*n* = 689). Thirty-two (32) of the 689 surveys were returned (5 percent response rate). The thirty-two respondents planted a total of 4,085 acres of peanuts (average of 127 acres per producer) representing about 19 percent of the total peanuts grown in Oklahoma in 2006. It should be noted 2006 was a severe drought year, following several drought years, which may have affected the responses to the survey.

Findings

The issues identified by respondents that were of greatest concern with growing peanuts are listed in Table 1.

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Table 1. Top concerns with peanut production identified by Oklahoma survey respondents.

Issue	*High Concern*	*Moderate Concern*	*Low Concern*	*No Concern*
Weeds	78.1%	18.8%	3.1%	0%
Diseases	75.0%	21.9%	3.1%	0%
Harvest	64.5%	35.5%	0.0%	0%
Soil fertility	50.0%	31.3%	18.8%	0%
Insects	28.1%	40.6%	31.3%	0%

*Other concerns noted by growers (one each) included: irrigation water quality and quantity, irrigation costs, field lost and low prices (marked high concern), time, and improved wicking equipment.

Weeds

Respondents (78.1 percent) identified weeds as the top issue of high concern with growing peanuts. Pigweed was the most frequent weed problem (*f* = 27), followed by yellow nutsedge (*f* = 16) (Table 2). Various herbicides were used to control weeds in peanuts during 2006. Table 3 notes the herbicides used by respondents to treat weed problems in peanuts during 2006.

Table 2. Weeds encountered in peanut by Oklahoma survey respondents.

Weed	*Frequency (f)*
Pigweed	27
Yellow nutsedge	16
Texas panicum	10
Horsenettle	7
ALS-resistant Palmer amaranth	5
Crownbeard	4
Spurge	4
Eclipta	3
Hophornbeam copperleaf	2
Silverleaf nightshade	2
Sunflowers	2
Crabgrass	2
Eclipta, Careless weeds, Morning glory, Other	1

Table 3. Herbicides and number of applications used for weed control in peanuts by Oklahoma survey respondents.

Trade Name and (chemical name)	*Air*	*Ground*	*Unspecified*
Prowl® (pendamethalin)	0	17	3
Cadre® (imazameth)	1	10	3
Pursuit® (imazethapyr)	0	6	0
Strongarm® (diclosulam)	0	4	0
Valor® (flumaioxazin)	0	3	0
Select® (clethodim)	0	2	0
Cobra® (lactofen)	0	2	0
Gramoxone max® (paraquat)	0	2	0
Ultra Blazer® (aciflurofen)	0	3	0
Butyrac 200® (2, 4-DB)	0	2	0
Dual II Magnum® (metolachlor)	0	1	0
2, 4-DB®	0	1	0
Roundup® (glyphosate)	0	1	0
Dual® (metolachlor)	0	1	0
Treflan® (trifluralin)	0	1	0
Outlook® (dimethenamid)	0	1	0
Cinch® (cinmethylin)	0	-	1
Total	**1**	**57**	**7**

Plant Diseases

Peanut diseases were listed as an issue of high concern by respondents (75 percent). The most frequent disease experienced by producers was leaf spot (*f* = 25), followed by pod rot and southern blight (*f* = 8 each) (Table 4). Various fungicides were used to treat peanut diseases during 2006. Table 5 notes the fungicides used by respondents to treat plant disease problems in peanuts during 2006.

Harvest

Harvest issues were identified as an issue of great concern by more than half of the respondents (64.5 percent). However, respondents were not asked to specify issues associated with harvest. The response shows this issue should be of continued effort for research and Extension educational programs.

Soil Fertility

Producers noted several soil fertility issues related to growing peanuts. The most frequent issue was with phosphorus deficiency (*f* = 11), followed by potassium deficiency (*f* = 10). Table 2 shows other soil fertility issues identified by respondents while growing peanuts.

Table 4. Diseases encountered in peanuts by Oklahoma survey-respondents.

Disease	*Frequency (f)*
Leaf spots	25
Pod rot	8
Southern blight	8
Sclerotinia blight	6
Limb rot	5
Tomato spotted wilt virus	1
Web blotch	1

Table 5. Fungicides used for disease control in peanuts by Oklahoma survey respondents.

Trade Name and (chemical name)	*Air*	*Ground*	*Unspecified*
Bravo® (mefenoxam and chlorothalonil)	6	5	2
Folicur® (tebuconazole)	5	3	1
Headline® (pyraclostribin)	4	2	3
Tilt® (propionazole)	5	3	-
Abound® (azoxystrobin)	-	6	2
Endura® (boscalid)	4	-	-
Omega® (prochloraz)	-	1	-
Total	**24**	**20**	**8**

*One respondent noted he used "Abound® to treat pod rot (peanut disease) through chemigation."

Insects and Arthropod Pests

Insects were not perceived to be an issue of high concern by a majority of survey respondents in 2006, but insect problems were considered to be an issue of high or moderate concern combined by nearly 70 percent of the respondents. Thrips were the most important insect problem identified (*f* = 10), followed by spider mites and fall armyworms (*f* = 2 each) (Table 7). Insecticides used to treat insect problems and the methods of application are specified in Table 8.

Table 6. Soil fertility problems encountered by peanut producers.

Element	*Frequency (f)*
Phosphorus	11
Potassium	10
Low pH (acid soil)	9
Zinc	4
Calcium	4
Nitrogen	3
Sulfur	2
Salinity	2

Table 7. Arthropod pests encountered by peanut producers.

Insect	*Frequency (f)*
Thrips	10
Spider mites	2
Fall armyworms	2
Beet armyworms	1
Lesser cornstalk borers	1
Potato leafhoppers	1

Table 8. Insecticides used in peanuts for insect control.

Trade Name and (chemical name)	*Air*	*Ground*	*Unspecified*
Orthene® (acephate)	0	2	1
Temik® (aldicarb)	0	2	2
Danitol Di-Syston® (fenopathrin + disulfoton)	0	1	0
Sevin® (carbaryl)	0	1	0
Lorsban® (chlorpyrifos)	0	1	0
Comite® (propargite)	0	1	0
Total	**0**	**8**	**3**

Summary and Conclusions

The average peanut producer who responded to this survey grew 127 acres of peanuts and identified weeds, diseases, and harvest (unspecified) as issues of major concern. Pigweed and yellow nutsedge were the most frequent weed problem encountered. Leaf spot was the most frequently encountered disease problem in peanut. Soil fertility problems typically included phosphorus, potassium, and low pH (acid soil). Insects were of minor concern.

These results suggest peanut producers will benefit from research and Extension programs addressing basic and specific pest management challenges. Producers are aware of most of the weed problems occurring in peanut, but they continue to need research-based evaluation of weed control methods. Research and Extension programs addressing peanut disease problems will still be useful to assist growers with disease management; including the evaluation of fungicides and the development of computer-assisted, weather based disease forecasting programs. While less of a general problem, they would benefit from up-to-date information on harvesting, soil fertility, and insect management issues.

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