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OKLAHOMA PEANUT DISEASE LOSS ESTIMATES FOR 1979

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Each year diseases cost the Oklahoma peanut growers thousands of dollars and the 1979 season was not an exception. Pod rot, Sclerotinia, leafspots and nematodes continued to be the major problems this past year in reducing peanut yields. For the most part the 1979 season was a good year. Rainfall was above average, thus many dryland fields produced yields comparable to those under irrigation. In spite of the heavy disease losses, Oklahoma growers produced over 132,100 tons of peanuts, which was the second highest peanut crop produced. The 132,100 tons were sold for approximately $420 per ton, returning $55,482,000 to the growers. If diseases had not been present the estimated production with no disease would have been approximately 179,973 tons, returning to the Oklahoma peanut growers $75,588,555. This estimated $20,106,555 loss due to diseases is economically important.

Peanut disease losses vary from year to year, with the weather and control practices having a great influence on disease incidence and loss. Peanuts play an important role in supporting the farming operations of many Oklahoma growers. Disease control practices become increasingly important, because any heavy loss in production can have a severe impact on the economy of small communities and businesses where peanuts are grown.

Seedling diseases continue to be important, costing the Oklahoma grower approximately $2,078,685. Seedling disease is generally caused by a combination of soil organisms, thus it is called a seedling disease complex. The fungal pathogens most commonly involved in the seedling disease complex are Rhizoctonia solani, Pythium sp., Fusarium sp., and Aspergillus niger. The young seedlings have little or no natural resistance to the many soil pathogens; hence, peanut seeds and seedlings require a fungicidal protection. Research has shown that the combination of a fungicide seed treatment and a soil fungicide applied at planting as an in-furrow treatment and incorporated in the covering soil are needed to insure healthy peanut seedlings. Much of the seedling disease loss could have been prevented by applying the soil fungicide Terraclor in an in-furrow band planting time practice.

Sclerotinia blight (Sclerotinia sclerotiorum) was quite heavy in many Caddo and Hughes County fields. The disease seems to be restricted to the peanut production area north of a line drawn across the state through Ardmore. Sclerotinia needs cool-moist conditions; hence, the rains and cool, cloudy weather last summer encouraged heavy disease buildup, causing heavy losses to infested fields. Botran 75W, available to growers under a specific exemption under Section 18 of FIFRA (emergency use) prevented excessive losses in many fields, yet lack of recognition, weather and field conditions favorable to the disease made it difficult to control. Sclerotinia blight symptoms closely resemble those of Southern blight caused by the fungus Sclerotium rolfsii and many growers fail to distinguish between the two diseases. The misidentification caused many growers to apply the wrong fungicide. Fungicides that control Southern blight do not control Sclerotinia, thus the disease had destroyed large areas in many fields before the proper fungicide was applied.

OKLAHOMA PEANUT DISEASE LOSS ESTIMATES FOR 1979 1/

	% Loss	lbs Loss	Dollar Loss
Seedling	2.75	9,898,500	2,078,685
Southern Blight	1.5	5,399,180	1,133,828
Aspergillus flavus (Seg 3)	0.5	1,799,730	377,693
Sclerotinia Blight	1.0	3,599,460	755,887
Pod & Root Rots	10.6	38,154,220	8,012,386
Verticillium & Fusarium Wilts	2.0	7,198,920	1,511,773
Nematodes	5.0	17,997,280	3,779,429
Foliar Diseases	3.75	13,497,960	2,834,572
Total	27.1	95,745,500	20,106,555

1/ % disease loss estimate derived from field surveys, grower reports, research and demonstration plots, field observations and plant disease diagnostic laboratory.

Total acres harvested	120,000 Acres
Total production	132,100 Tons
Estimated production with no disease	179,973 Tons
Estimated total crop value with disease	$55,482,000 @$420/Tons
Estimated total crop value without disease	$75,588,555 @$420/Tons
Average yield with disease	2,202 lbs/Acres
Average yield with no disease	2,999 lbs/Acres

Southern blight (*Sclerotium rolfsii*) was not as severe as past seasons, however, the increased rainfall encouraged heavy disease buildup in a few non-irrigated fields in Eastern Oklahoma. Much of the $1,133,828 loss could have been prevented with the proper use of Terraclor and/or Vitavax soil fungicides.

Aspergillus flavus a soil-borne fungus is known to infect peanuts in the ground, the windrow or in trucks or trailers at harvest and can develop under certain storage conditions. This soilborne pathogen can infect peanuts from seedling stage to maturity and is capable of producing aflatoxin in peanut kernels before and after harvest. No practice can be recommended at this time that will completely eliminate the aflatoxin problem, however, certain cultural and disease control practices will reduce the chances of the disease occurring. The *A. flavus* segregation 3 peanuts not only amounts to a heavy loss to the growers but presence of aflatoxin is the concern of the entire peanut industry.

Pod rot disease was not as severe in certain fields that had suffered heavy loss in past seasons, yet, there were a number of fields that suffered 40 to 60% loss this year. Pod rot disease continued to cause heavy losses in certain fields, but it was reduced or controlled in others, while a great number of growers reported having severe infection for the first time. In many fields the Pod rot disease took its toll causing a 10.6% loss in the state costing Oklahoma growers approximately $8,012,386 this year. Certain cultural and chemical practices have been demonstrated to reduce the severity of Pod rot. However, because effective control has not yet been attained, we can expect heavy Pod rot disease losses to continue.

Verticillium wilt (Verticillium dahliae) infested acres continue to increase in the Caddo County peanut area. The disease is no longer just a Caddo County grower problem since Verticillium infected plants were found in Southern and Eastern Oklahoma fields. We are concerned about the spred of this disease since there are no practical methods of controlling Verticillium wilt known.

Early and late peanut leafspots (Cercospora arachidicola) and (Cercosporidium personata) did not become a problem in most fields until late August or early September. Heavy losses occurred in many fields because growers failed to recognize the importance of late season disease and neglected their fungicide program. Heavy infection followed with almost complete defoliation of the plants was observed not only in the river bottom fields but also in many upland, open fields. Increased Cercosporidium personata (late leafspot) infections were found during late August in certain fields and became more severe and difficult to control with cool-moist fall conditions. The Leafspot diseases moved down the stems to the pegs causing 40 to 50% losses in certain fields. This late season disease development was estimated to have caused 1000 to 1800 lbs per acre reduction in yield. The 3.75% loss credited to the two leafspot diseases was estimated to have cost the growers approximately $2,834,572. This estimate may have been low in relation to the amount of loss credited to the late season buildup. The heavier losses can be attributed to the pegs being weakened by the late season fungal infection and nuts being left in the ground. The major portion of this loss could have been prevented

by maintaining a good fungicide program. There are many excellent fungicides presently recommended and available. The greatest problem is proper timing and application. Web blotch (Ascochyta) and Leptosphaerulina leaf scorch (Letosphaerulina crassiasca) diseases were difficult to find and not considered to be a problem this year.

Root knot (Meloidogyne hapla), Root lesion (Pratylenchus brachyurus) and Ring (Criconemoides sp.) nematodes were found in damaging populations throughout the peanut producing areas. Root knot and Root lesion nematodes are known to cause heavy losses. All three species seem to be involved in the Pod rot disease complex. Certain fields visited this summer reflected poor control of Root knot nematode from nematicides used, however, in most cases the poor control could be associated with improper application. The Root lesion populations did not reach damaging levels until late season, hence, many of the nematicide applications applied in July had little effect in control. The heavy Ring nematode populations found in 1978 did not seem to develop this year. The Ring nematode is known to cause injury to the roots and pods, however, we lack information concerning what population level can be considered damaging and has limited information on its control. Several nematicides are available which when properly applied will provide effective and economical control of the Root knot, Root lesion and Ring nematodes. Control of these nematodes could have drastically reduced the $3,799,429 loss incurred by Oklahoma peanut growers.

The estimated $20,106,555 loss due to diseases in peanuts during 1979 is economically important and should be the concern of every Oklahoma peanut grower. Much of this loss could have been prevented with early detection and proper disease control practices. We realize the total 27.1% disease loss could not have been prevented, however, at least 11.5% of this loss could have been prevented with early detection and using recommended disease control practices. This 11.5% loss estimate was based on the percent of those diseases that have recommended disease control practices available and actual research and demonstration plot results to support this yield increase. The average yield per acre could have been increased 300 - 500 lbs per acre with proper disease control. Growers should contact their local County Extension Office for the recommended peanut disease control practices.

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