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**POULTRY LITTER PRACTICES
OF ARKANSAS POULTRY PRODUCERS**

By

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POULTRY LITTER PRACTICES BY ARKANSAS POULTRY PRODUCERS

Poultry litter is removed from poultry houses by the growers themselves, cleanout contractors, and others such as friends and neighbors. Because poultry flock sizes and litter removal practices vary among producers, the amount of litter removed per farm varies greatly. Most of the poultry litter of the growers responding to our survey is spread on pastures as a fertilizer. Other uses of litter include using or selling it for cattle feed and selling it as a soil amendment for row crops. This report presents the findings of a questionnaire sent to poultry growers in Arkansas to determine what growers do with their litter. Findings are presented for the state and for each region.

METHOD OF STUDY

Poultry growers throughout Arkansas were questioned to find out who removes litter from poultry houses, the amount of litter removed per year and the uses of litter. Winrock International Institute for Agricultural Development, in cooperation with the Cooperative Extension Service, University of Arkansas sent questionnaires to members of the Arkansas Poultry Growers Association. Information about the project and a postage paid card with questions was mailed to each poultry grower. The respondents were identified by Northwest, River Valley, Southwest and Eastern regions of the state (Figure 1). There were 44 responses from the Southwest region, 36 responses from the River Valley region, 35 from the Northwest and 13 from the Eastern region. This report summarizes the findings of 129 poultry grower responses in 34 counties of Arkansas.

LITTER REMOVAL

Poultry litter is removed from houses between batches. Some growers remove litter only once or twice per year while others clean out between every batch. The more often litter is removed, the more bedding is contained in the litter and the greater the amount of litter available for use. Often, cleanout contractors are hired by poultry growers to remove the litter from poultry houses. The litter is then spread onto the grower's pastures, hauled to other nearby pastures and spread, stored for feed or future use, or sold. If a cleanout contractor is not hired to remove litter, the litter is most often removed by the grower. Some growers have the equipment necessary to remove litter, while others do not. Some growers have friends and neighbors with cleanout equipment who remove the litter. Some poultry growers remove "caked litter" or wet spots between batches but hire a cleanout contractor for removing the majority of litter.

Figure

POULTRY GROWERS RESPONSE TO QUESTIONNAIRE

NORTHWEST REGION

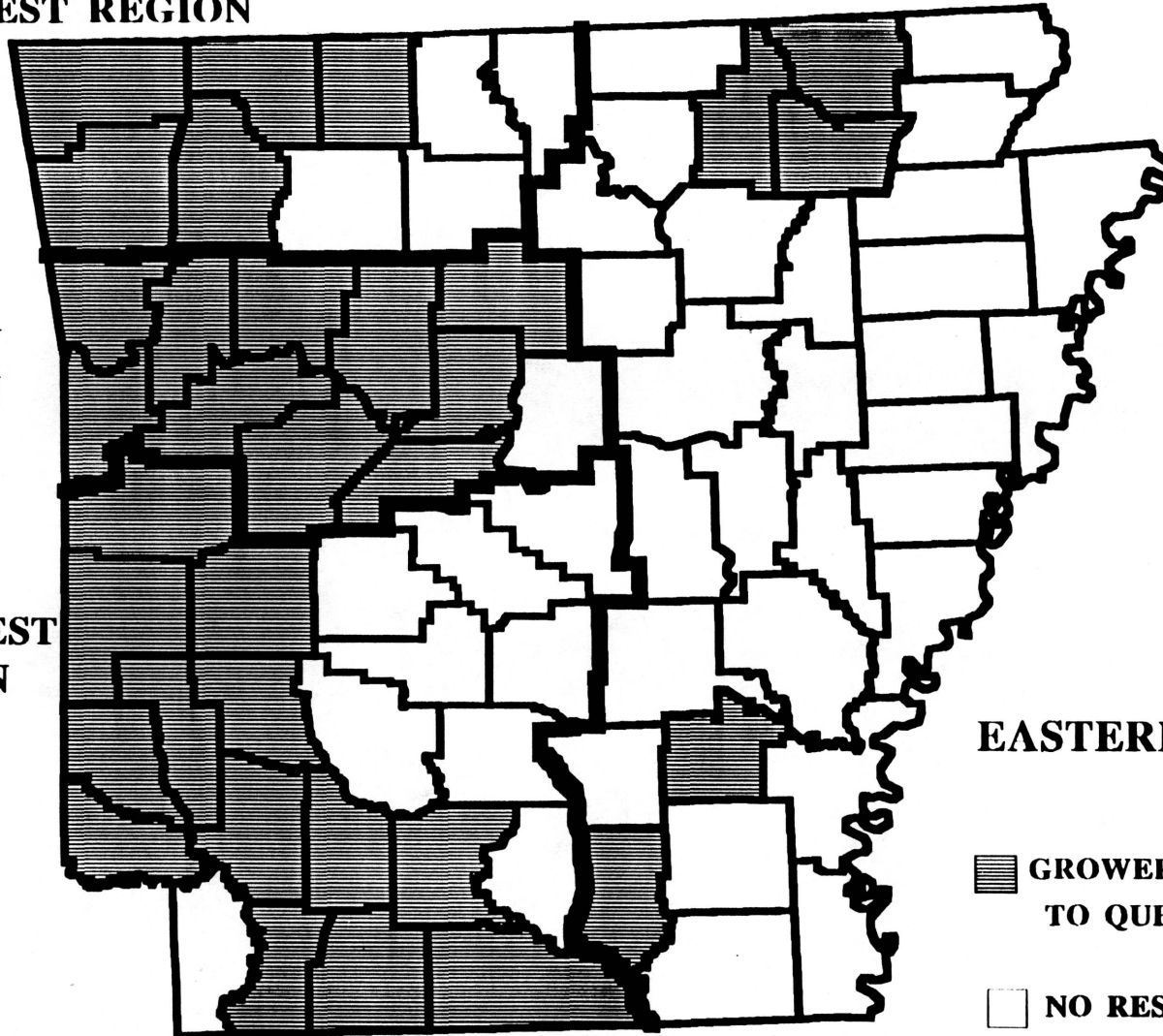
**RIVER
VALLEY
REGION**

**SOUTHWEST
REGION**

EASTERN REGION

 **GROWERS RESPONSE
TO QUESTIONNAIRE**

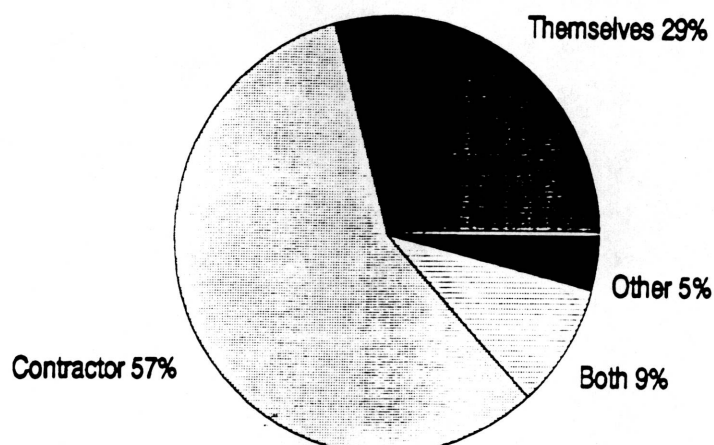
 **NO RESPONSE**



Who Removes Litter

Over half of growers responding use cleanout contractors exclusively for the removal of poultry litter (Figure 2). Twenty-nine percent of the respondents statewide clean out their own poultry houses. The remaining respondents either clean out themselves and use contractors, or have a friend or neighbor remove the litter.

Figure 2: Poultry Litter Cleanout - Arkansas



There are differences in removal practices among regions (Figures 3-6). The Northwest Arkansas region most closely reflects the state results, with cleanout contractors cleaning the majority of houses. The eastern half of Arkansas differs tremendously from the western half in litter removal. Figure 5 shows that about two-thirds of the growers in the Eastern region remove litter themselves exclusively. The only regions in which litter was cleaned out by friends and neighbors were the River Valley and the Northwest regions.

Figure 3: Poultry Litter Cleanout - Northwest Region

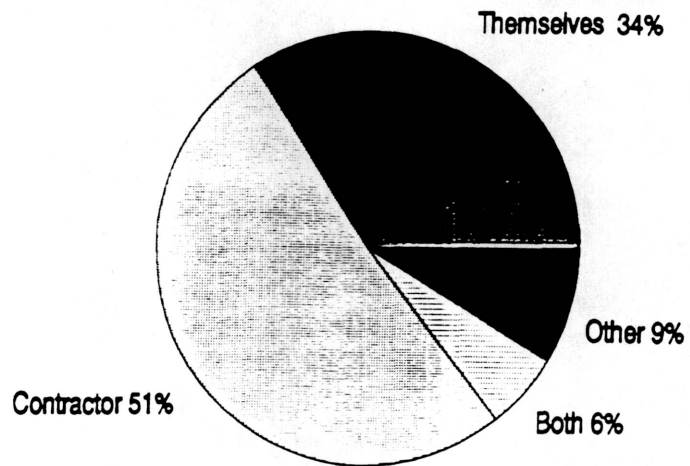


Figure 4: Poultry Litter Cleanout - River Valley Region

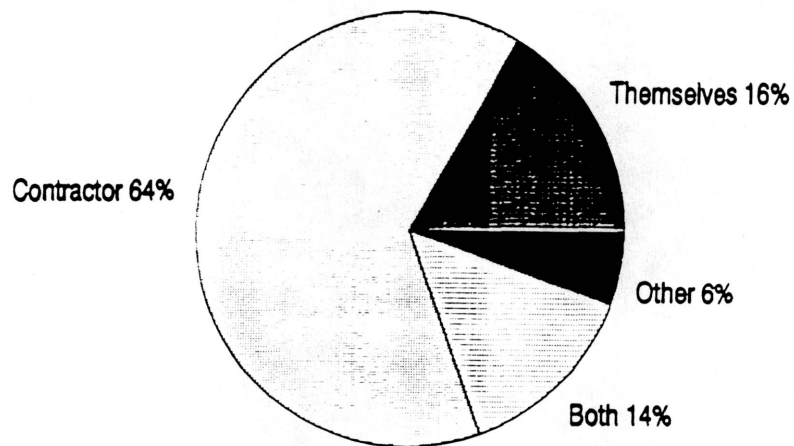


Figure 5: Poultry Litter Cleanout - Southwest Region

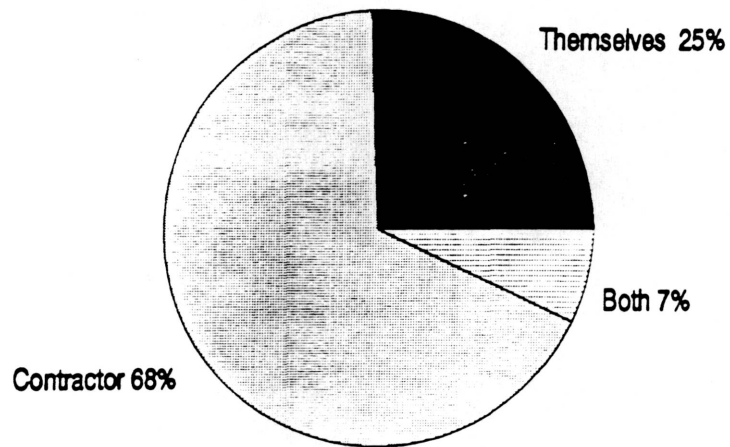
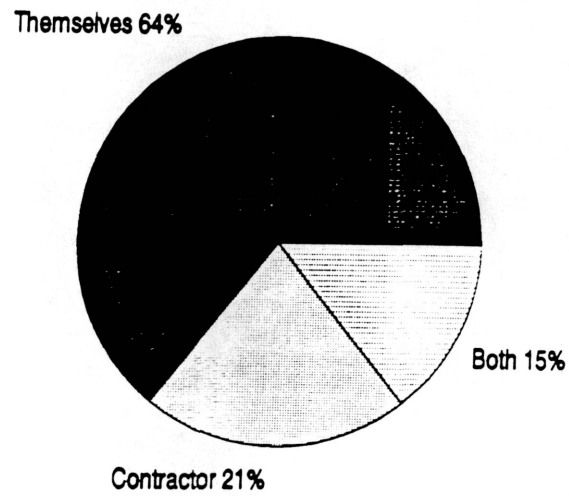


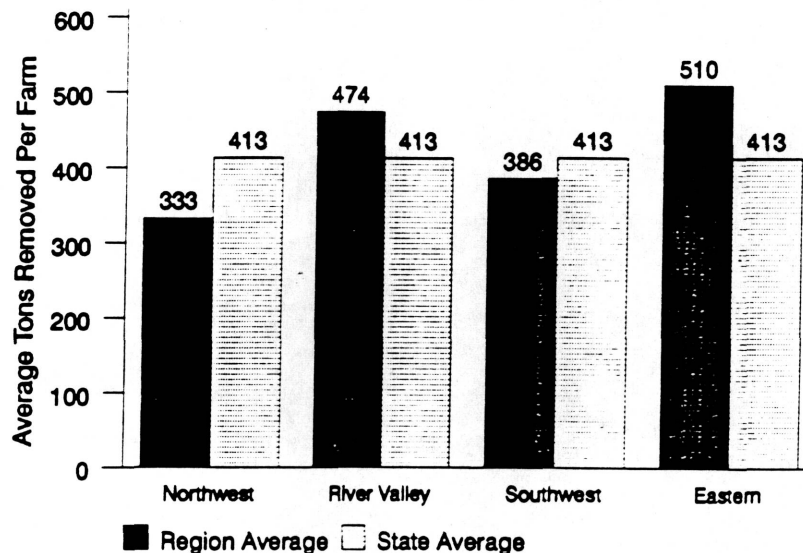
Figure 6: Poultry Litter Cleanout - Eastern Region



Amount of Litter Removed

Figure 7 shows the tons of litter removed per farm in 1992 by region. The region which differs most from the statewide average of 413 tons is the Eastern region with an average of 510 tons per farm. This may be due to larger farms, greater availability and low prices of bedding material, an off-farm demand for their litter, and more frequent litter removal. The lowest average amount of litter removed per farm is in the Northwest region, with an average of 333 tons. Poultry producers in this area tend to remove poultry litter once or twice a year, rather than between every flock, and may have fewer houses than other areas of the state.

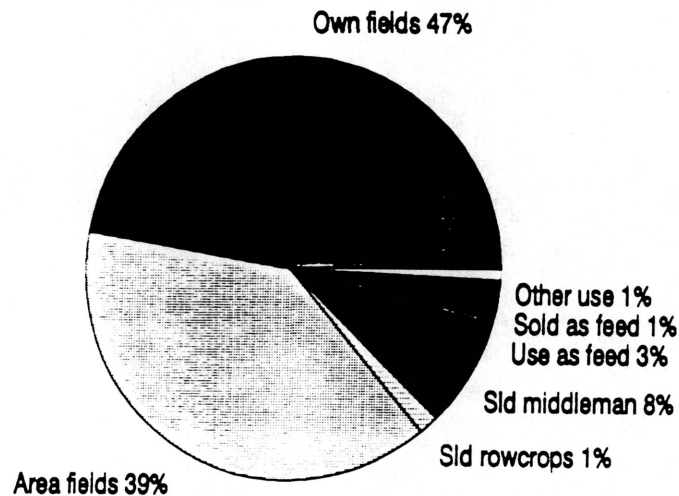
Figure 7: Tons of Litter Removed Per Farm in 1992



LITTER USES

About half of litter produced on the poultry farms in our survey is used on the growers' own fields and over one-third is used on other fields in the area (Figure 8). Eight percent is sold to middlemen/haulers. Three percent of litter produced is used on the grower's farm as a cattle feed. One percent is sold to be used as a cattle feed. One percent is sold directly to row crop farmers.

Figure 8: Percentage of Litter By Use - Arkansas



The Northwest and River Valley regions are similar to the state averages (Figures 9,10) except no litter is sold directly to row crop farmers. About two-thirds of litter produced by responding growers in the Southwest region is used on their own fields. Figure 11 shows that some litter in this region is sold as feed, 4 percent is used on the farm as a feed, and 3 percent is for other uses, which include giving away to friends and neighbors and using the litter in a composter. Respondents in the Eastern region sell more litter to middlemen than other regions in the state (Figure 12). There is currently a market for litter from this area for use as a soil amendment on row crops in the delta. Nine percent of litter produced by respondents in the Eastern region is sold directly to row crop farmers. Almost one-third of litter produced by respondents in the eastern half of the state is sold to middlemen.

Figure 9: Percentage of Litter By Use - Northwest Region

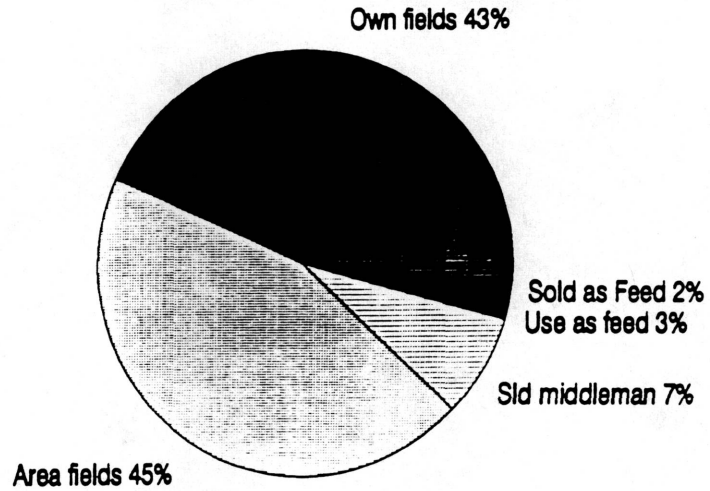


Figure 10: Percentage of Litter By Use - River Valley Region

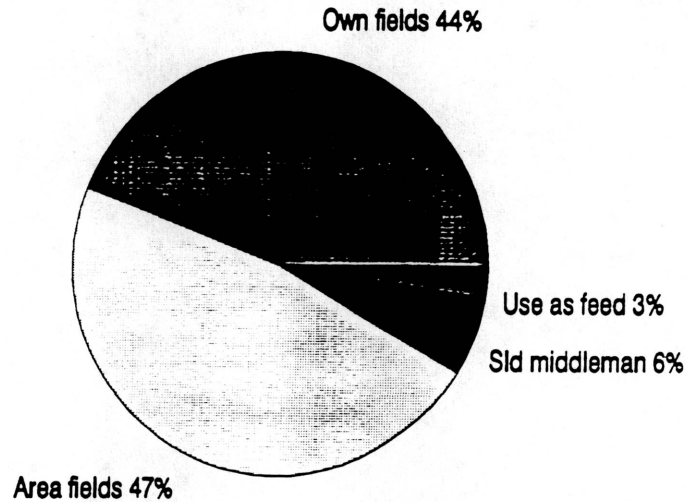


Figure 11: Percentage of Litter By Use - Southwest Region

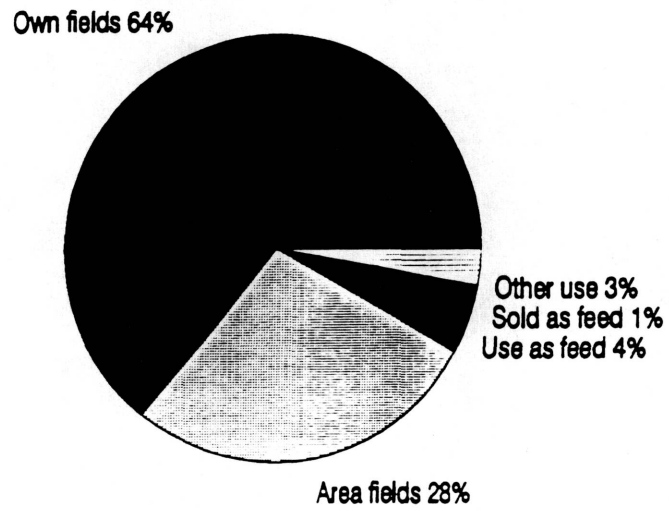
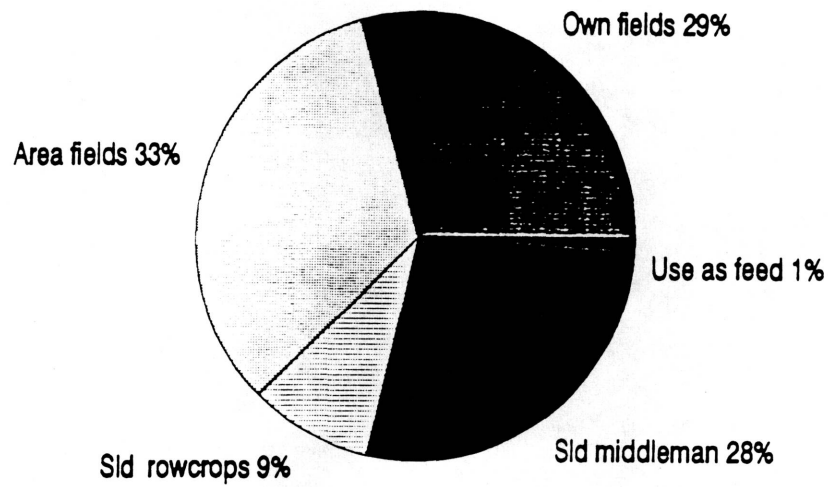


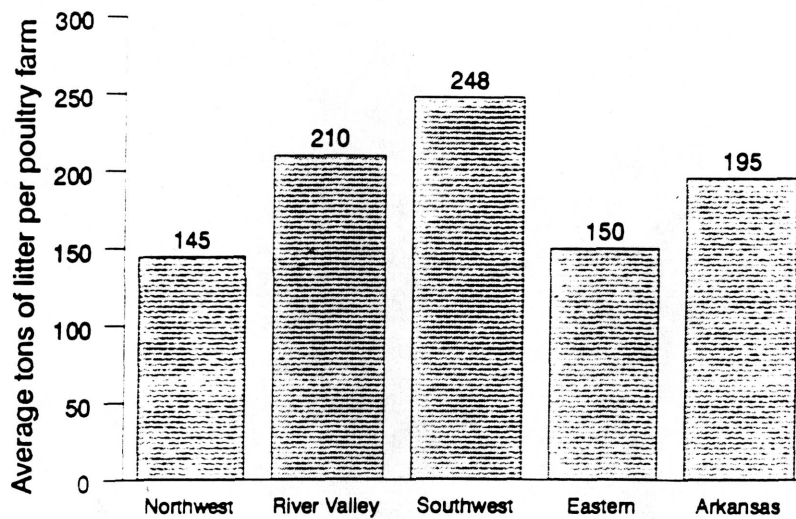
Figure 12: Percentage of Litter By Use - Eastern Region



On average, there are 195 tons of litter spread on the poultry producer's land in one year and 161 tons of litter spread on other fields in the area. In addition, an average of 34 tons per producer are sold to a middleman/hauler, 12 tons are fed to the grower's cattle and 2 tons are sold to be used as a cattle feed. An average of 3 tons are used for other purposes such as given away or used for a composter. The following figures show the average amount of litter per poultry farm used for different purposes.

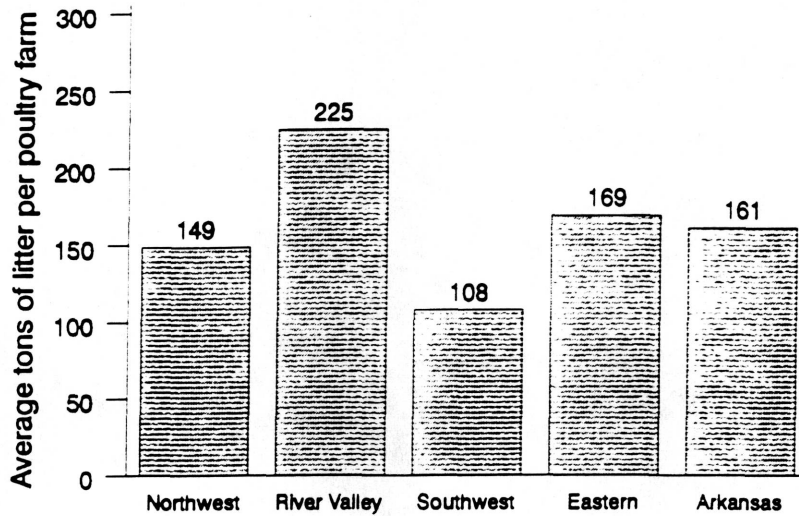
There are regional differences in the amount of litter used per grower for different uses. Growers in the Southwest region spread the greatest amount of litter on their own fields, with an average of about 250 tons per farm (Figure 13). The least amount used for this purpose was in the Northwest (145 tons) and Eastern (150 tons) regions.

Figure 13: Average Amount of Litter Spread on Own Fields



The amount of litter per grower spread on other area fields was greatest in the River Valley region where growers use an average of 225 tons each (Figure 14). The Southwest region had the least amount per grower used for other area fields, which was less than half of the River Valley average.

Figure 14: Average Amount of Litter Spread on Other Fields in Area



Respondents from the Eastern region were the only growers to sell litter directly to row crop farmers, with an average of 46 tons of litter per farm (Figure 15). In addition, growers from the Eastern region sold an average of 140 tons per farm to middlemen/haulers (Figure 16). Growers in the Northwest and River Valley regions also sold some litter to middlemen, but growers in the Southwest region did not.

Figure 15: Average Amount of Litter Sold Directly to Row Crop Farmers

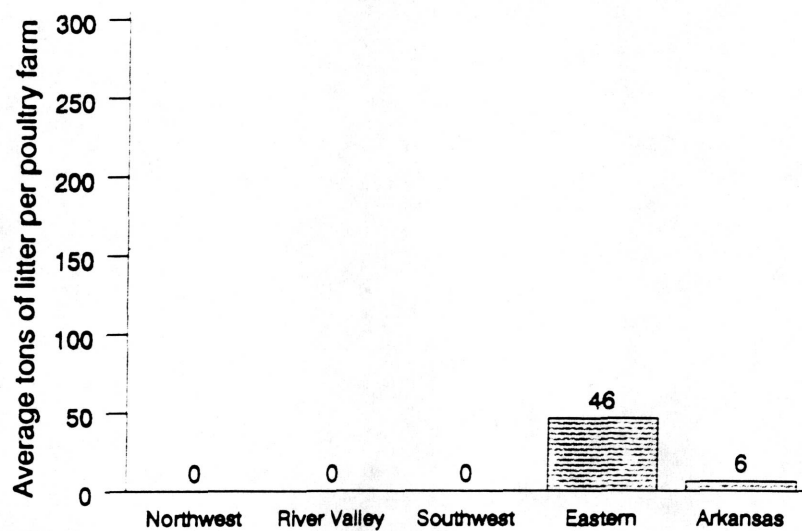
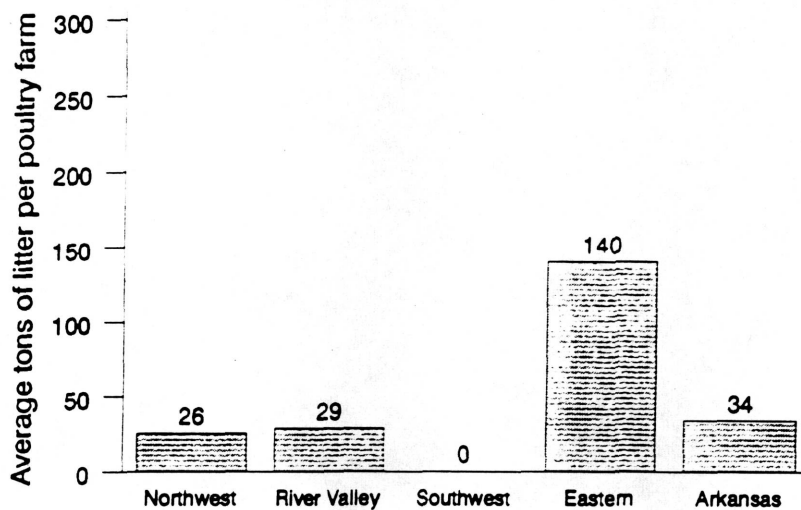


Figure 16: Average Amount of Litter Sold to Middleman/Hauler



Growers from all regions used litter on their farms as cattle feed and some also sell litter to be used as cattle feed. The Southwest region reported the greatest amount of litter fed per poultry farm, with an average of 19 tons (Figure 17). Respondents from the Southwest and Northwest regions reported selling litter as cattle feed (Figure 18). In addition, growers from the Southwest region used an average of 11 tons per farm for giving away to friends and neighbors or using in composters (Figures 19). No other region reported giving away litter.

Figure 17: Average Amount of Litter Used as Cattle Feed

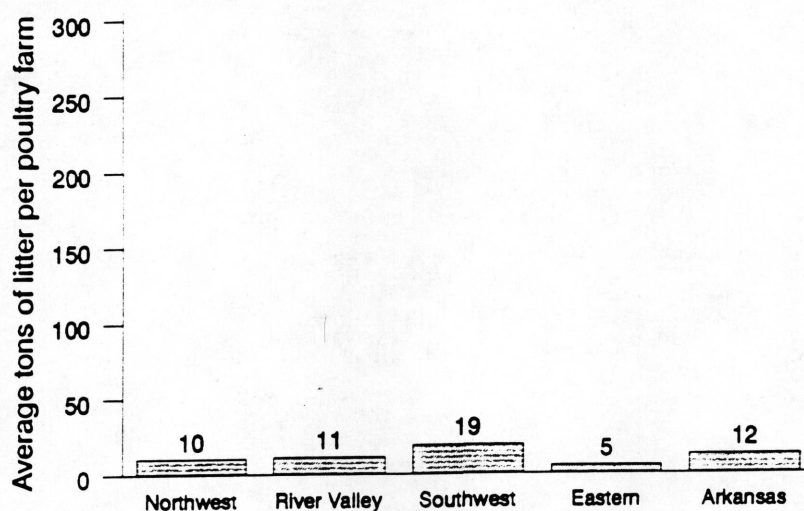


Figure 18: Average Amount of Litter Sold as Cattle Feed

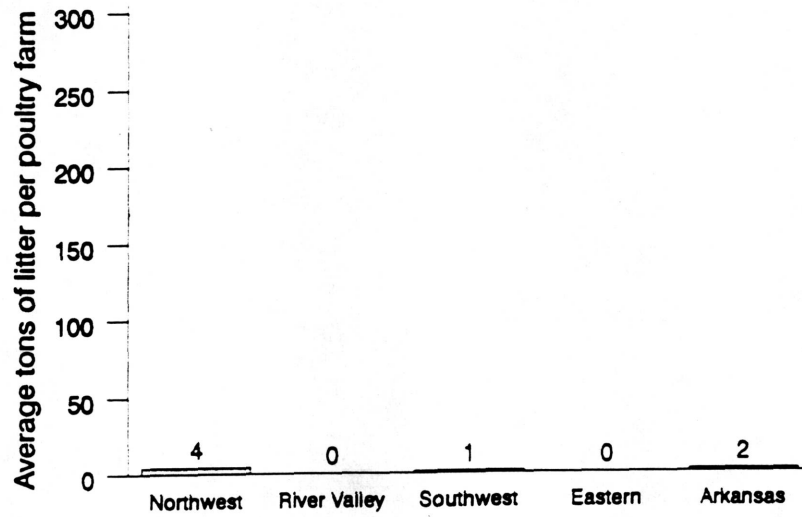
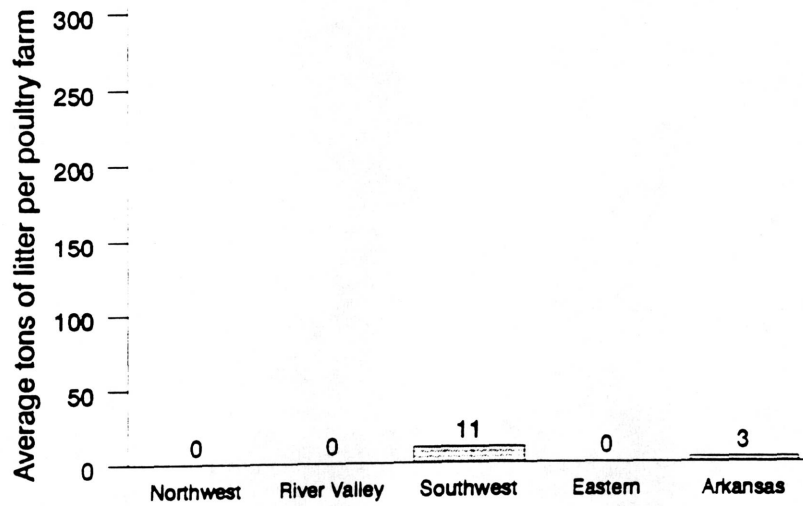


Figure 19: Average Amount of Litter for Other Uses



The greatest difference among regions in amount of litter used for different purposes occurs between the Eastern and Southwest regions. Respondents from the Eastern region sold a total of 648 tons of litter in one year directly to row crop farmers and an additional 1,965 tons of litter per year to middlemen or haulers, which is much higher than the other regions (Figures 20-24). The Southwest was the only region in which no litter was sold to middlemen/haulers. More litter in the Southwest region is spread on the growers' own fields than other regions with a total of 7,924 tons of litter per year were used for this purpose. This was also the only region in which litter is used for other purposes, which include being given away and used in a composter. There were a total of 336 tons of litter used for other purposes.

Figure 20: Total Amounts of Litter By Use - Arkansas

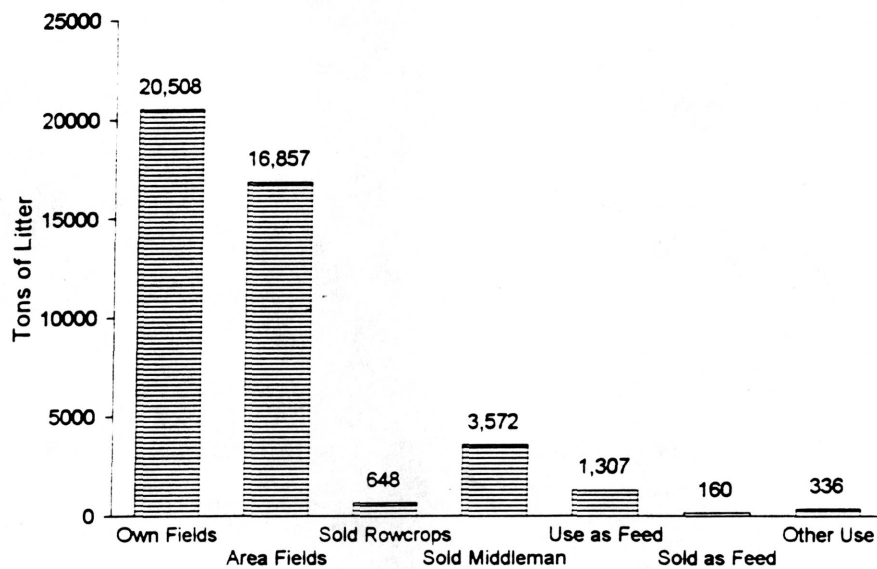


Figure 21: Total Amounts of Litter By Use - Northwest Region

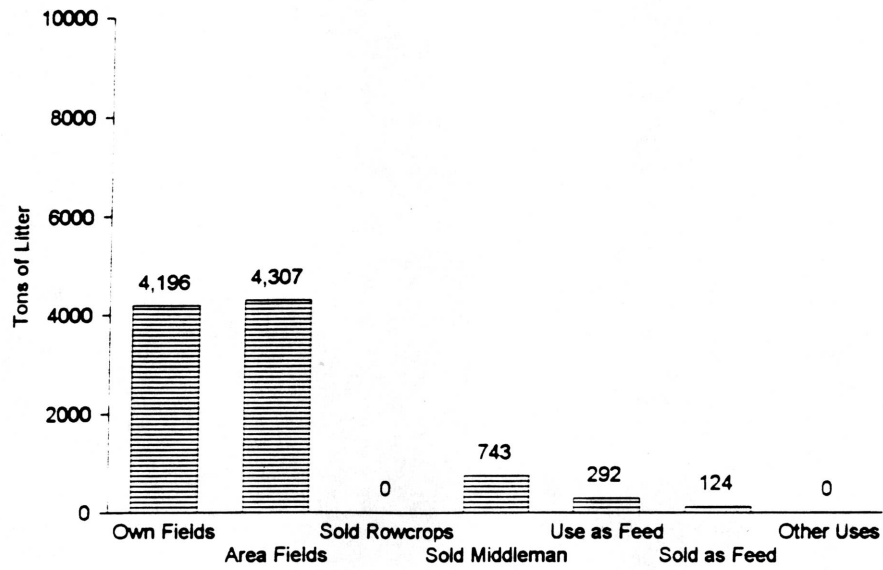


Figure 22: Total Amounts of Litter By Use - River Valley Region

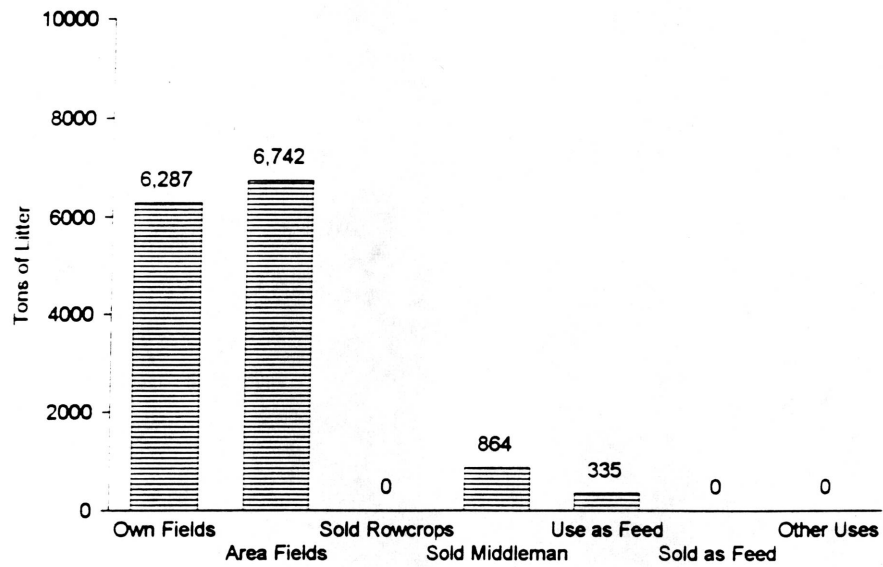


Figure 23: Total Amounts of Litter By Use - Southwest Region

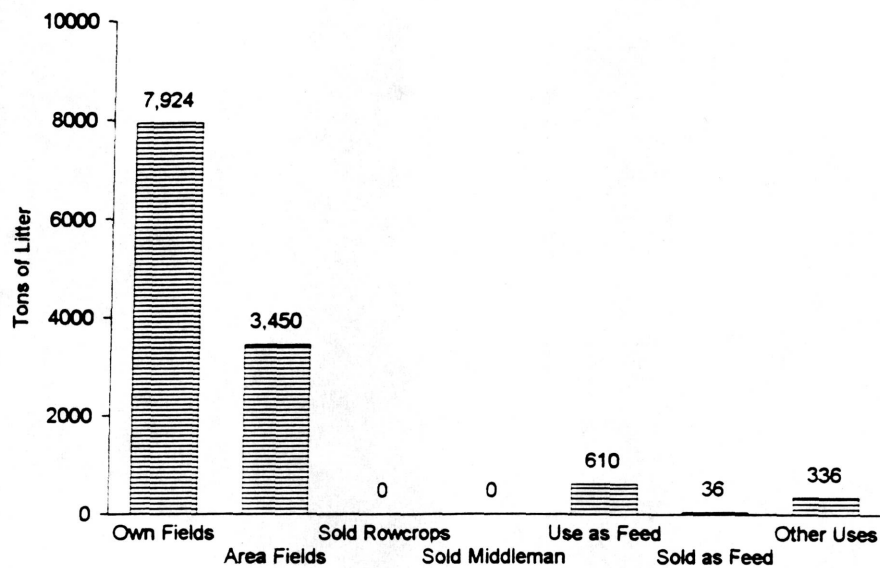
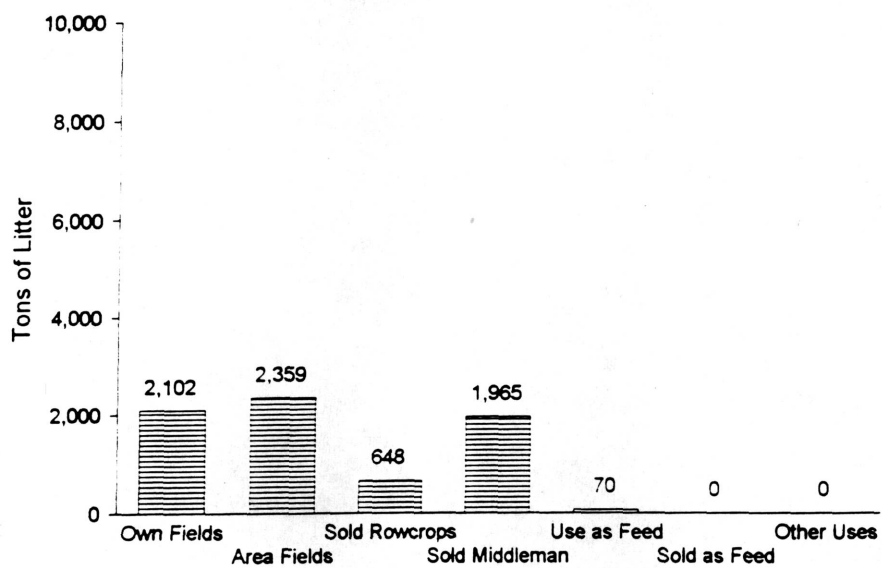


Figure 24: Total Amounts of Litter By Use - Eastern Region



On/Off Farm Uses

In addition to determining how much litter is used for different purposes, it is also important to know how many growers use litter entirely for on-farm purposes and how many growers move litter off of their farms. One-third of growers in our survey use all of their litter on their own farms (Figure 25). About half of respondents use poultry litter both on and off of their farms. All poultry litter is used off of the growers' farms by 14 percent of respondents. As might be expected, on and off farm use of litter differs among regions (Figures 26-29).

Figure 25: Growers Using Litter On and Off Farm - Arkansas

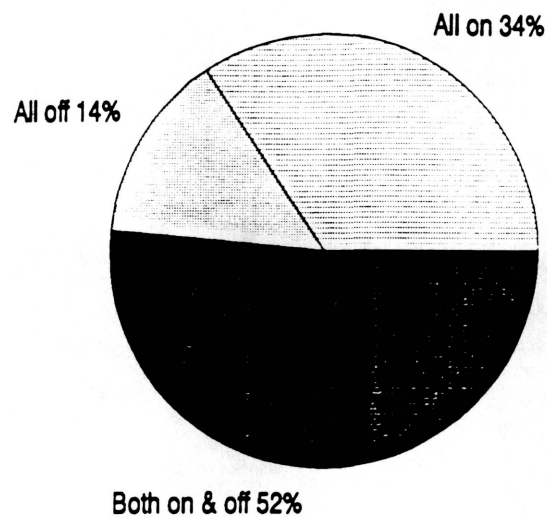


Figure 26: Growers Using Litter On and Off Farm - Northwest Region

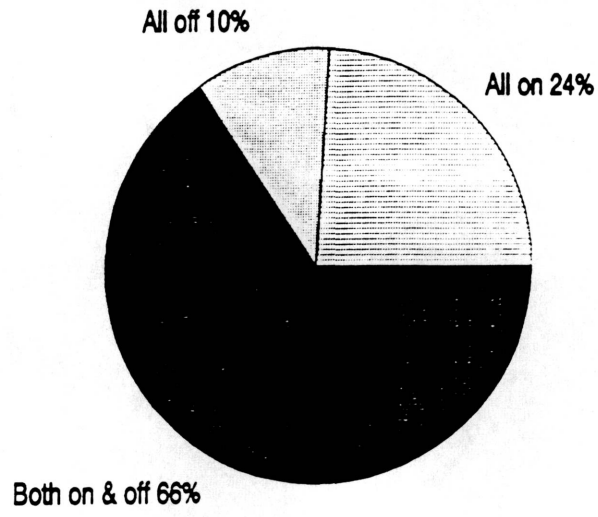


Figure 27: Growers Using Litter On and Off Farm - River Valley Region

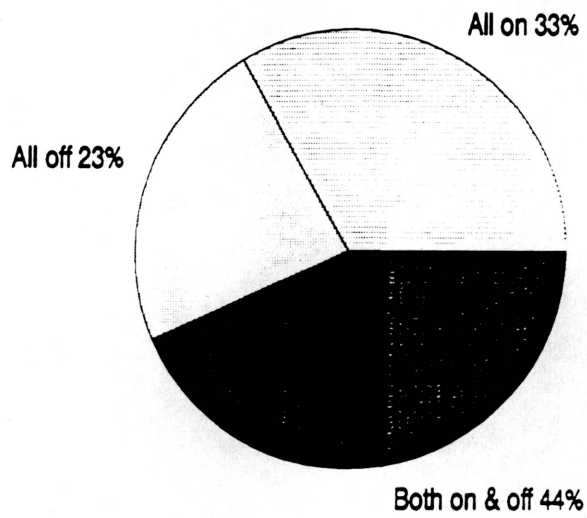


Figure 28: Growers Using Litter On and Off Farm - Southwest Region

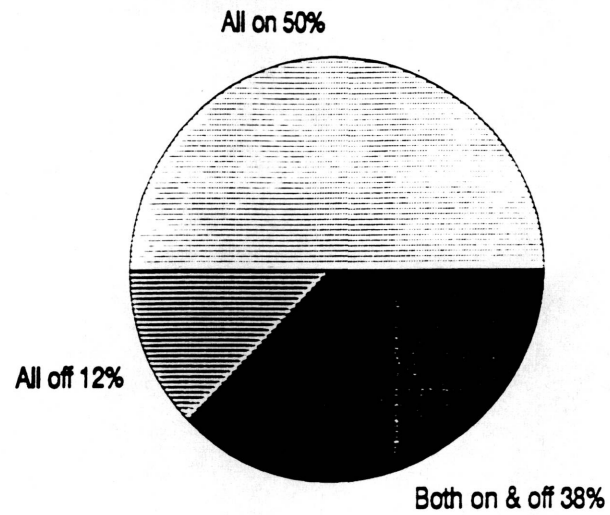
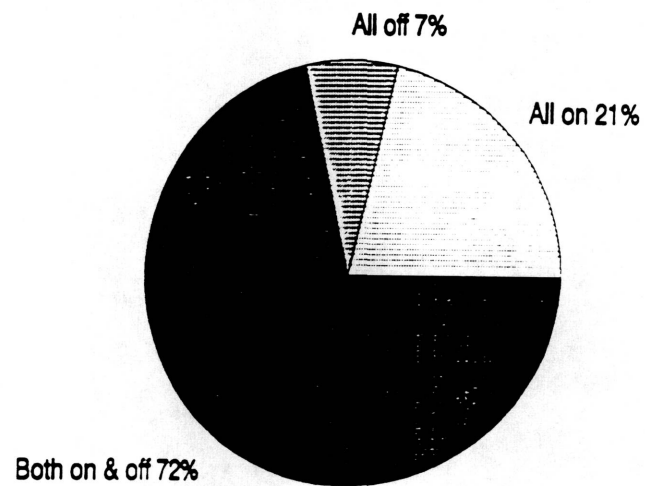


Figure 29: Growers Using Litter On and Off Farm - Eastern Region



Less than 1/4 of growers in the Eastern region use all their litter on their farms, which is less than the state average of 34 percent. This is expected, since a larger amount of litter is produced per respondent's farm in this region. Considerably more growers in the Southwest use all their litter on the poultry farm than the statewide average, possibly because they have pasture to spread it on, they do not clean out as often or as much as the other regions, and they do not have an established market for their litter.

The most dramatic difference among regions is the percentage of litter used for on-farm and off-farm purposes (Table 2). For all respondents in Arkansas, 50 percent of litter is used on the grower's farm and 50 percent is used off the grower's farm. The Northwest and River Valley regions are very similar and are close to the state average. The Eastern and Southwest regions, however, are nearly opposite from one another. Seventy percent of the litter produced in the Eastern region is used off the poultry grower's farm, with only 30 percent being used on the farm. Sixty-nine percent of the litter produced in the Southwest region is used for on-farm purposes and only 31 percent for purposes off of the poultry producer's farm.

Table 2: PERCENT OF LITTER USED ON/OFF FARM

	NW Region	RV Region	SW Region	East Region	STATE
Litter used on grower's farm	46%	47%	69%	30%	50%
Litter used off of grower's farm	54%	53%	31%	70%	50%

LITTER AS A CATTLE FEED

It was previously thought that some poultry growers who raise cattle feed a portion of their litter to their cattle. We asked growers if and how much litter they feed in one year. Twenty-three poultry growers from all regions of Arkansas reported using poultry litter as a cattle feed. Eighteen percent of respondents indicated feeding litter to cattle (Figure 30) and feed an average of 52 tons of litter per year (Table 3). Growers in the Southwest and River Valley regions use more litter for feed than other respondents.

Figure 30: Respondents Who Use Litter as Feed

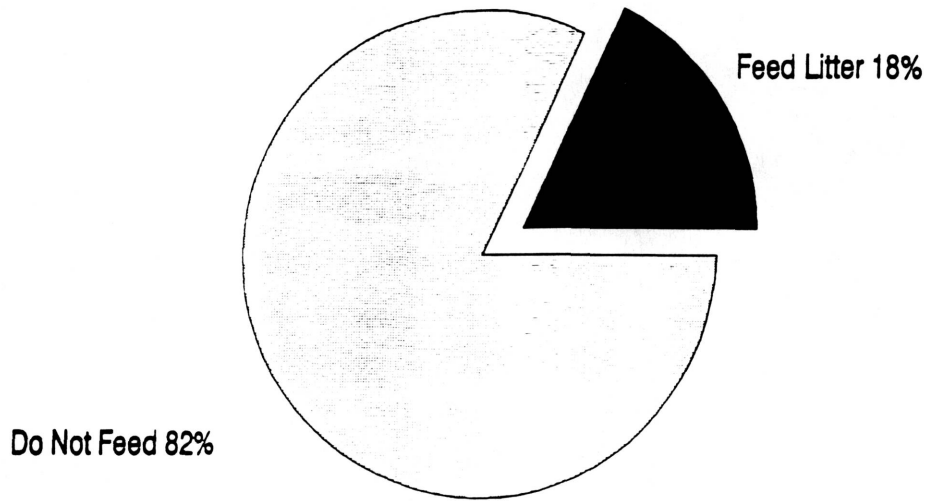


Table 3: AMOUNT USED ON POULTRY FARM AS CATTLE FEED

	NW Region	RV Region	SW Region	East Region	STATE
Average tons of litter per farm fed	31	71	65	35	52
Number of valid responses	8	5	8	2	23

SUMMARY OF FINDINGS:

The amount of litter removed per poultry farm and the use of poultry litter varies among regions of the state. The strongest differences exist between the eastern and western halves of the state. In eastern Arkansas, litter is most often removed by the growers and more litter is removed per poultry farm. Respondents in this region remove 510 tons of litter per year, of which most is moved off of the producer's farm. Seventy percent of their litter is used for off-farm purposes, including litter sold to row crop farmers and middlemen. In the western regions of the state, litter is most often removed by cleanout contractors. About half of litter is used for on-farm purposes and about half is used for off-farm purposes in the

Northwest and River Valley regions. Respondents in the Southwest region, however, use sixty-nine percent of litter on their farms. The Southwest and Eastern regions have the greatest differences in uses of litter.

Poultry litter is also used as a cattle feed in all response regions of Arkansas. Eighteen percent of all respondents use poultry litter as a cattle feed. Poultry producers who feed litter use an average of 52 tons per year for this purpose. Significantly more poultry litter is fed to cattle by respondents in the River Valley and Southwest regions than in the Northwest and Eastern regions.

Appendix A

POULTRY LITTER UTILIZATION PROJECT

Poultry Grower Questionnaire

1. Who removes litter from your poultry houses? yourself _____
cleanout contractor _____ other _____ (please specify) _____

2. How much litter is removed from your poultry houses in one year (1992)? (Please answer in either tons or loads. If answering in loads, please indicate the tons per load.) _____ tons
_____ loads _____ tons per load

3. What are the uses of poultry litter removed from your houses?
(check all that apply and give percentage.)

_____ Spread on your own fields _____ %
_____ Spread on other fields in area _____ %
_____ Sold directly to a row crop farmer _____ %
_____ Sold to a middleman/hauler _____ %
_____ Used yourself as a cattle feed _____ %
_____ Sold to be used as a cattle feed _____ %
_____ Other (please indicate) _____ %
100 %

4. If you use litter for cattle feed, please estimate the quantity in tons/year being used for this purpose. _____ tons/year

5. In what county is your farm? _____

Name: _____

Telephone: _____

Appendix B

Table A1: Poultry Litter Removal

Cleanout	NW Region (35)	RV Region (36)	SW Region (43)	East Region (14)	STATE (129)
Themselves Exclusively	12	6	11	9	38
Contractor Exclusively	18	23	29	3	73
Themselves and Contractor	2	5	3	2	12
Other: Friends and Neighbors	3	2	0	0	5

Table A2: Average Amount of Litter Removed Per Poultry Farm In 1992

	NW Region	RV Region	SW Region	East Region	STATE
Average tons removed per farm	333	474	386	510	413
Number of valid responses	29	30	32	14	105

Table A3: Number of Respondents in Each Category of Use

	NW Region	RV Region	SW Region	East Region	STATE
Spread on own fields	26	23	28	13	90
Spread on other fields in area	20	19	15	5	59
Sold directly to row crop farmer	0	0	0	2	2
Sold to middleman/hauler	4	3	0	6	13
Used yourself as cattle feed	7	3	8	2	20
Sold to be used as cattle feed	3	0	1	0	4
Other	0	0	2	0	2

Table A4: Average Amount of Litter For Each Use In One Year

Average Tons per poultry farm	NW Region	RV Region	SW Region	East Region	STATE
Spread on own fields	145 (26)	210 (23)	248 (28)	150 (13)	195 (90)
Spread on other fields	149 (20)	225 (19)	108 (15)	169 (5)	161 (59)
Sold directly to Row Crop Farmer	0 (0)	0 (0)	0 (0)	46 (2)	6 (2)
Sold to middleman/hauler	26 (4)	29 (3)	0 (0)	140 (6)	34 (13)
Use yourself as a cattle feed	10 (7)	11 (3)	19 (8)	5 (2)	12 (20)
Sold to be used as a cattle feed	4 (3)	0 (0)	1 (1)	0 (0)	2 (4)
Other use	0 (0)	0 (0)	11 (2)	0 (0)	3 (2)

Table A5: Total Amount of Litter for Each Use

Total Tons	NW Region	RV Region	SW Region	East Region	STATE
Spread on own fields	4,196	6,287	7,924	2,102	20,508
Spread on other fields	4,307	6,742	3,450	2,359	16,857
Sold directly to rowcrop farmer	0	0	0	648	648
Sold to middleman/hauler	743	864	0	1,965	3,572
Use yourself as a cattle feed	292	335	610	70	1,307
Sold to be used as a cattle feed	124	0	36	0	160
Other use	0	0	336	0	336

Table A6: Percent of Total Amount of Litter in Use Categories

	NW Region	RV Region	SW Region	East Region	STATE
% Spread on own fields	43.4	44.2	64.1	29.4	47.3
% Spread on other fields	44.6	47.4	27.9	33.0	38.9
% Sold directly to rowcrop farmer	0	0	0	9.1	1.5
% Sold to middleman/hauler	7.7	6.1	0	27.5	8.2
% Use yourself as a cattle feed	3.0	2.4	4.9	1.0	3.0
% Sold to be used as a cattle feed	1.3	0	.3	0	.4
% Other use	0	0	2.7	0	.8

Table A7: Use of Litter On or Off Farm

	NW Region	RV Region	SW Region	East Region	TOTAL
All used on grower's farm	7	10	16	3	36
All leaves grower's farm	3	7	4	1	15
Both on and off farm use	19	13	12	10	54
Number of valid responses	29	30	32	14	105