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## OVERWINTER LOSS OF NONTILLED WHEAT RESIDUE

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IN the semiarid wheat-fallow area of the Great Plains, the effectiveness of stubble mulch for soil protection and moisture conservation is directly related to the quality and position of residue available. The amount of stubble lost over winter may be a factor in maintaining adequate residue which is needed to protect the surface during fallow and early seedling growth periods.

Two years of field observations and measurements to determine the extent of overwinter losses from nontilled wheat stubble were initiated in 1962 at Akron, Colorado; North Platte, Nebraska; and Sidney, Montana. Determinations were made from stubble areas with and without applied residue. Standardized procedures (1) were used with one exception. The difference between total plant weight and threshed grain was used at Sidney for fall sampling. Winter wheat residues were used at North Platte and Akron, and hard red

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spring and durum wheat residues were used at Sidney.

Soil at North Platte and Akron is a silt loam; soil at Sidney is a loam.

### Results and Discussion

*North Platte.* Overwinter losses from plots with established residue levels of 3,000; 6,000 (normal production); and 9,000 pounds per acre ranged from 10 to 30 percent during the 2-year period. Average loss was 17.5 percent (Table 1). The 2-year average loss for the 6,000 pounds per acre level was 13.5 percent.

*Akron.* Overwinter losses at this location ranged from 3 to 9 percent with no apparent relation to initial residue level (Table 1). The 2-year average loss at all residue levels was 5.7 percent and 5.5 percent for residue levels of 2,400 pounds per acre and less. Average losses at this location were the lowest of the three areas studied.

*Sidney.* Residue

losses varied considerably between years. Losses for the 2-year period ranged from 20 to 44 percent (Table 1). A trend similar to that recorded at North Platte was observed. A smaller percentage residue loss resulted from greater amounts of residue for both wheat varieties. Average losses at this location were the highest of the three areas studied.

A number of unmeasured factors may have influenced residue loss variations among the locations studied. The use of a different method of residue measurement in the fall at Sidney, the longer overwinter period and the use of spring-seeded wheat varieties may also have contributed to the generally higher percentage of residue loss at this location.

### REFERENCES CITED

1. Whitfield, C. J., et al. 1962. *A standardized procedure for residue sampling.* ARS 41-68, U. S. Dept. Agr., Washington, D. C. 9 pp.

TABLE 1. Percentage Loss of Wheat Residues for Two Winter Periods at Three Locations in the Great Plains

Residue in fall Lbs./Acre	Winter periods		Location average
	1962-63	1963-64	
	Percent		
<i>North Platte, Nebraska</i>			
3000	23	30	17.5
6000	13	14	
9000	15	10	
<i>Akron, Colorado</i>			
1600	3	4	5.7
1900	9	—	
2400	6	9	
3100	6	—	
5000	—	3	
<i>Sidney, Montana</i>			
3200	44	29	31.4
4200	38	—	
4000 (Durum)	—	26	
4800 (Durum)	20	—	

Significance between treatments (P.05) = North Platte 10 percent, Akron N. S.; Sidney 19 percent.

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