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Spring Moisture and Yields on Standing Stubble VS. Spring Moisture and Yields on Stubble Land Tilled in the Fall

Crops in this area are dependent upon the moisture provided by seasonal rainfall plus the moisture which is stored in the soil at seeding time. Therefore, it is important that we use only those tillage practices that will conserve soil moisture. A fairly common practice in this area is fall tillage of stubble with the one-way disk. On spots of heavy clay or gumbo soils some fall tillage may be needed, but on sandy and loamy soils, the predominant soils of southwestern North Dakota, fall tillage of stubble land is unnecessary, and in fact, may be detrimental to yields of small grain the following year.

In 1957 determinations of soil moisture at seeding time at 6 inches to a depth of 2 feet on stubble land tilled in the fall with the one-way disk were compared with moisture on land where stubble had been left standing undisturbed over the winter. In this comparison soil moisture was found to be significantly greater at all intervals under standing stubble in the following amounts: 0-6 inches, 16.0%; 6-12 inches, 44.4%; 12-18 inches, 56.0%, and 18-24 inches, 12.8%. The soil was dry at seeding time below the 24 inch depth.

In the fall of 1955 tillage with a 5 foot sweep was added to the trial. It has been suggested that tillage with sweeps leaves the stubble comparatively undisturbed but leaves the soil loose to permit better penetration in the fall, winter and spring moisture with less run off.

Data from this trial for 1958 for 1958 and 1959 shows no significant difference in yield of wheat following these three different treatments of stubble land in the fall. In 1960, however, there was a significant difference of 4.5 bushels of wheat per acre in favor of standing stubble as compared to one-way disked stubble and 3.3 bushels per acre in favor of standing stubble compared with Noble bladed stubble. Yields and moisture determinations for 1960 are summarized in Table 17.

Table 17. Wheat yields and moisture at seeding time on Fall Tillage Trial - 1960

Treatment	Yields Bushels Per Acre				Av.	Test Wt.
Standing Stubble	13.2	11.8	11.8	14.1	12.7	53.0
Noble Blade	8.0	10.5	8.6	10.6	9.4	49.0
One-way disk	8.8	7.9	6.9	8.6	8.1	49.5

Treatment	% Moisture at Seeding					
	0-12"	12-24"	24-36"	36-48"	Av.	
Standing Stubble	16.1	15.7	12.0	11.0	13.7	
Noble Blade	15.5	13.6	10.7	10.9	12.7	
One-way disk	15.8	11.9	10.0	10.3	12.0	

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