Research Summary Report

VERY EARLY SEEDING OF WHEAT AND BARLEY

Ben K. Hoag and G. N. Geiszler

Well-drained soils many years are in condition to cultivate sometime between the middle and end of March. This is usually followed by a period in early April when field work is not possible.

Because of the increasing size of farms, operators often find it necessary to plant much later than desired and sometimes too late for optimum crop yields.

A study was conducted at Minot for three years, 1966-1968, to determine the feasibility of seeding in March when the soil surface is in suitable condition. Each year, a well-drained site known to be relatively free of wild oats was selected for the test. The seedbed was prepard as early as possible and planted with three plots each of Chris wheat and Dickson barley. Approximately one and two months later, the same varieties were planted in adjacent plots. In 1967, the later seeded plots were re-cultivated before the second and third seeding. This was necessary because rains after the March cultivation and subsequent drying crusted the soil surface so that the drill would not penetrate the soil. Only the March cultivation was made in the other years.

All seed used was treated with a mercury fungicide and an insecticide. No seed decay could be found in the March seeding when checked three weeks after planting.

Farmers report that March seedings usually are weed infested. In this test, weeds were a problem and were controlled with post-emergence chemical sprays. In 1968, a heavy stand of wild buckwheat developed which was controlled when growth on all plots had advanced enough to permit

Hoag is superintendent and Geiszler is former agronomist, North Central Agricultural Experiment Station, Minot.

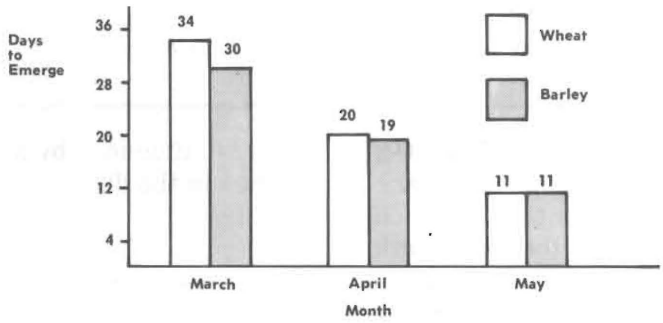

Figure 1. Days from seeding to emergence of Chris wheat and Dickson barley seeding in 3 months. Minot, North Dakota (1966-68).

spraying. However, the early-seeded plot yields may have been reduced by the early weed competition before the control was applied.

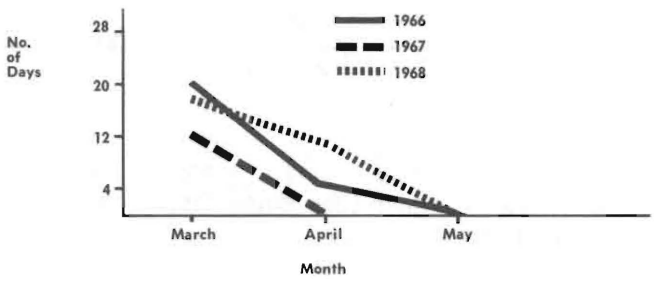

Figure 2. Number of days below 32°F after emergence of barley planted in 1966, 1967 and 1968, Minot, North Dakota.

Emergence was slow for the March seedings. The number of days from seeding to emergence for the three seeding dates is shown in Figure 1. In the earliest seeding, the barley emerged several days before the wheat, but little difference was noted in the later seedings.

The number of days the temperature dropped below 32°F after emergence is shown in Figure 2. The temperature dropped below 20°F on the March seeding after the crops had emerged in each of the three years. The earliest planting was in 1966, and in this same year the lowest temperatures were recorded after the March seeding had emerged. In 1966, the March barley seeding was injured by temperatures as low as 12°F shortly after it came up. March barley seedling regrowth was three inches when temperatures again dropped, this time to 20°F, but the regrowth suffered no visible injury. Snowfall during this cold period accumulated to a depth of two inches and may have protected the March-seeded young plants. However, the snow did not provide enough protection for the

Table 1. Average days from seeding date to headed and ripe for Chris wheat and Dickson barley, Minot, N. Dak.

Seeding Date			Av. Days to Headed		Av. Days to Ripe	
1966	1967	1968	Wheat	Barley	Wheat	Barley
3/17	3/28	3/16	100	97	135	125
4/14	4/27	4/13	77	75	107	99
5/19	5/23	5/13	55	53	85	79

Table 2. Test weight of Chris wheat and Dickson barley seeded on fallow at three dates, Minot, N. Dak.

Seeding Dates			lbs/bus. of Wheat				lbs/bus. of Barley			
1966	1967	1968	1966	1967	1968	Avg.	1966	1967	1968	Avg.
3/17	3/28	3/16	60.5	60.3	57.5	59.4	48.2	48.7	46.3	47.7
4/14	4/27	4/13	59.8	59.2	57.3	58.8	47.3	47.7	43.5	46.3
5/19	5/23	5/13	57.5	57.0	55.8	56.8	46.2	46.7	45.8	46.3
Average			59.3	58.8	56.9		47.2	47.7	45.2	

Table 3. Yield of Chris spring wheat and Dickson barley seeded on fallow at three dates, Minot, N. Dak.

Seeding Dates			Yield of Wheat - Bus/A				Yield if Barley - Bus/A			
1966	1967	1968	1966	1967	1968	Avg.	1966	1967	1968	Avg.
3/17	3/28	3/16	44.6	26.8	46.2	39.2	68.3	45.4	75.8	63.2
4/14	4/27	4/13	47.5	23.0	48.5	39.7	79.0	33.2	73.2	61.8
5/19	5/23	5/13	45.8	20.0	45.1	37.0	76.1	34.4	69.1	59.9
Average			46.0	23.3	46.6		74.5	37.7	72.7	

April-seeded barley plants which were about 1½ inches tall, and their top growth was killed. During this cold period, the soil froze to the four-inch depth. The low temperatures killed the top growth of the March seeded barley each year. In all years at each seeding date, satisfactory stands of barley and wheat existed at the end of the spring frost season.

The plots headed and matured in the order of planting (Table 1). Early seeding helps the farmer by lengthening the time for seeding and harvest. The barley matured six to 10 days earlier than the wheat. The largest difference occurred when they both were seeded in March.

Although there was some variation in plant height, there appeared to be no relation to seeding date. Similarly, seeding date did not appear to influence lodging.

Test weights of the grain were highest for the early and lowest for the late planting (Table 2). The only exception was in 1968 when a late rain favored the late-seeded barley.

In 1966 and 1968, the April seeding produced the highest yields, while in 1967 the March seeding produced the highest wheat yields, although the March and April averages were similar. Barley seeded in March produced the highest average yield, followed by the April and May seeding dates, respectively (Table 3). Only in 1966 did the March yields appear to be affected by the freezing temperatures.

Protein in the grain of both wheat and barley varied but did not appear to be affected by seeding date (Table 4). However, the per cent of plump kernels in barley was highest for the March seeding in two years and for the late seeding in 1968. The latter was influenced by a timely rain, which was described in the discussion of barley test weight (Figure 3).

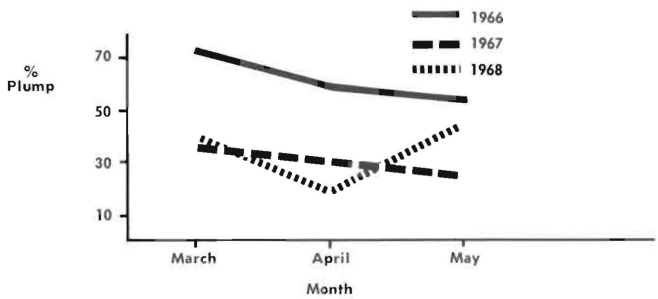

Figure 3. Percent plump barley when planted at different dates, Minot, North Dakota (1966-68).

In summary, March seeding of wheat and barley accompanied with chemical weed control produced yields of wheat and barley comparable to and in some cases higher than when these crops were seeded in April or May. Test weights also were higher for the March seeding.

In early seeding, the barley emerged before the wheat, while in later seedings time required for emergence of the two crops was the same.

Frost injury to the barley seedlings occurred whenever temperatures dropped into the 20°F range, but they recovered and produced satisfactory stands. Wheat seedlings showed no apparent injury from these low temperatures.

Very early seeded barley produced the highest per cent of plump kernels two out of three years.

Table 4. Percent protein in Chris spring wheat and Dickson barley when seeded on fallow at three different dates, Minot, N. Dak.

Seeding Dates			% Protein in Wheat				% Protein in Barley			
1966	1967	1968	1966	1967	1968	Avg.	1966	1967	1968	Avg.
3/17	3/28	3/16	15.2	15.7	15.5	15.5	14.1	14.9	14.5	14.5
4/14	4/27	4/13	15.6	16.2	15.7	15.8	13.5	14.2	15.3	14.3
5/19	5/23	5/13	14.7	17.1	15.0	15.6	13.7	15.2	14.9	14.6
Average			15.2	16.3	15.4		13.8	14.8	14.9	