

Seeding date and fertility timing affects on winter canola in 2008-09

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Two questions that we often get from winter canola growers are:

- 1. If I plant early or I am going to plant late, do I need to pick a different variety or can the same variety be used early or late?**
- 2. I can save money if I put more Nitrogen down in the fall. The Canola Production Handbook tells us to only put 1/3 of the nitrogen down in the fall. Can I increase that to 2/3 without hurting my yield?**

During the 2008-09 growing season we conducted replicated experiments at 4 locations (Stillwater, Jones, and Carrier OK, and Kiowa, KS to answer question 1 and at two locations (Perkins and Lahoma, OK) to answer question 2.

PLANTING DATE:

METHODS:

We used 3 planting dates of six varieties at each site. Basically, we wanted to spread the planting dates out but stay within the mid-September to October 10 planting dates recommended for most of this area. So, the planting dates at all sites were: September 15 \pm 3 days, September 26 \pm 1 day, and October 8 \pm 3 days.

All of the varieties were planted at each date at each location at 5 pounds per acre of treated seed. Roundup was applied in the fall and again in the spring to prevent weeds from interfering with the yield data. Insecticide was sprayed once in the winter and once in the spring except some sites didn't need insecticide in the fall.

All of the plots were direct harvested in June using a small combine with a 5 foot header. Moisture content at harvest varied from about 7 to 13 % depending on whether it was an early or late maturing variety. Yield data was corrected to a 10% moisture basis. There was a little shattering at Kiowa due to storms, but very little shattering at the other locations when the plots were harvested on June 13 through June 17, with the southern locations first, then Carrier, and finishing up in Kiowa. All of the canola was re-cleaned to remove dockage before the yields were determined.

All of the plots got preplant fertilizer and were topdressed to meet the requirements for 3000 pound yield. All plots received 15 pounds/acre of sulfur.

RESULTS:

Varieties:

Averaged over all four sites and all planting dates the highest yield of the 6 varieties tested was 2616 pounds/acre for the experimental variety CWH683, which may be available in the near future (see Table 1). The lowest yield was an average of 2073 pounds per acre for DKW41-10. The yield of this early blooming-early maturing variety DKW 41-10 was lower than usual because of the hard freezes in April. DKW41-10 was in full bloom when the freezes hit all sites with several hours

of sleet at two sites. The late maturing varieties were just starting to bloom and lost only a few flowers to the freeze. Fortunately, when canola gets hit by a freeze, it will branch out and produce more blooms for pods and that did happen. So, the yield of the early variety was lower than expected and it matured later than normal but still made decent yields.

Genetic improvement is obvious in the yield data, because the older variety DKW13-69, which is a later maturing variety, had the second lowest yields in the tests, averaging a respectable 2280 pounds per acre, but not as good as the newer varieties. Unlike wheat, where genetic improvement in yields has been very slow, improvements in canola yields over the past five years have been quite remarkable.

Planting dates:

Every farmer in Oklahoma and Kansas knows when he wants to plant, but the weather doesn't always work with you. One of the drawbacks to planting early is that crops need more water and if you hit a dry fall the early planted wheat or canola will suffer from lack of water first.

At Carrier it was dry during the fall and we wondered if it was ever going to rain. In the end, the canola planted September 18 averaged 1637 lbs/a. Holding off until September 27 to plant increased yield to 1889 lb/a. We usually consider October 10 as late as you want to plant, because you need to get some size on the crop before hard freezes arrive. But this year the Oct. 10 Canola at Carrier averaged 1906 lb/acre with the DKW47-15 making 2316 lb/a. We thought that was pretty good for a crop that didn't even grow 3 feet tall. The Jackpot wheat seeded around the canola was planted late and not hurt much by the freeze and it made 46 bu/a. We have always told people that wheat would make about 15% more yield than canola, but with these new varieties that gap will be closing.

The plots at Jones were also dry during the fall but got more water during the winter and spring. As a result yields averaged 2426, 2380, and 2601 with the early, mid, and late planted canola. The DKW41-10 was again hit by the freeze but recovered quite well. The highest yield was from CWH683 planted October 10, which was 2990 lbs/a.

Yields were fairly good at Stillwater, averaging 2988 lb/a across all varieties and seeding dates and the data uniformity was good (CV=7.2%). The highest yield was 3702 lbs/a from CWH683 seeded on September 14. Delaying seeding until October 11 reduced the yield of CWH683 to 3054 lb/a. That is what we expect to see in a situation where the field never really suffered from lack of water all year. The site at Stillwater is a relatively low pH site (pH = 5.1). Based on what we see for yields, that pH doesn't seem to hurt these newer varieties. At this site, Endurance wheat was planted in early October on three sides of the canola. It was a properly managed crop but due to the freezes, then too much rain in May and lodging it made 11 bushels per acre and test weight was grades 3 and 4. The canola did not lodge and test weights were very high. Canola seems to have much more resistance to lodging than the wheat. We saw this at Dacoma also where wheat was lodged right beside standing canola

The results from Kiowa KS are similar to Stillwater in that holding off until later to plant reduced yield. At Kiowa, averaged across varieties, yields were 2441, 2292, and 1945 for the early, mid and late seeding dates. This is why we typically suggest that canola needs to be planted between mid-September and early October. Planting too early can cause excess growth which uses too much water and also causes your seed treatment insecticide to run out too soon. Waiting too late can result in slow growth and smaller plants that just don't yield quite as good.

However, all of the results, taken as a whole indicate that as long as we stay in the mid-September to October 10 planting window, we can still expect to raise a good crop (Table 2). In past years, waiting until Oct. 10 to plant resulted in considerably lower yields. It seems to depend on whether the late fall weather lets the canola get some growth on it or not. If there is one variety that probably needs to be planted early it is DKW 45-10. It seems to have a little slower growth in the fall and benefits more from earlier seeding. The two varieties that are tolerant to residual sulfonylurea herbicides applied to wheat, DKW46-15 and DKW 47-15 produced very good yields at all sites. A choice between these varieties might be based on maturity, with DKW47-15 maturing a little later.

We have learned that winter canola is more tolerant of a late spring freeze than wheat. However, the earliest maturing varieties were still hurt some by the freeze. So, growers will have to decide for themselves whether to go with early varieties or later varieties in regard to potential freeze damage. Growers make the same decisions with wheat varieties and understand that risk.

NITROGEN TIMING

METHODS:

The same 6 varieties that were planted in the planting date study were also planted at the OSU Research Stations at Perkins (on September 30) and Lahoma (on October 2) to see what the effect on yield was of applying all of the nitrogen in the fall, all in the spring, or splitting it 1/3 fall followed by 2/3 in the spring, or 2/3 fall followed by 1/3 in the spring. Soil test N was 41 lbs at Lahoma and 19 at Perkins. All nitrogen was applied as urea and the total applied was 126 pounds/acre of actual N. Fall applications were applied the first week of November. Spring applications were applied on Feb.1.

The plots were direct combined on June 17 (Lahoma) but at Perkins maturity was different enough that some plots were harvested June 4 and the rest on June 8. Moisture was 6 to 11 percent at harvest, depending on the variety. All yield data was corrected to 10 % moisture and corrected for dockage content.

RESULTS:

Nitrogen timing:

The results from both sites were close to the same with average yield at Lahoma of 2432 lb/a compared to 2476 lb/a at Perkins (Table 3). The yield data indicate that it did not make a lot of difference whether 1/3 or 2/3 of the N was

applied in the fall. In previous years we have seen situations where applying too much N and planting early in September (before Sept. 20) and then getting nice rains caused too much top growth in the fall. This led to lower yields due to excess water consumption and increased winter kill. Even with the relatively dry fall of 2008, applying all of the N in the fall seemed to reduce yield a bushel or so. Therefore, if a person decides to increase the portion of the N applied in the fall, they should be careful to not plant very early.

If all of the N was applied in the spring the yield dropped 80 to 117 lbs/acre compared to the split applications. Obviously this is not a good way to do it.

Timing of N application also had a significant affect on maturity. This was most evident at Lahoma. At harvest on June 17, averaged over varieties, the grain moisture was 6.5% when all of the N was applied in the fall and 9.9% when all of the N was applied in the spring. Moisture content with the 1/3--2/3 split was 8.0% and it was 8.1% with the 2/3--1/3 split. So again either 1/3 or 2/3 in the fall didn't make much difference. But, it was obvious that maturity could be delayed by too much N in the spring.

At this time it still seems advisable to go with a split application, and as a general rule we suggest not over 2/3 of the N in the fall.

Varieties:

The yields of the varieties ranked much the same as in the planting date studies (Table 4). DKW41-10 averaged 2210 lb/a (44 bushels and 10 pounds per acre), which was the lowest because it had freeze damage. The older variety DKW13-69 was next lowest at 2327 lb/a. Keep in mind that when we say older, it is only a couple of years old, but canola varieties are just getting better faster than what we are used to with wheat.

The other solid varieties DKW 45-10, DKW 46-15 and DKW 47-15 averaged 2453, 2440, and 2535, respectively, so they were about 48 to 50 bushels/a which is very acceptable. However, the new experimental variety CWH683 averaged 2771 lb/a. Numerically, the highest yielding treatment was CWH683 with the traditional 1/3--2/3 split N, which averaged 2912 lb/a. Obviously this was a year when the weather favored late maturing varieties.