

Canola Growth Response to Different Rates of Irrigation Regimes

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Two canola varieties, Global Spring and 353 were planted the last week in October. The seeding rate was approximately 5 1/2 lbs per acre. Stand counts averaged 9 plants per square ft. in varieties Global Spring and 353. Cascade was used to fill in one border because we didn't have enough of 353 to replant a full border the second time. The plots had to be replanted the 15th of November because of a severe weed problem of volunteer barley. The plots were planted in two borders, one for each variety. The two varieties of canola were planted in strips each approximately 70 feet wide by 360 feet long. Each strip was divided into 9 plots allowing for 3 irrigation regimes (wet, medium and dry) and 3 replications of each regime. Neutron access tubes for determination of soil moisture status in the soil were installed in 12 of the 18 plots.

100 lbs phosphorous and 60 lbs nitrogen were applied preplant incorporated. Additional nitrogen fertilizer, 50# actual N as urea was applied in irrigation treatment March 3rd to all treatments. The wet treatment was irrigated when 30% of the moisture in the root zone had been depleted, medium treatment was when 50% of the water in the root zone had been depleted and the dry treatment was when 70% of moisture in root zone had been depleted. The water holding capacity of the soil was determined in the following manner; two days after the pre-irrigation and the post planting irrigation, calibrated neutron probe readings were made in the 12 installed access tubes. These readings were averaged to give the amount of water in the soil at field capacity. Soil samples were then taken at 4 depths in 6 locations in the field and these samples were used with a pressure plate apparatus to determine the amount of water in the soil at wilting point. The difference between these two values provide the water holding capacity of the soil and allowed determination of the percent depletion points which were needed to schedule the irrigations. The irrigation information from the test is provided below.

Nine and seven tenths inches of moisture was applied in the germination process in 2 applications. Following the 2nd irrigation after seeding November 28, 1989 the plots in each moisture regime treatment were watered as needed based on readings from the neutron probe. Amount of moisture applied to the plots by nature between November 28, 1989 and March 1, 1990 was 2.6 which was quite evenly distributed throughout the period.

The Global Spring variety started flowering about the 5th of March. 353 started 10 days later and Cascade a week later. Global Spring and 355 had uniform stands, size of plants and flowering pattern. Cascade was more uneven and appeared to show N or Phos deficiency during the Feb-Mar period. By the 10th of April seed pods in Global Spring were pretty well developed in all irrigation treatments. Pod development in 353 was slightly behind Global Spring and Cascade a little behind 353.

According to the soil and tissue tests taken throughout the season, a positive trend in terms of plant use of nutrients and the nutrients being applied was indicated and the amount applied was adequate.

First harvest of the Global Spring variety part of the plots was accomplished May 7th. On May 11th a second harvest was made in the Global Spring and harvesting was also completed of the 353 and Cascade varieties. Recommendations or guidelines for harvest timing and procedure was not received from the company until after harvest was completed. The harvest should have been accomplished using the procedure of cutting and swathing when pods were at 30% moisture before combining. We would have saved much of the seed. That would have meant starting the harvest procedure at least 3 weeks earlier.

At the time the plots were combined square ft samples of plants were taken from each plot and hand harvested to check against the amount loss from shattering that resulted during the combine harvest.

Based on the amount of seed recovered from the small plot samples projected to a per acre basis we obtained from 1000# on the low moisture treatments up to 3000 plus lbs/acre equivalent from the medium and high moisture treatments with the Global Spring and 353 varieties.

Very little difference was found between the medium and high moisture treated plots in terms of amount of seed produced. The yield difference was not significant between the two.

This is one year's information but it gives us a good indication that we should be able to grow a good crop of canola seed, depending on soil type with about 20 inches of moisture in the southwest area.

No irrigation applications were needed until March 2, 1990. From that point in time until harvest in May moisture was applied to the treatments as follows.

Irrigation no. 1 (all plots) November 16, 1989 5.5 inches

Irrigation no. 2 (all plots) November 28, 1989 4.2 inches

<u>DATE</u>	<u>WET</u>	<u>MEDIUM</u>	<u>DRY</u>
3/2/90	3.3	3.3	3.3
3/10/90	2.5		
3/21/90	2.8	2.8	
4/4/90	3.6		
4/10/90			3.6
4/11/90		3.5	
4/17/90	<u>3.5</u>	<u>—</u>	<u>—</u>
Sub Total	15.7	9.6	6.9
	<u>9.7</u>	<u>9.7</u>	<u>9.7</u>
TOTAL	25.4	19.3	16.6

Average yield per treatment - projected yield per acre basis - 1/3 of each plot harvested.

Variety A	Treatment	Total lbs harvested per treatment Per Acre
1	27.2	875.8
2	27.9	898.3
3	23.1	743.8
Variety B		
1	22.9	737.3
2	23.1	743.8
3	17.3	557.0