

Winter Rapeseed

Seeding Rate and Date Guide

Seeding rate and time of planting for winter rapeseed (*Brassica napus*, L.) and winter Canola (an edible oil class of rapeseed) can influence crop productivity, winter survival potential, competitiveness to weeds, maturity date, and potential insect damage. The successful establishment of a desired population of plants at the appropriate time in the growing season is the first step in determining crop productivity. Fall seeded rapeseed must grow large enough to survive winter conditions and begin vigorous growth in the spring. Crop competition with weeds is a first line strategy for weed control that is directly influenced by seeding rate and planting date decisions.

Rapeseed Seeding Date

In northern Idaho and other Pacific Northwest areas with similar growing conditions, winter rapeseed is usually planted during August. Delay of planting into September may cause the crop to be less developed and limit the crop's ability to survive winter conditions. Late planted rapeseed may not cover the soil surface adequately for erosion protection. Early planting conforms to planting date recommendations found in the *Dryland Winter Rapeseed Production Guide*, EXT 715.

Normally, planting in August requires the use of summer fallow fields to provide soil moisture for successful plant establishment. If planting could be delayed into September, there are years when recropping could be successful. The rapeseed breeding program at the University of Idaho is developing winter rapeseed cultivars with improved fall establishment and in the future may have varieties that are adapted for later planting. With currently available varieties, late planting is risky in most years.

Winter rapeseed trials evaluated crop performance across two cultivars. The average for both seeding dates in either August and September showed higher seed yield from August plantings than September plantings (Table 1). The August 9, 1991, planting produced sub-optimum plant stands due to hot, dry planting conditions. Yields were nearly 900 pounds per acre less in late September than in August planting in the 1992-93 growing season. The amount of oil, the erucic acid content of the oil, and the winter survival rate did not change with planting date in these experiments. Most likely winter survival rate was not influenced by planting date because of mild winters during both experiment years. However, seed weight and plant height did

Stephen
O. Guy
Mary
Dore

University of Idaho
College of Agriculture

Cooperative Extension System ☐ Agricultural Experiment Station

CIS 1029

UNIVERSITY OF IDAHO LIBRARY

Seed rapeseed early enough to allow for good winter survival; in middle to late August for current varieties.

Table 1. Winter rapeseed performance under four seeding dates at Moscow, ID.

Planting date	Seed yield (lb/acre)	Seed oil (%)	Erucic acid (%)	Seed weight (g/200)	Plant height (inches)	Bloom date (Julian)	Plant stand (1,000/acre)	Winter survival (%)
<i>1991-92 experiment</i>								
August 9	1,974	39.1	50.0	1.09	55.3	110	76	82
August 24	2,429	40.0	50.6	1.10	56.2	111	511	97
Sept. 9	2,039	39.8	50.0	1.06	51.6	114	579	109
Sept. 20	2,087	39.8	50.2	0.97	45.5	120	417	85
LSD 0.05*	n.s.	n.s.	n.s.	0.03	3.4	1	109	n.s.
<i>1992-93 experiment</i>								
August 11	2,292	40.1	52.1	1.03	58.9	133	302	52
August 25	2,325	39.8	52.6	1.03	58.8	134	387	54
Sept. 8	2,005	40.2	52.3	1.05	57.9	135	382	54
Sept. 21	1,430	39.6	52.2	0.96	47.3	137	280	46
LSD 0.05*	422	n.s.	n.s.	0.05	2.5	1	34	n.s.
* Values differing by more than the LSD are significantly different at the 5% level. n.s. Indicates no difference among values.								

decrease as planting was delayed. Bloom dates were over 8 days later in the 1991-92 experiment and almost 3 days later in 1992-93 experiment as planting was delayed from the end of August to the end of September. These delays may put the crop at greater risk of insect damage, heat stress, or late season moisture limitation; but may allow later planted rapeseed to avoid late season frost at flowering. The results of these trials demonstrate that planting in August is important agronomically for the cultivars 'Dwarf Essex' and 'Bridger' used in these experiments. When varieties selected for late establishment become available, negative effects of late seeding should be reduced.

Rapeseed Seeding Rate

Seeding rate directly influences crop stand density. The final stand of winter rapeseed depends upon establishment rate (the number of seeds planted that produced harvested plants) and winter survival. Stand density can also influence crop yield, quality, lodging, winter survival, and weed competitiveness.

Winter rapeseed small plot seeding rate experiments were conducted using Dwarf Essex and Bridger near Moscow, Idaho, in 1991-92 and 1992-93 growing seasons. Seeding rates were 4, 6.7, 9.3, and 12 pounds per acre in both experiments and resulted in plant stands ranging from a low of just over 200,000 plants per acre to about 500,000 plants per acre across the seeding

rates. Plant establishment rate was highest for the lowest seeding rate in both years. Over 60 percent of the seed sown established plants in 1991-92 and over 80 percent did in 1992-93 at the 4 pounds per acre seeding. But under 40 percent in 1991-92 and under 60 percent in 1992-93 of the 12 pounds per acre seeding rate established plants. In fact, the lowest seeding rate stand was about 40 percent of the highest seeding rate's stand because of a higher establishment rate.

In the 1991-92 experiment there was a significant yield response to seeding rate at the second (August 24, see planting date section) and third (September 9) seeding date (Figure 1). Each 2.7 pounds per acre decrease in seeding rate corresponded to about a 200 pounds per acre greater yield for the second planting date and about 125 pounds per acre increase for the third date. At the first planting date, there was difficulty in establishment due to hot dry weather and the plant stands were too low to be useful. In the latest planting date (September 20) no seeding rate response was found. Thus, for the two recommended seeding dates, the highest yields were achieved with the 4 pounds per acre seeding rate. In the 1992-93 experiment there were no significant yield differences among the seeding rates.

Weather affected the 1991-92 and 1992-93 experiments, and probably is the cause of a seeding rate response one year and not the

University of Idaho



next. The weather for the 1991-92 experiment was warm early and became hot and dry later in the season, but the 1992-93 conditions were cool and moist with a very long growing season. These differences in weather may account for the different responses to seeding rates between years.

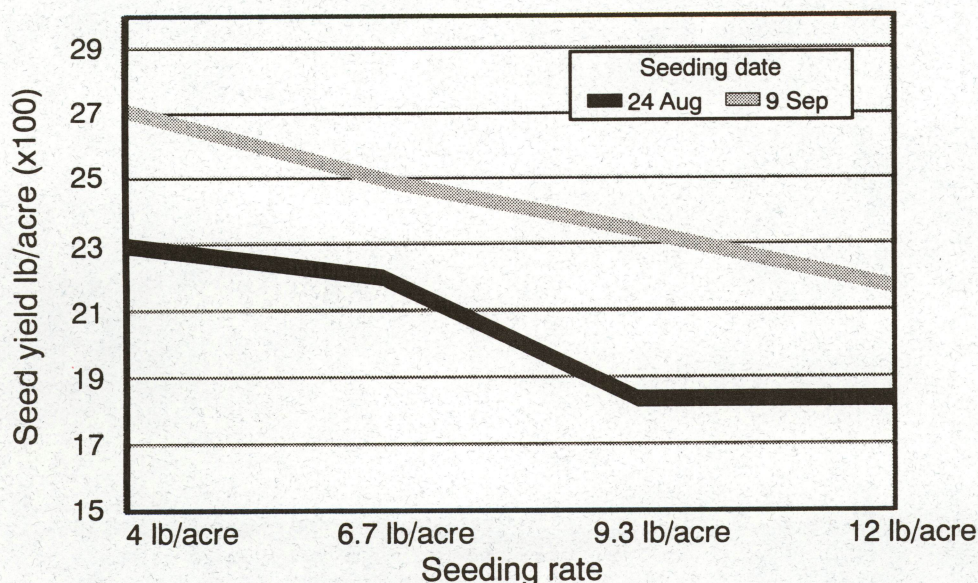
In 1994, winter rapeseed seeding rates of 2, 4, 6, 8, 10, and 12 pounds per acre were evaluated in an on-farm trial using Dwarf Essex in 500-foot long strips. This trial, near Genesee, Idaho, was conducted using farm scale equipment that should closely approximate grower conditions. Spring plant stands ranged from 146,000 plants per acre to 439,000 plants per acre for the lowest and highest seeding rates, respectively (Table 2). Of the sown seed, 80 percent established plants with the 2 pounds per acre seeding rate, while other seeding rates ranged from 40 to 52 percent establishment rate. The yield from the 2 pounds per acre seeding rate was almost 350 pounds per acre (15%) higher than the 10 pounds per acre rate. Yield increased progressively as seeding rate decreased. The weather conditions of 1994 were similar to 1992, but not as warm early in the year. Weed control was not a problem in any of the seeding rates of the trial, and no herbicide was used. Oil yield and erucic acid content were not affected by seeding rate.

Results from these seeding rate trials indicate that lowering seeding rates of winter rapeseed (Dwarf Essex) will not reduce yield and, under the conditions in some of these trials, can increase yield. This assumes that a grower can successfully establish a crop and that the seed can be delivered accurately and uniformly at low rates. The method of variable seeding used in the on-farm trial can be adapted by growers to achieve low seeding rates. In that trial, live seed was diluted with heat-killed seed in the proper ratios to get the specified rates of live seed when the drill was set to deliver 12 pounds per acre. For that trial. Two units of dead seed were mixed with one unit of live seed to give a 4 pounds per acre live seeding rate. Growers could use bin-run seed for dead seed diluent at minimal cost. Diluting live seed allows the drill to operate at a functional, accurate setting, while achieving a low seeding rate. However, complete mixing of live seeds and diluent material is necessary before placement in the drill. A cement mixer works well for this. Remember to use crop seed that is clean and weed-free.

Reduced seeding rates can enhance crop productivity, do not reduce crop quality, and should lower seeding cost for growers. Seed costs for rapeseed are expected to rise as more proprietary varieties become available.

Seed 2 to 4 pounds per acre of seed under good establishment conditions, or 6 to 8 pounds per acre for poor conditions.

Fig. 1. Winter rapeseed seeding rate response in two seeding dates at Moscow, ID, 1992.



If growers can reduce seeding rates by 50 to 75 percent, those savings should be substantial. The 1990 publication EXT 715, *Dryland Winter Rapeseed Production Guide*, indicates 4 pounds per acre is the minimum seeding rate, but this new information supports advantages to even lower rates, and that higher rates for adverse conditions, such

as late seeding or high weed potential, should be 6 to 8 pounds per acre not the up to 12 pounds per acre of seed as previously published. As new winter rapeseed varieties become available, they should be evaluated for optimum planting rates, especially if they have the potential for later seeding in the fall.

Set drills accurately at a reasonable rate and use inert diluent with live seed to precisely deliver low seeding rates; heat killed bin-run seed or inert fill will work as diluents.

Table 2. Winter rapeseed seeding rate response at Genesee, ID, 1994.

Seeding rate (lb/acre)	Seed yield (lb/acre)	Plant stand (1,000/acre)	Seed established† (%)
2	2,611	146	81
4	2,469	184	52
6	2,432	276	51
8	2,440	351	48
10	2,265	406	45
12	2,316	439	40
LSD 0.05*	177	55	9

* Values differing by more than the LSD are significantly different at the 5% level.
n.s. Indicates no difference among values.
† The percentage of plants established from planted seed.

Further Reading

To order the following publications, contact the University of Idaho Cooperative Extension System office in your county or Agricultural Publications, University of Idaho, Moscow ID 83844-2240; (208) 885-7982.

Dryland Winter Rapeseed Production Guide, EXT 715, \$1.50

1994 Certified Seed Selection Guide for Some Public and Private Varieties of Peas, Austrian Winter Peas, Lentils, Chickpeas, and Rapeseed, MS 147, Free

Northern Idaho Fertilizer Guide: Winter Rapeseed, CIS 785, 25¢

Rapeseed: An Alternative Crop for Idaho, EXP 752, \$2.00

Production, Processing, and Marketing Potential for Rapeseed in the PNW, CIS 818, 35¢

Cabbage Seedpod Weevil Control in Winter Rapeseed, CIS 782, 35¢

Bridger and Cascade Winter Rapeseed Varieties, CIS 801, 35¢

Authors

Stephen O. Guy is Extension crop management specialist and Mary K. Moore is an Extension associate. Both are in the University of Idaho College of Agriculture's Department of Plant, Soil and Entomological Sciences in Moscow.

Issued in furtherance of cooperative extension work in agriculture and home economics, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, LeRoy D. Luft, Director of Cooperative Extension System, University of Idaho, Moscow, Idaho 83844. The University of Idaho provides equal opportunity in education and employment on the basis of race, color, religion, national origin, age, gender, disability, or status as a Vietnam-era veteran, as required by state and federal laws.