VII SEED PRIMING TRIAL

Objective: To evaluate a novel seed priming system to enhance emergence, maturity and yield of canola.

Background: A method of priming seed has been developed and commercialized by a company named Kamterter II L.L.C. for a number of vegetable crops, including some crucifer vegetables. This priming system has been shown to improve germination and reduce time to germination of these small seeded vegetable crops. Potential benefits for canola may include faster germination rates, which should reduce the incidence of seedling diseases such as rhizoctonia, fusarium and pythium, better crop weed competition, shorter days to maturity and higher yields.

Methodology: This trial was conducted as a subset of the systems trial using Q2 (open pollinated) and InVigor 2663 (hybrid). One objective was to determine whether the response to priming was different between hybrid and open pollinated varieties. The four treatments were primed vs. unprimed Q2 and InVigor 2663. Seed lots were identical for both primed and umprimed lots of each variety. Each treatment was replicated four times. Ratings taken included those used for the systems trials and weekly crop development ratings throughout the growing season. The primed seed was treated with Foundation after priming.

Western Canadian Summary:

CPC Location	Selkirk MB		Naicam SK		Beiseker AB		Rolla BC	
	NYD	CMD	NYD	CMD	NYD	CMD	NYD	CMD
SEED PRIMING TRIAL								
InVigor 2663 - Primed	39.8	N/A	30.8	N/A	21.8	N/A	50.9	N/A
InVigor 2663 - Unprimed	38.2	120	29.7	83	17.0	(18)	51.0	209
Q2 - Primed	35.3	N/A	25.1	N/A	8.8	N/A	47.8	N/A
Q2 - Unprimed	33.6	85	23.9	55	8.3	(89)	50.0	202

Note: NYD - Net Yield Data (bu/ac), CMD - Contribution Margin Data ($/ac)
N/A - not available at time of publication.
Brackets in the CMD reflect a negative value.

SELKIRK

Methodology: The trial was seeded on May 27. All treatments received the same level of crop inputs, with the exception of herbicide applications. The Q2 treatments received a pre-plant incorporated application of Edge granular (9 kg/ac) which required an additional tillage pass. There were some wild oat escapes which required a follow up application of Select (0.065 L/ac). The InVigor 2663 treatments received an application of Liberty (1.35 L/ac) at the 2-leaf stage of the canola.

Observations: Conditions at this site were ideal for emergence, with the unprimed treatments emerging in about one week. Emergence counts at 5, 10 and 21 days after seeding (DAS) indicated that the primed treatments emerged quicker initially. However, by 10 DAS this advantage in plant density had disappeared. Based on the growth stage observations throughout the season, it appeared that the one to two day earlier emergence provided a maturity advantage for the Q2 until late flowering. The advantage in the InVigor 2663 disappeared more quickly, by the late rosette stage.

Results:

SEED PRIMING TRIAL Selkirk, MB							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**	**Grade**
InVigor 2663 - Primed	104	39.8	N/A	44.3	1097	84	2
InVigor 2663 - Unprimed	100	38.2	120.19	44.5	1097	84	2
Q2 - Primed	105	35.3	N/A	43.1	1084	83	1
Q2 - Unprimed	100	33.6	84.82	43.1	1084	83	2
LSD CV%		2.33 5.3		1.66 1.6			

Note: N/A - not available at time of publication.

Discussion: Statistical analysis revealed no advantages in net yield or oil content due to priming of either of the varieties. Final maturity was also unaffected by priming. The priming did provide a grade advantage for Q2 due to reduced levels of green seed. The downgrading of the other treatments due to green seed was probably a function of hot weather during and following swathing, as well as very little rainfall prior to combining.

NAICAM

Methodology: This trial was seeded on May 4. A fertilizer blend of 7-20-10-5 (actual) was seed-placed for all treatments. Muster Gold II (40 ac/case) was applied for the conventional treatments. A Liberty (1.35 L/ac) and Select (0.025 L/ac) tankmix was applied to the Liberty Link treatments. All herbicides were applied at the 2 to 3-leaf stage.

Observations: Dry growing conditions (see ***Site Information - Comments***) resulted in uneven emergence. Emergence took place on May 22. Emergence was more uniform for the primed treatments compared to the unprimed. Emergence counts indicated an advantage of 20 plants/m^2 for primed compared to unprimed treatments. Length of flowering, pod filling and ripening were very similar. Harvestability ratings were equal.

Results:

SEED PRIMING TRIAL Naicam, SK						
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**
InVigor 2663 - Primed	105	30.8	N/A	42.1	1055	101
InVigor 2663 - Unprimed	100	29.7	75.65	43.2	1055	101
Q2 - Primed	105	25.1	N/A	43.2	1055	100
Q2 - Unprimed	100	23.9	47.01	42.4	1046	101
LSD CV%		1.52 4.0		1.35 2.2		

Note: N/A - not available at time of publication.

Discussion: All treatments graded number one. Contribution margins reflect differences in yield, herbicide and seed costs. There were no statistical differences in terms of yield or oil content among treatments.

BEISEKER

Methodology: Q2 and InVigor 2663 (primed and unprimed) were seeded on May 15 within the systems trial at a rate of 5 lb/ac. Each of the varieties were sprayed with the appropriate herbicides (see ***Site Description, Beiseker***).

Observations: A rain the day after seeding resulted in rapid emergence. The primed treatments were the first to emerge. Emergence counts conducted 21 days after seeding were higher for the primed treatments. Primed InVigor 2663 averaged 99 plants/m^2, while the unprimed averaged 77 plants/m^2. The Q2 primed averaged 122 plants/m^2, while the unprimed averaged 105 plants/m^2. Weekly growth staging during the growing season indicated that the primed treatments were continually further advanced than the unprimed. At swathing time, seed colour change on the main stem was more uniform throughout the plots in both of the primed treatments. The unprimed treatments had more variability in maturity.

Results:

SEED PRIMING TRIAL Beiseker, AB							
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Ground Cover (%) June 27**	**Growing Degree Days**	**Days To Maturity**
InVigor 2663 - Primed	128	21.8	N/A	37.5	100	1154	94
InVigor 2663 - Unprimed	100	17.0	(17.88)	37.5	100	1185	96
Q2 - Primed	106	8.8	N/A	37.5	97	1185	96
Q2 - Unprimed	100	8.3	(88.28)	36.9	93	1276	102
LSD CV%		1.91 10.0		0.86 1.6			

Note: N/A - not available at time of publication.
Brackets in the contribution margin reflect a negative value.

Discussion: The primed InVigor 2663 had the highest yield. There were no differences in yield comparing the Q2 primed and unprimed. Oil content was unaffected by priming.

ROLLA

Methodology: This trial was seeded on May 10 at a seeding rate of 8 lb/ac. A fertilizer blend of 8-25-10-20 (actual) was seed-placed for all treatments. On August 2, an aerial application of Decis 5EC was applied at a rate of 60 mL/ac to control diamondback moth larvae. Swathing began on September 1 and finished on September 7. This trial was harvested on October 6.

Observations: Due to the optimal growing conditions that were present during seeding, no differences were observed between the primed and unprimed treatments. However, differences occurred between the two varieties. Both InVigor 2663 treatments had higher emergence counts (132 plants/m^2) compared to the Q2 treatments (112 plants/m^2).

Results:

SEED PRIMING TRIAL Rolla, BC						
Treatment	**Yield (%)**	**Yield (bu/ac)**	**Contribution Margin ($/ac)**	**Oil (%)**	**Growing Degree Days**	**Days To Maturity**
InVigor 2663 - Primed	100	50.9	N/A	43.8	945	112
InVigor 2663 - Unprimed	100	51.0	208.86	43.8	945	111
Q2 - Primed	96	47.8	N/A	45.0	969	117
Q2 - Unprimed	100	50.0	202.10	44.4	969	117
LSD CV%		3.02 5.2		0.72 1.3		

Note: N/A - not available at time of publication.

Discussion: Priming had no significant impact on yield, oil content or maturity within a variety.