Successful
Stand Establishment

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How to optimize canola establishment?

• Set targets
• Take care when seeding
• Evaluate stand & practices
• Protect your stand
• Re-evaluate & make plans for next year
Set Targets

5-8 plants/ft\(^2\)
75% emergence
TARGET 5-8 UNIFORM PLANTS/FT²

MORE PLANTS = WASTED SEED
• CROWDING = SELF THINNING, LODGING
• UNREALIZED PROFIT

SOURCE: ALBERTA AGRICULTURE
Target 5-8 UNIFORM plants/ft²

LESS plants = more risk

- Yield potential & yield stability ↓ below 3-4 plants/ft²
- Thin/bare patches = weeds, flea beetles, wasted inputs
- Branchy plants = longer & more variable DTM

Photos: Autumn Barnes, Justine Cornelsen
Uniformity?

Uniformity especially important when plant densities low

Non-uniformity x low density = 👎

Control what you can: residue management, fertility rates & application, packing pressure

Source: Agriculture & Agri-Food Canada, 2013
Why does survival matter?

Scenario:
6 plants/ft\(^2\) target, 5 gram TSW, $13/lb seed cost

Seeding rate & seed cost:
A. 50% emergence = 5.8 lbs/ac, $75.40/ac
B. 60% emergence = 4.8 lbs/ac, $62.40/ac  $13/ac savings
C. 75% emergence = 3.8 lbs/ac, $49.40/ac  $26/ac savings

www.canolacalculator.ca
Metric/Imperial conversion

- 4 gram TSW = 113 thousand seeds/lb
- 5 gram TSW = 92 thousand seeds/lb
- 6 gram TSW = 77 thousand seeds/lb
How to hit 75% emergence?

• Pre-seed
  – Develop goals to measure yourself against
    • [www.canolacalculator.ca](http://www.canolacalculator.ca)
  – Harvest residue distribution
  – Optimize soil P long term
  – Improve record keeping to avoid herbicide carryover
  – Maintain/replace ineffective equipment

Photo: Autumn Barnes
Take care when seeding
Before you leave the shop

• Running through the seed drill
  – Checking Openers: Worn or Okay?
  – Air Seals on Tanks
  – Rotate the hoses
  – Front to back and side to side leveled
  – Packer pressure

– Know your equipment
Poor Establishment

% Avg Precip: March 10 – June 10, 2019
Germination over Time

Many fields fall between these lines.... With emergence occurring several days later.

Source: Agriculture & Agri-Food Canada
Soil Temperature

- Measure & average over minimum of three days (Temps taken at 1” at 7-9 AM and 4-6 PM)

- Canola can imbibe water and germinate at 2°C (36°F)
  BUT:
  - Growth rate will decrease
  - Emergence % compromised
  - Clock ticking on seed treatment

  - Optimum soil temp is 10°C (50 F)
  - A good starting point is 5°C (41 F)
Question: What is the ideal speed of seeding?

Answer: The speed that ensures that the majority of seed is placed in the ½ to 1” layer below the press wheel furrow giving adequate separation between fertilizer and seed.
How fast is too fast?

<table>
<thead>
<tr>
<th>Seeding Speed</th>
<th>Avg. Depth</th>
<th>Range of Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 MPH</td>
<td>¾”</td>
<td>0.5-1.25”</td>
</tr>
<tr>
<td>4 MPH</td>
<td>1”</td>
<td>0.5-1.75”</td>
</tr>
<tr>
<td>5 MPH</td>
<td>1.5”</td>
<td>0.25-3.25”</td>
</tr>
</tbody>
</table>

Source: Canola Council of Canada
Note Seed in Fertilizer Row

Source: Canola Council of Canada
Stubble disturbance @ 4.1 mph
Stubble disturbance @ 5.0 mph
Stubble disturbance @ 6.2 mph
Buried rows

Photo: Agriculture & Agri-Food Canada
Confirmed with wire-stem (*Rhizoctonia solani*)

Photo: D. Kaminski, MAF
Effect of seeding depth on plant population

![Bar chart showing the effect of seeding depth on plant population. The x-axis represents seeding depth in inches (0.5, 1, 1.5, 2) and the y-axis represents plants per square meter (0 to 140). The chart shows a decrease in plant population as the seeding depth increases.](chart.png)
How to hit 75% emergence?

• Time of seeding
  – Seed into 5 C (41 F) or higher, 0.5-1” deep
  – Seed into moisture, adjust packing pressure
  – Calibrate frequently
  – Check placement/separation frequently, adjust speed
  – Follow safe rates of seed-placed fertilizer
  – Use premium seed treatments?
Evaluate Plant Stand
What does good establishment look like?

Photo: Gregory Sekulic
Surveyed canola density

Source: Julia Leeson AAFC 2018
Fields with patches of sub-optimal canola density

Source: Julia Leeson AAFC 2018
Protect Seedlings
Low/Variable Population?

- Longer & more variable canopy closure & maturity
- Insect thresholds may be lower
- Increased weed pressure
  - Budget for extra weed control
Flea Beetles

- Cold, dry = slow plant growth
  - Feeding on underside of leaves & stems
    - Wind

- Warm, calm = active feeding & active growing
  - Tops of leaves

- Poor establishment = worse
Re-evaluate stand & plan for next year
Residue management during harvest
Herbicide residue risk?

• Fields with history of Group 2, 4, 5 or 15
  – Check labels – not all are residual or have action on canola
• Normal biological activity inhibited
  – Dry, cool, low OM, pH
• Herbicide stacking?
• CHECK LABEL for re-cropping intervals
Gr2 carryover, Claresholm AB

Photos: Autumn Barnes 2018
Questions?

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