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

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Set Targets

5-8 plants/ft^2
75% emergence

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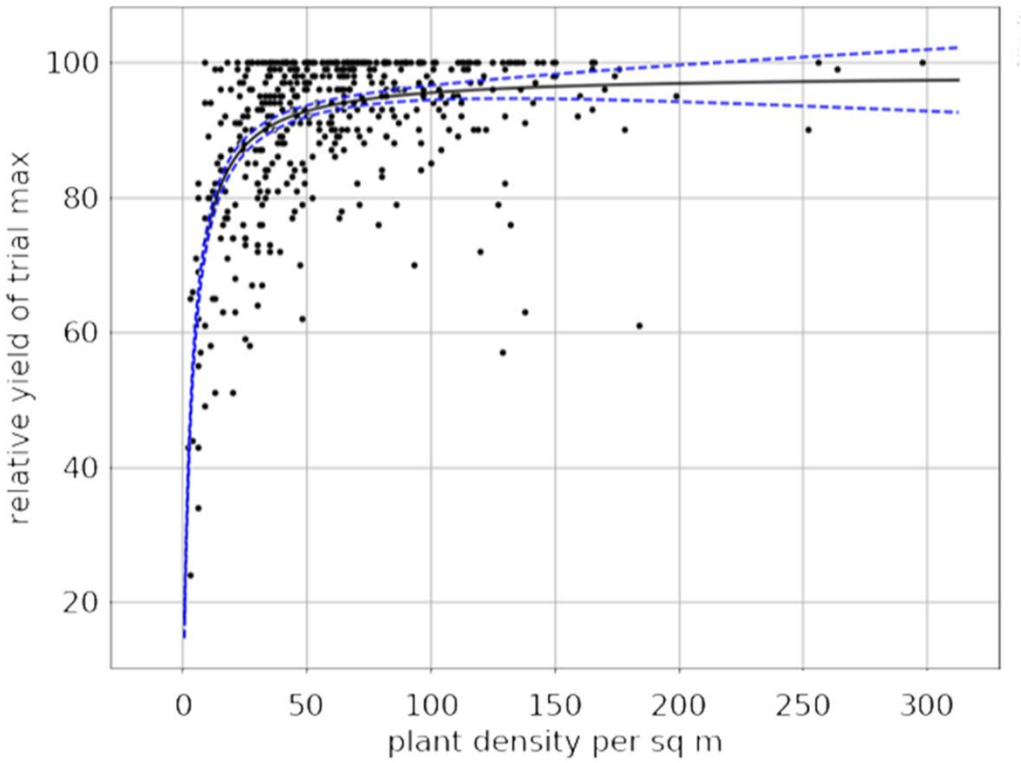
Target 5-8 UNIFORM plants/ft^2

MORE plants = wasted seed

- Crowding = self thinning, lodging
- Unrealized profit



Source: Alberta Agriculture

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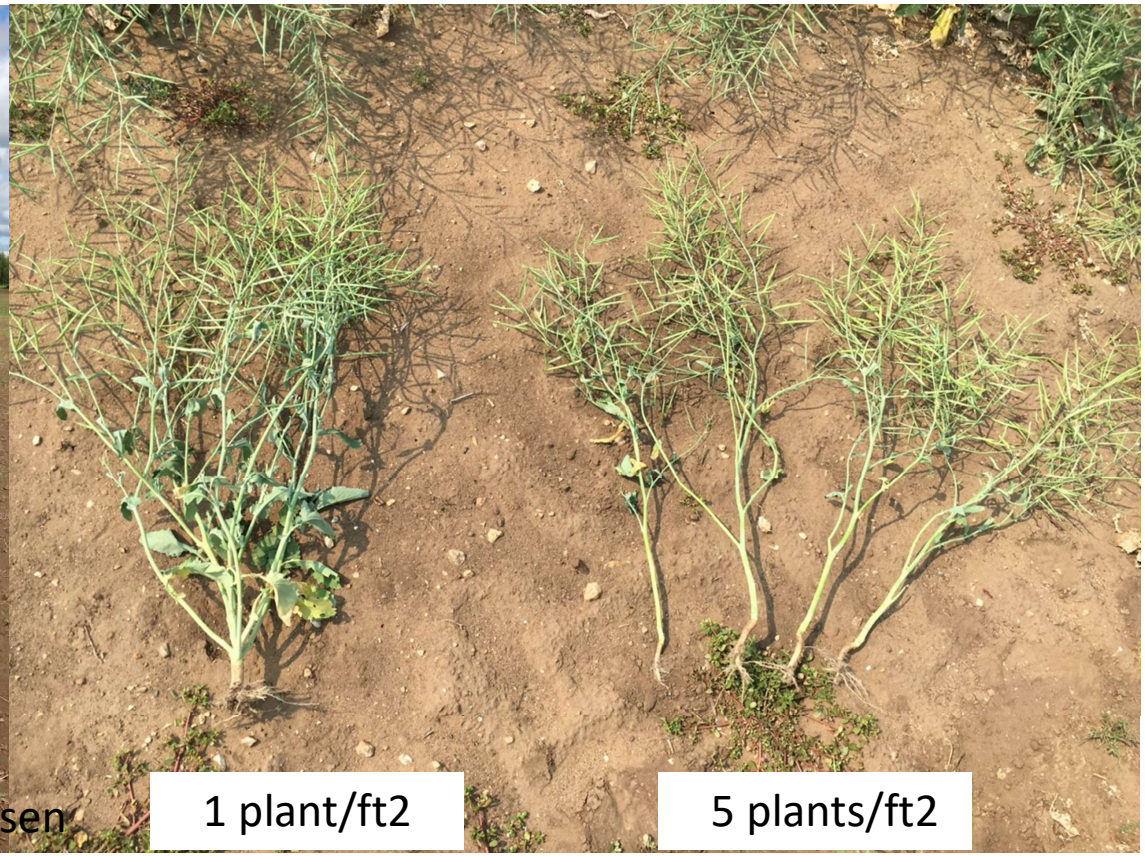
Target 5-8 UNIFORM plants/ft^2

LESS plants = <u>more risk</u>

- Yield potential & yield stability ↓ below 3-4 plants/ft^2
- Thin/bare patches = weeds, flea beetles, wasted inputs
- Branchy plants = longer & more variable DTM



1 plant/ft2

5 plants/ft2

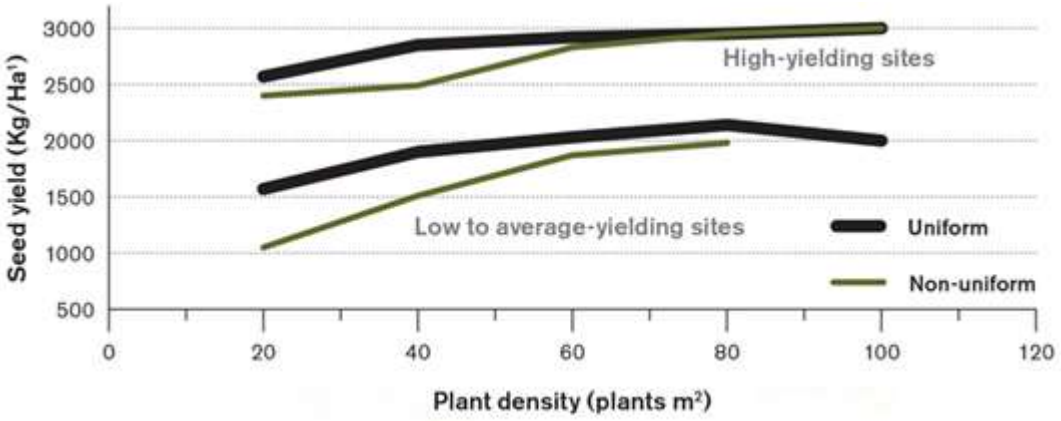
Photos: Autumn Barnes, Justine Cornelsen

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

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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

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Metric/Imperial conversion

- 4 gram TSW = 113 thousand seeds/lb
- 5 gram TSW = 92 thousand seeds/lb
- 6 gram TSW = 77 thousand seeds/lb

Photos: Canola Council of Canada

How to hit 75% emergence?

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

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Take care when seeding

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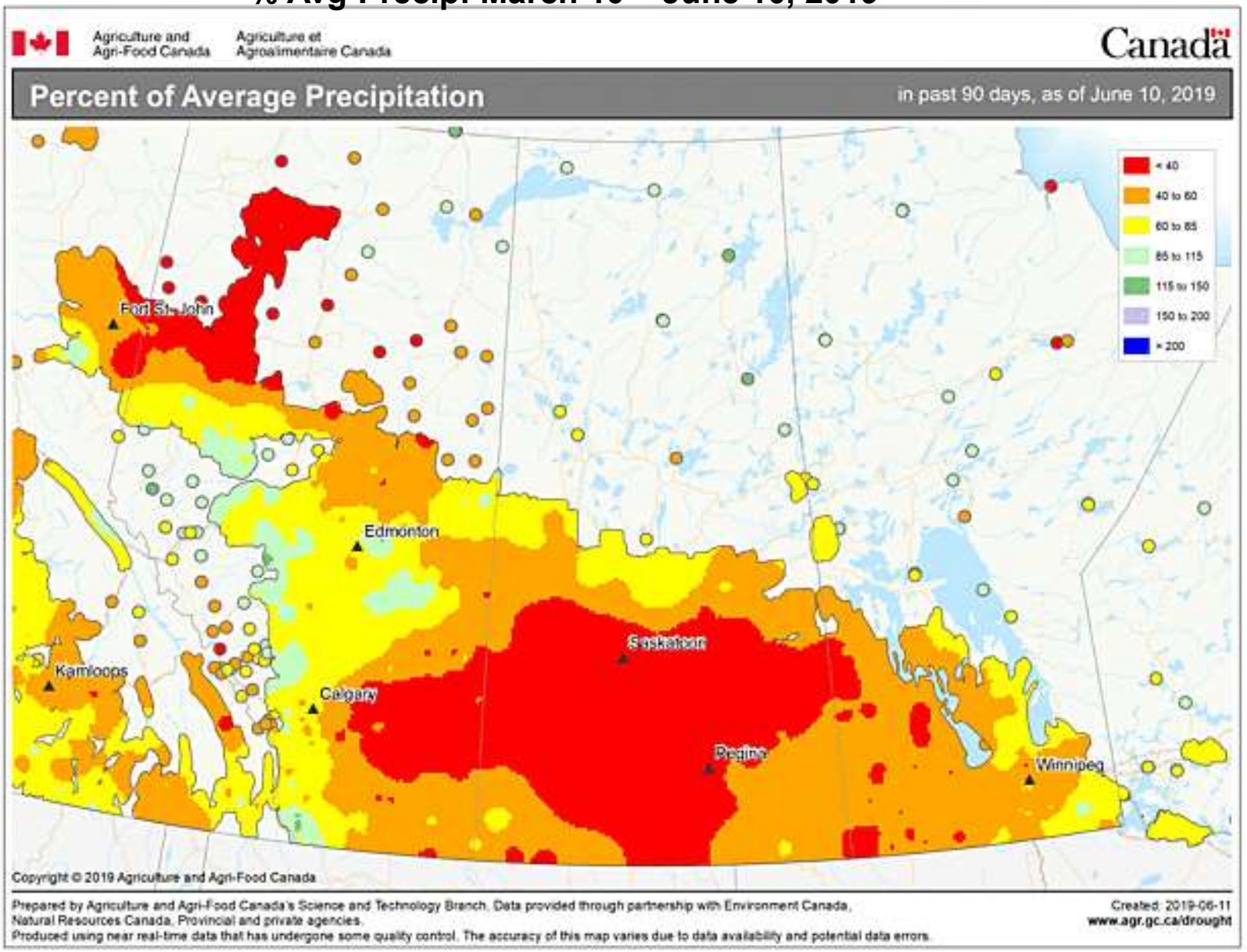
Before you leave the shop

- 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

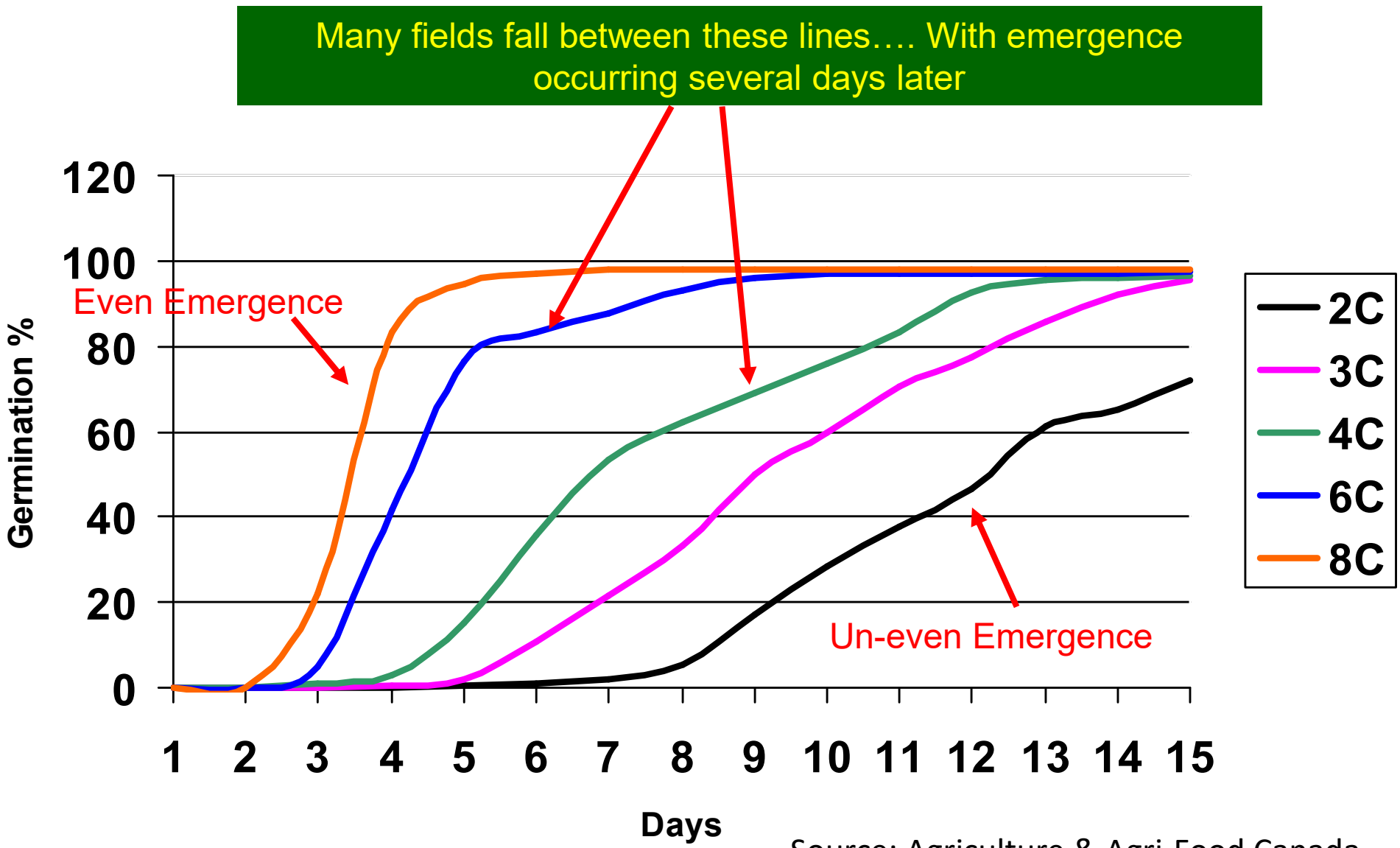
Poor Establishment

% Avg Precip: March 10 – June 10, 2019



2 C = 41 F
8 C= 46.4

Germination over Time



Source: Agriculture & Agri-Food Canada

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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)

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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.

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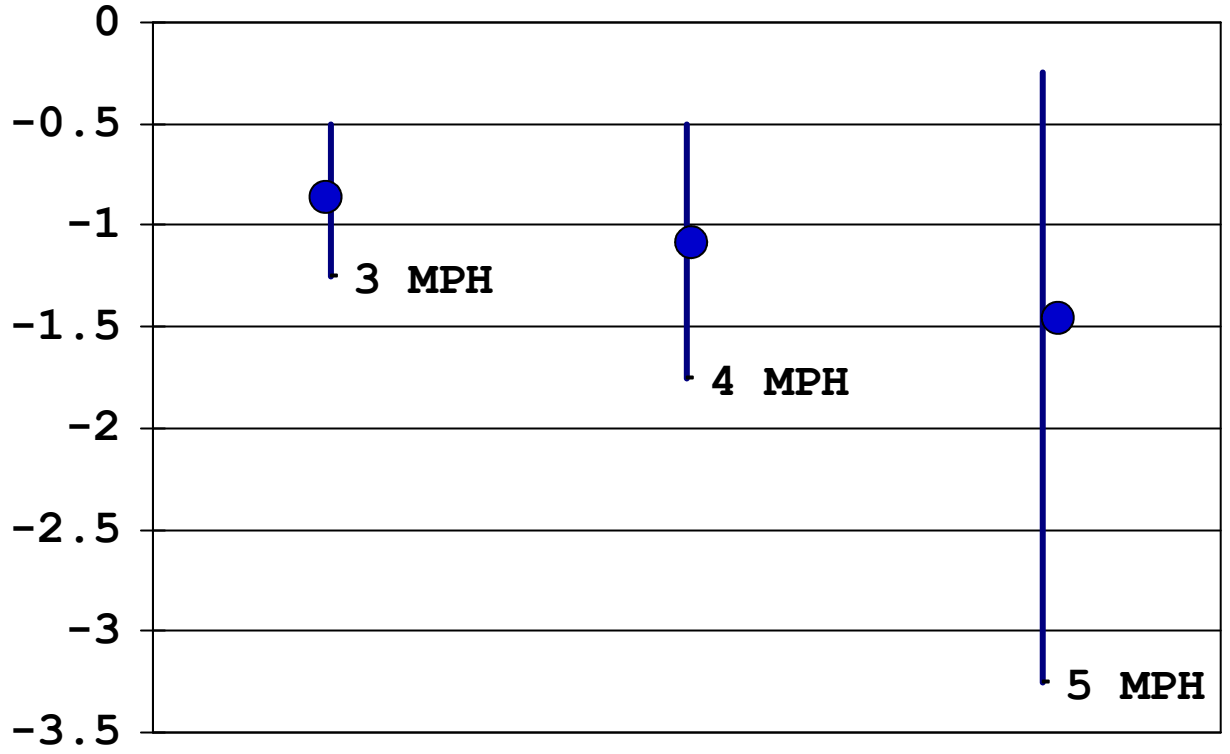
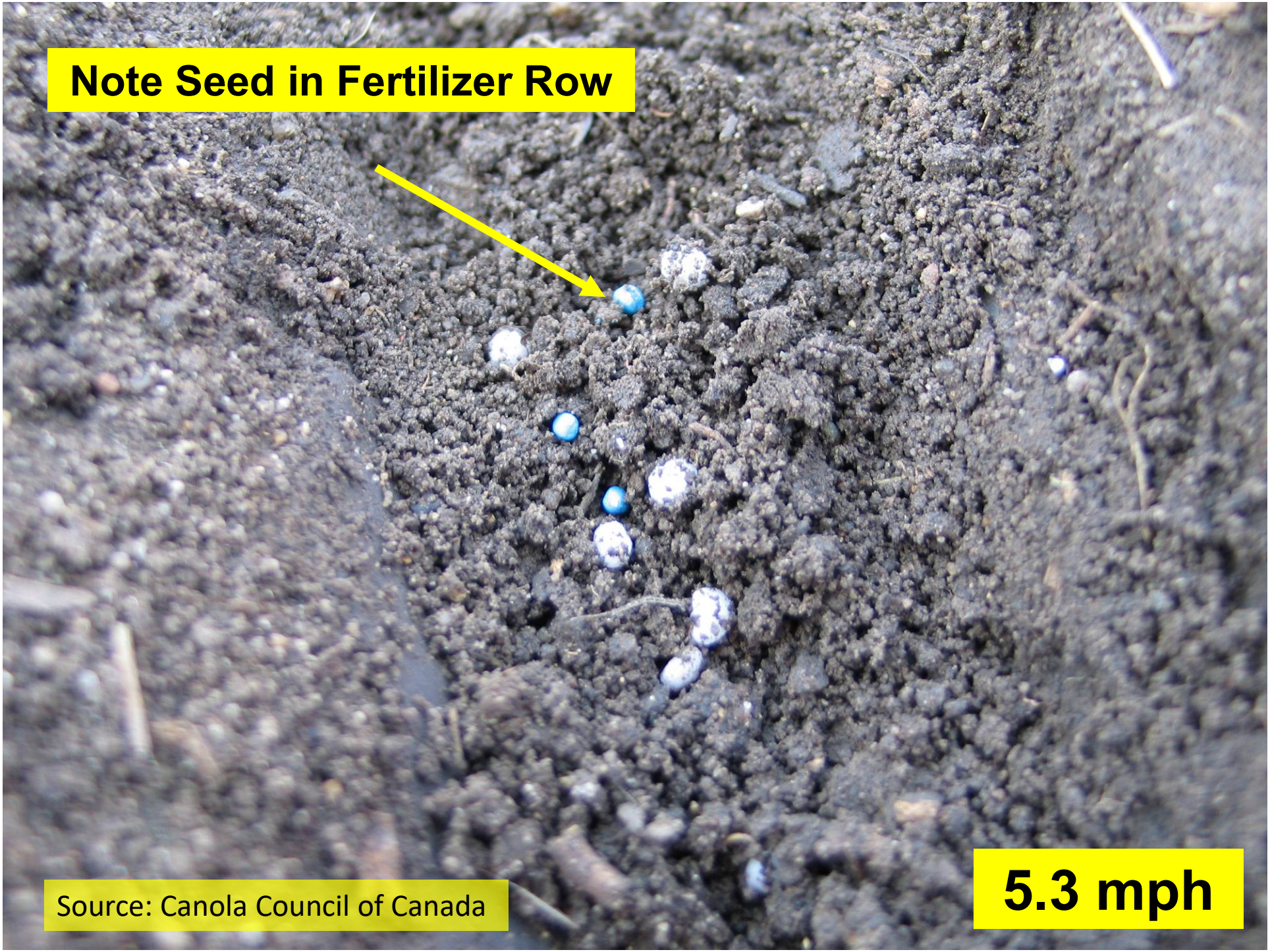
How fast is too fast?

Seeding Speed	Avg. Depth	Range of Depth
3 MPH	¾”	0.5-1.25”
4 MPH	1”	0.5-1.75”
5 MPH	1.5”	0.25-3.25”



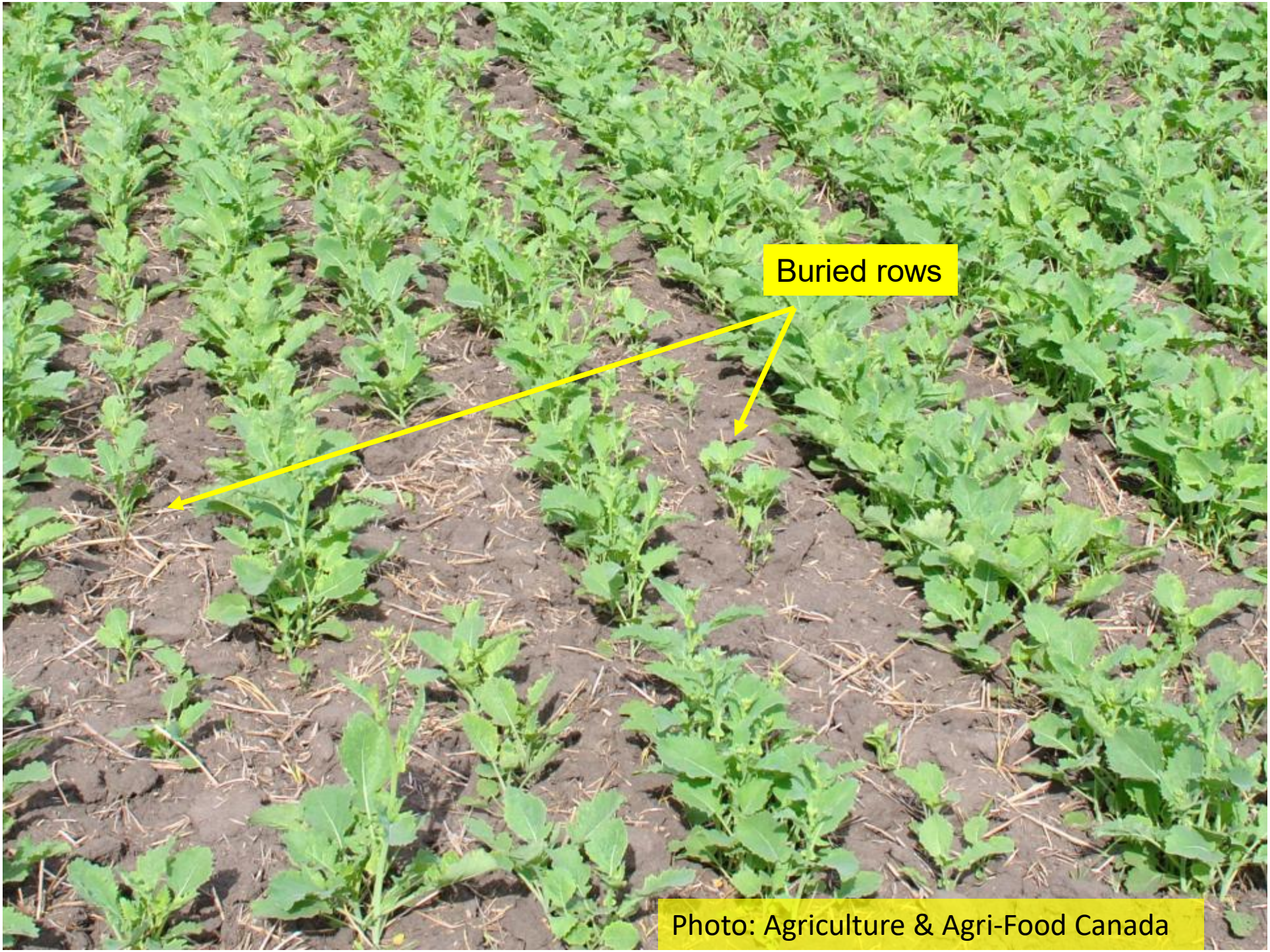
Source: Canola Council of Canada


Note Seed in Fertilizer Row
Source: Canola Council of Canada
5.3 mph

Stubble disturbance @ 4.1 mph

Stubble disturbance @ 5.0 mph

Stubble disturbance @ 6.2 mph


Buried rows
Photo: Agriculture & Agri-Food Canada


Deep Seeding
Photo: Agriculture & Agri-Food Canada


Confirmed with wire-stem (*Rhizoctonia solani*)
Photo: D. Kaminski, MAF

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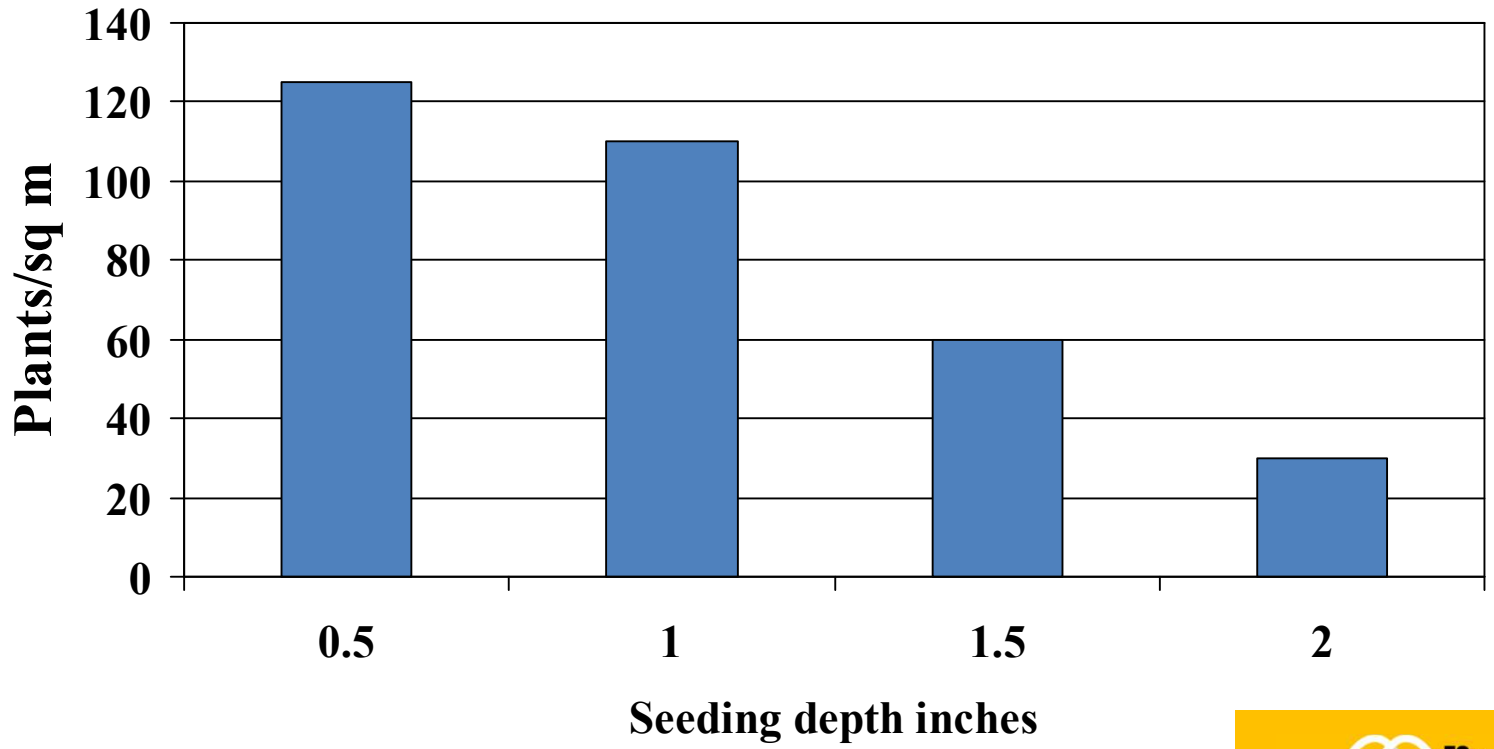
Effect of seeding depth on plant population



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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?

Photos: Warren Ward, Autumn Barnes

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Evaluate Plant Stand

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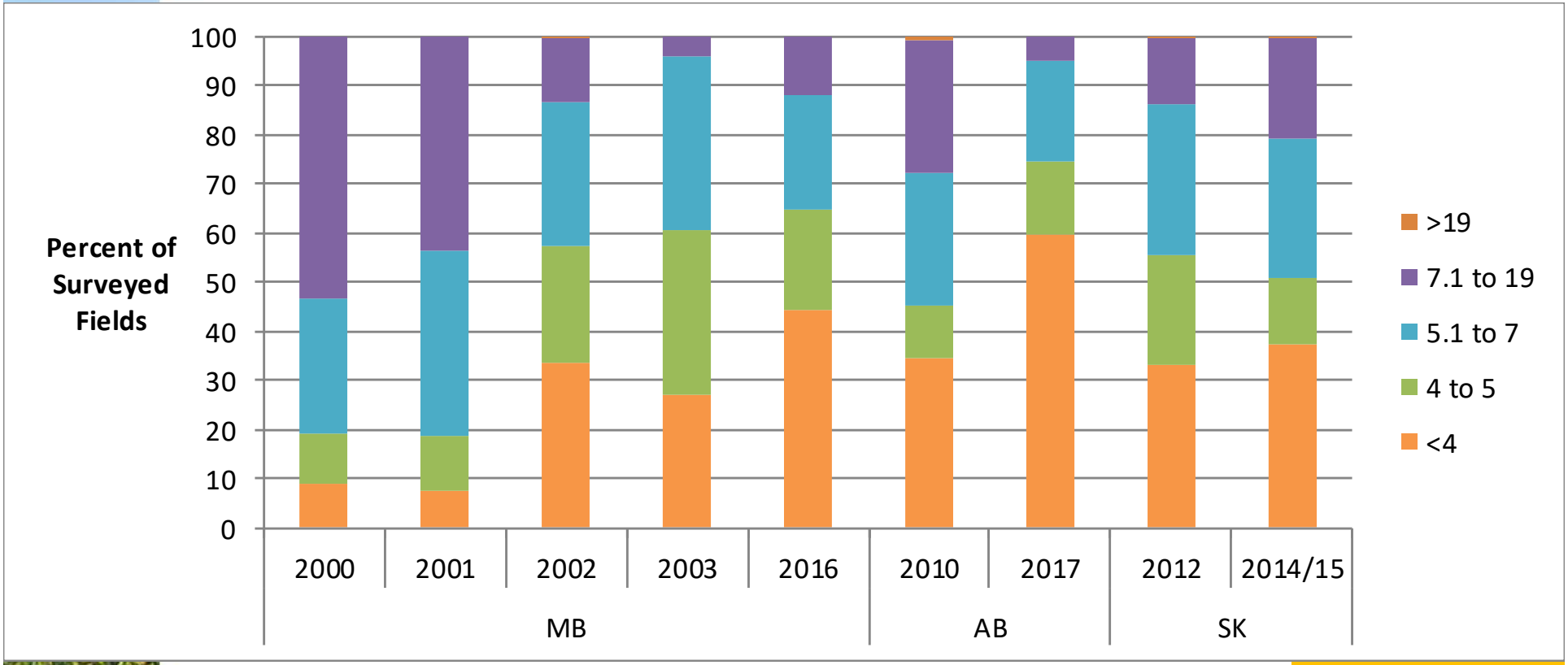
Photo: Justine Cornelsen

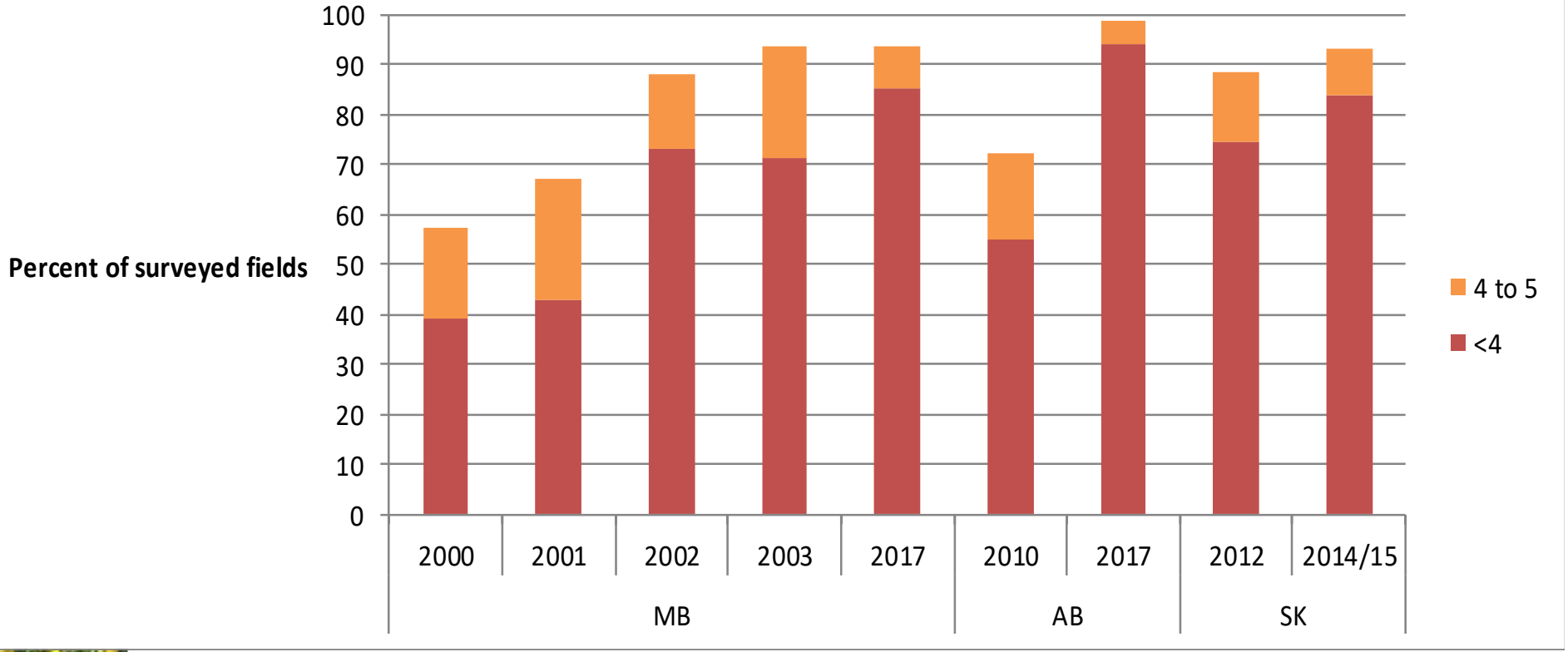

Photo: Gregory Sekulic

Surveyed canola density



Source: Julia Leeson AAFC 2018

Fields with patches of sub-optimal canola density



Source: Julia Leeson AAFC 2018

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Protect Seedlings

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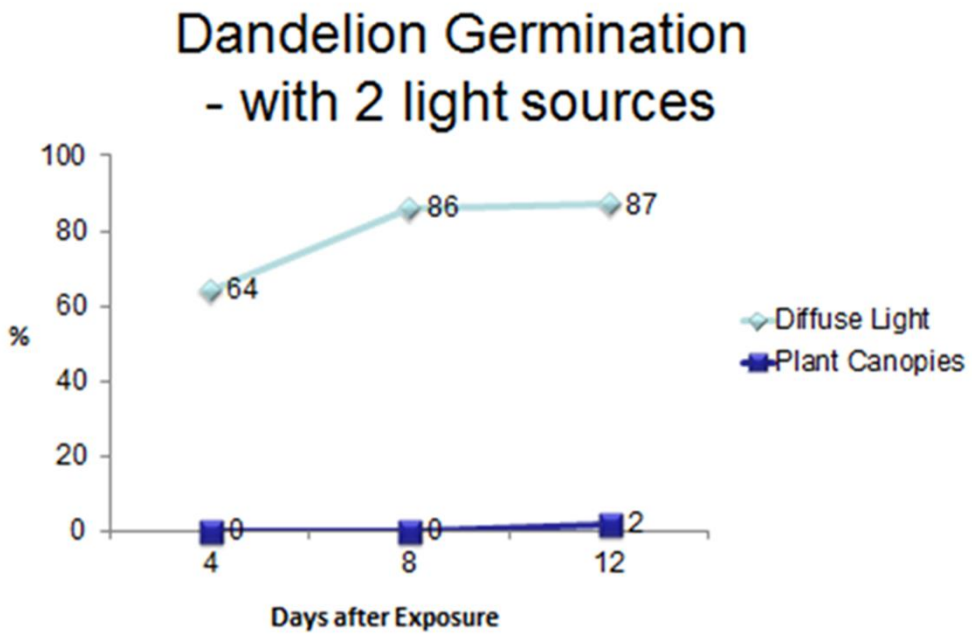
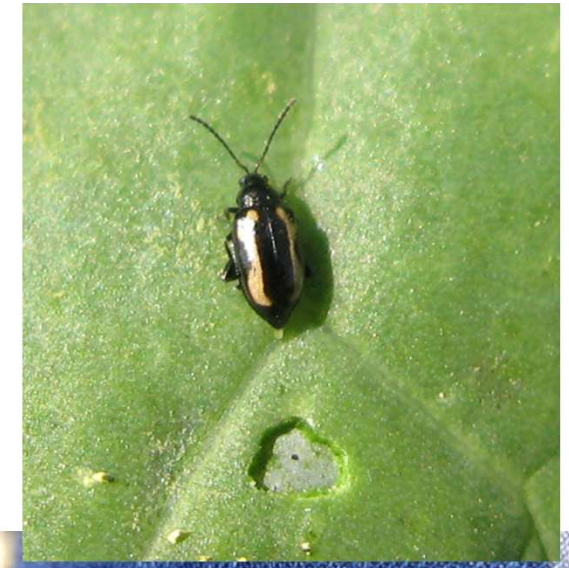
Low/Variable Population?

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



T. Górski. 1975. Germination of seeds in the shadow of plants. Physiol. Plant 34:342-346
- rhubarb, rye, barley, dense currant, and wild shrubs canopies

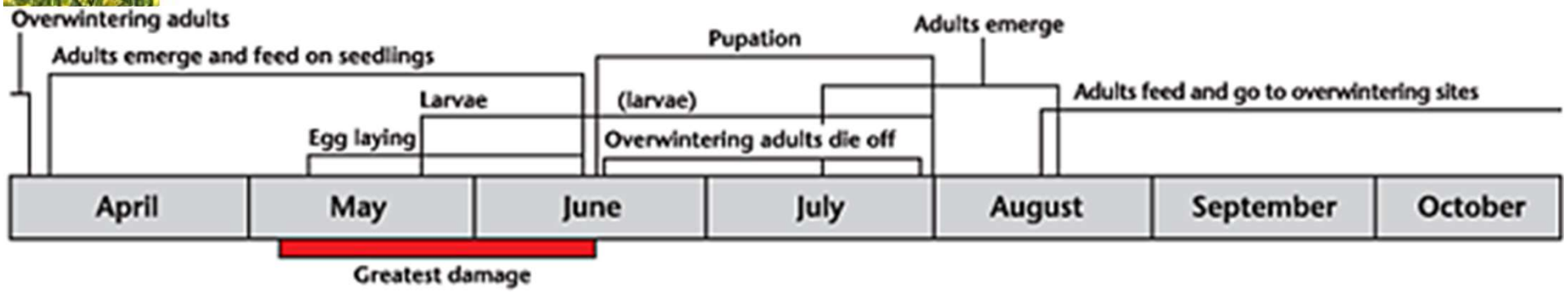
Flea Beetles

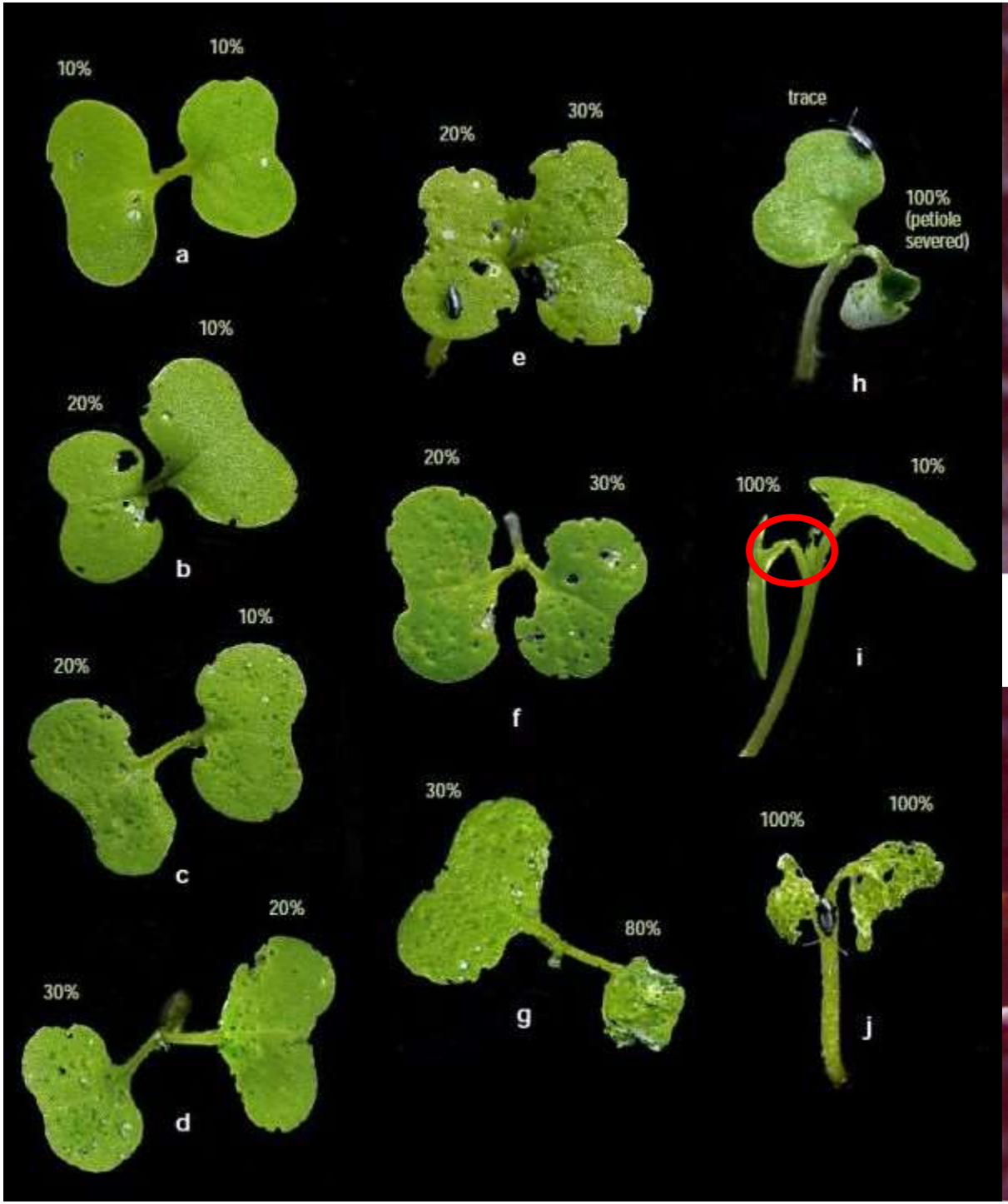


- Cold, dry = slow plant growth
  - Feeding on underside of leaves & stems
    - Wind

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

- Poor establishment = worse

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25%: Action Threshold


50%: Economic Threshold

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Re-evaluate stand & plan for next year

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Residue management during harvest

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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

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Photos: Autumn Barnes 2018

Gr2 carryover, Claresholm AB

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Gr2 carryover @ Carmangay, AB

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Photo: Autumn Barnes 2018

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