Growing Peas and Lentils
Key Growth Stages

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Pea and Lentil Growth Stages

- Seed
- Germination considerations
- Growth and development
- Desiccating Considerations
Pea Seed

- Larger compared to most crops
  - Average 2000 seeds per pound
    - range 1600 to 2500 seeds/lb
- Seed doubles in volume during the first 2 days of germination
  - Requires 3X the moisture for germination compared to small grains
- 38°F minimum temperature for germination
Pea Seed

- 38°F minimum temperature for germination

- Soil temperature and days to emergence:
  - 38°F - 45°F: 17 to 21 days to emerge
  - 45°F - 50°F: 14 to 17 days to emerge
  - 50°F - 55°F+: 10 to 14 days to emerge
Lentil Seed

- “Lens-shaped” thus the name lentil
  - Average seeds per pound
    - Range from 6,000 to 12,000 seeds/lb
- Requires similar moisture requirements for germination as small grains
- 41°F minimum temperature for germination
  - Requires slightly warmer soil temps for germination compared to peas
Lentil Seed

- 41°F minimum temperature for germination

Soil temperature and days to emergence:
- 41°F - 45°F: 17 to 21 days to emerge
- 45°F - 50°F: 14 to 17 days to emerge
- 50°F - 55°F+: 10 to 14 days to emerge
Pea and Lentil Germination

- “Hypogeal” germination
  - Growing point/cotyledons stay with the seed piece

- Often described as a numeral “node” stage or by “inches high”
Cotyledons and 1st node are with the seed piece

- 2nd and 3rd nodes usually stay below the ground and act as axillary buds

- 1st true leaf actually is the 3rd or 4th node; however, it’s called the 1st vegetative node.
Pea and Lentil Growth Stages

1st node/leaf stage:
- Depends on soil temps usually 14 days

2nd node/leaf stage and after: every 4 to 5 days

Important for frost, herbicide application, rolling, N fixation, etc.
Key Pea Growth Stages

- 1st leaf or 1st node
- Scale bud
- Cotyledons
- 2nd leaf or 2nd node
Key Growth Stages

- Each leaf stage can be identified as a node stage as well
  - Ex. 1st leaf stage = 1st vegetative node stage
Frost Tolerance

- Peas: 19 - 23°F
  - Can withstand extremely cold temperatures, especially between the 1st and 5th node stages

- Lentils: 25°F
  - Not as frost tolerant as peas
  - Similar to canola, however, the lentil growing point is below the ground
Severe Frost Damage Cases

What to expect?

If leaves are killed and the stem is wilted

1 – 5 node stage: quick recovery from underground axillary buds

7\textsuperscript{th} node stage or beyond:
  - About 40 days after planting
  - Plant will most likely die for axillary bud initiation will most likely not occur for the plant is moving into the reproductive stages. About 15 to 20 days from flowering
    - Need temps in the low 20’s in early, mid-June?
    - 2004 Twice: June 18 and June 25
Herbicide Considerations

- Node (leaf) stages important for most broadleaf herbicides
- Basagran: contact herbicide
  - At least 4 nodes
- Pursuit/Raptor
  - Prior to the five node stage
Rolling Peas/Lentils

- **Prior to emergence:**
  - Recommended only in a high residue or no-till cropping system

- **After emergence:**
  - Any cropping system
  - Heavy soil types
  - Peas 1 - 5 node stage, 1 to 4 inches high
  - After 7 node stage:
    - stand reduction and yield reduction can occur
Fertility Recommendations

- Nodulation/N fixation begins at the 3 to 4 node stage
  - Approximately 3 weeks after planting
  - N fixation only occurs for only 4 to 5 weeks so every week counts
  - If N fixation has not occurred by the 5th node stage
    - First, need to determine Why?
    - Still time for a N rescue treatment if needed
  - N needs by the plant reach maximum at flowering
Desiccating Peas and Lentils

- Gramoxone Max (Paraquat)
- Glyphosate: not a “true” desiccant
  - Only consideration should be for perennial weed control
Advantages in Desiccation

- Dry vines for even harvesting
  - Need even, mature crop
  - Dry down troublesome weeds
    - Wild buckwheat, kochia
- Usually a quality decision (Green peas)
  - Standing peas usually will dry more rapidly and generally retain better seed quality (less bleach) than peas in a swath
Concerns With Desiccating Peas and Lentils

- Even ripening of the field is very important
  - Can be a tough decision when to spray
    - 2004 uneven ripening made spraying difficult
  - Immature/green seed will cause quality issues, discounts

- Lentils have more indeterminate growth compared to peas
  - Uneven ripening, low areas green, hilltops ripe
  - Swathing better choice if that’s the case
Crop Staging for Desiccating

- **Peas**
  - 80% to 90% of the pods have turned yellow to tan-ripe color
  - Top pods should have turned from a dark green color to a limey-green color
    - Seed should be firm when pressed
    - With yellow peas; seed should have a light green/yellow color
Crop Staging for Desiccating

- **Lentils:**
  - 75% of the pods should be yellow to ripe
  - Top pods should have turned from a dark green color to a limey-green color
    - Seed should be firm when pressed
    - If sprayed and there are a considerable percentage of green pods/green seeds, significant grade discounts will most likely occur
  - About a 7 to 10 days later than a normal swathing date
Desiccating Peas and Lentils

- Gramoxone Max: 1 ½ pints/acre
  - 20 gallons of water preferred
  - 7 day PHI
Glyphosate When and Where

- Perennial weed control
  - Need even, mature crop
  - Dry down troublesome weeds
  - Wild buckwheat, kochia

- Usually a quality decision (Green peas)
  - Standing peas usually will dry more rapidly and generally retain better seed quality (less bleach) than peas in a swath
Questions