Snap Bean Weed Control in Mid-Atlantic States

Mark VanGessel, Quintin Johnson, and Barb Scott
UD Weed / Crop Management
Outline

- Review herbicides
- Resistance issues
- Summarize snap bean research
- Discussion cultural and mechanical weed control
- Odds and ends
Snap Bean Herbicides

- **SOIL-applied**
  - Dacthal
  - Dual Magnum
  - Command
  - Eptam<sub>PPI</sub>
  - Prowl<sub>PPI</sub>
  - Reflex
  - Sandea
  - Treflan<sub>PPI</sub>

- **POST**
  - Basagran
  - Reflex
  - Sandea
  - Assure II/Targa
  - Poast
  - Select Max

PPI, pre-plant incorporated only
• EPTC - 2.5 to 3.0 lb ai/A
• Eptam 7E 3 to 3.5 pts/A or 15 pounds of Eptam 20G
• PPI, *immediately after application*
• *Do not use on flat-podded varieties, except Romano*
• Provides nutsedge control, annual grasses, and some broadleaf weeds
  – tankmix to broaden spectrum of control
• Rotation: after harvest
Treflan

- trifluralin - 0.5 to 0.75 lb ai/A
- 1.0 to 1.5 pints per acre of Treflan 4EC or 10 to 15 pounds per acre of Treflan 5G
- Incorporate within 8 hours after application
- Primarily controls annual grasses and a few broadleaf weeds
- Potential problems with root rots
- Rotation: up to 5 mos (depending on crop)
Prowl

- pendimethalin - 0.7 to 1.4 lb ai/A
- 1.5 to 3 pts/A Prowl 3.8 H2O or 1.8 to 3.6 of 3.3 EC formulation
- Incorporate thoroughly
- Primarily controls few annual grasses and certain broadleaf weeds
  - do not use when soils are cold and/or wet soil during emergence, or crop injury may result
- Rotation: next year for most crops
Dacthal

- DCPA – 6 to 10.5 lb ai/A
- 8 to 14 pts/A of Dacthal 6F - PRE only
- Primarily controls annual grasses and a few broadleaf weeds, including common purslane
- Results have been most consistent when used in fields with coarse-textured soils low in organic matter and when the application was followed by rainfall or irrigation
- Rotation 8 mos for most crops
- s-metolachlor - 0.63 to 1.91 lb ai/A
- Apply 0.66 to 2 pts/A per acre Dual Magnum 7.62E - PPI or PRE
- Primarily controls annual grasses, nutsedge, and small-seeded broadleaves
- Other generic versions of metolachlor and s-metolachlor may be available, and may or may not be labeled for use in the crop
- Rotation: up to 12 mos
• halosulfuron - 0.024 to 0.047 lb ai/A
• 0.5 to 1.0 oz wt/A Sandea 75DF - PRE
• Yellow nutsedge and many annual broadleaf weeds. PRE applications will control lambsquarters, jimsonweed, and purslane
  – POST will not control these three
• More than ~0.5” of water before emergence can increase injury
• Rotation: 3 to 18 mos depending on crop
• fomesafen - 0.25 to 0.38 lb ai/A
• 1 to 1.5 pt/A Reflex 2SC - PRE
• Controls a range of broadleaf weed species, including lambsquarters
  – will not control lambsquarters POST
• Do not apply to fields more than once every two years
• Rotations: 4 to 18 mos depending on crops
Region 2: max Rate 1.5 pts/A alternate years

DE, KY, MD, VA, WV

PA: South of I-80 to intersection of US-15 and east of Highways 15 and 522
Region 3: max Rate 1.25 pts/A alternate years

CT, ME, MA, NH, NJ, NY, RI, VT

PA: except areas in Region 2
• imazamox - 0.031 lb ai/A
• 4 fl oz/A of Raptor 1 L
  – at least 1 fully expanded trifoliate
• Use NIS (no COC or N)
• Use Basagran (8 to 16 oz) to reduce risk of injury
• Snaps more sensitive to Raptor than limas
• Not labeled in NJ
• Rotations: 3 to 18 mos
• bentazon - 0.5 to 1.0 lb ai/A
• Apply 1.0 to 2.0 pts/A Basagran 4SC
  – when beans have fully expanded first trifoliate
• Controls common cocklebur, mustards, jimsonweed common lambsquarters, and common ragweed – will not control pigweeds
• The use of COC increases risk and severity of crop injury – use NIS when weeds are small and soil moisture is adequate
• Do not spray when temperatures are over 90°F
• Rotations: no restrictions
• fomesafen - 0.125 to 0.25 lb ai/A
• 0.50 to 1 pts/A Reflex 2SC
  – one to two fully expanded trifoliate leaves
• Use NIS; 30 days PHI
• Tank-mix with bentazon (Basagran) to improve the control of common lambsquarters (0.75 pt + 1.5 pt)
• DO NOT apply to any field more than once every two years in the region
• Rotations: 4 to 18 mos depending on crops
• halosulfuron - 0.024 to 0.031 lb ai/A
• 0.50 to 0.66 oz wt/A of Sandea 75DF
  – beans should have 2 to 3 trifoliate leaves
• Add NIS
• Controls yellow nutsedge and certain annual broadleaf weeds
  – will not control lambsquarters POST
• Rotations: 3 to 18 mos depending on crop
Grass Herbicides

Assure® II herbicide

Targa® Herbicide

SELECTMAX® Herbicide

Generics also available
Wide-spread ALS-R pigweed

Snap beans:
- Sandea
- Raptor
Lima beans:
- Pursuit
Notes

• Most soil-applied products caution about use under cool, wet conditions
  – concerns for early-planted crops
• Most POST require snap beans to be at 1\textsuperscript{st} trifoliate stage or later AND recommend weeds no larger than 2 to 3” tall
• S-metolachlor followed by Reflex plus Basagran has been most consistent program in UD trials
Timing of POST Treatments

• Four-year trial (2000 to 2004)
  – 4 reps each year
• Three planting dates
  – mid-May, mid-June, and mid-July
• Six weed removal timings**
  – POST applications at 10, 20, 30, or 40 DAP
  – Weed-free and weedy check
• Percent weed control, yields, and grades

**Reflex (1 pt) + Basagran (1.5 pt) + Poast (1.25 pt)
Snap Bean Yield

Yield (tons/A)

May
June
July

Weedfree
10 DAP
20 DAP
30 DAP
40 DAP
Weedy
Summary

• Timely POST treatments is critical
• Application to weeds <3”

• PRE herbicide selection is challenging
  – Potential injury with early planted crops
  – Sandea injury with coarse-textured soils
  – Only one applic. of Reflex per 2 yrs
    • often better as POST on some species
Cultural

- **Stale** seedbed or **False** seedbed
- Concept allow seeds to germinate, kill weeds before crop emergence, few weeds growing in the crop
- **Stale**: prep soil 2 to 4 weeks prior to planting and then kill weeds at planting
  - Shallow tillage, flaming, chemical
Cultural

- **False** seedbed: weeds emerging in response to tillage are killed by two or more additional shallow cultivations at weekly intervals
- Crop is planted immediately after the final cultivation
  - final cultivation is as shallow as practical to avoid stimulating further weed seed germination
  - leaves the soil surface loose and open, forming a dry, crumbly layer from which weed seeds are less able to take up moisture and germinate
Concept of False/Stale Seedbeds

Tillage

Destroy seedlings and plant

Time

0

2 in

4 in

= crop seed
Stale and False Seedbed Considerations

• Need time before planting to start tillage
  – 2 to 3 wks for Stale; longer for False
• Irrigation can be used to encourage seed germination
• Increased risk of soil erosion and crusting during the cultivated fallow period
• Planting or transplanting equipment can disturb the soil sufficiently to stimulate weed emergence in the crop row
• More successful with early germination species (i.e. lambsquarters)
What should you do first?

Typically spray first because waiting to allows:
• the weeds in the row to get larger
• snap beans to grow and increase likelihood of intercepting herbicide spray
Comments

• UD work with rotary hoe and beans have looked favorable if done timely – “white-thread” stage

• Timeliness of cultivation just as important as timeliness of herbicide treatment
Thank you to

- Pennsylvania Vegetable Marketing and Research Program
- Hanover Foods
- Seabrook Bros
- PictSweet
- Agri-chem Companies
- Dwight Lingenfelter, PSU