CROP FOCUS

Second-Year Soybean Production

Soybeans Following Soybeans

- High soybean prices relative to corn can favor shifting acreage away from corn to more soybean production.
- In some cases, this may involve planting fields to soybeans in two consecutive years.
- Planting soybeans in the same field in consecutive seasons is generally not recommended by extension agronomists; however, there are several management considerations that can help maximize productivity for growers pursuing this strategy.

Yield Potential

- Growers should expect lower yields in second year soybeans.
- Research results have varied, but a yield reduction of 3-5% compared to soybeans following corn is not an unreasonable expectation.
  - **2.3%** average yield reduction in an 8-yr Univ. of Kentucky study with individual year reductions up to 13% (Grove, 2017).
  - **6.5%** average yield reduction in a 4-yr study in Ontario (OMAFRA, 2009).
  - **0%** average yield reduction in a long-term Univ. of Wisconsin study (Lauer et al., 1997).
- Plant stress caused by environmental conditions, diseases, or insects can easily increase yield losses in second year soybeans.

Management Considerations

Field Selection

- Avoid poorly-drained soils due to higher risk of *Pythium*, *Phytophthora*, sudden death syndrome, and brown stem rot.
- Consider cover crops in fields with slopes prone to erosion – soybeans produce less residue than corn and decompose more quickly.

Variety Selection

- Avoid planting a field to the same soybean variety two years in a row.
- Select soybean varieties with high levels of disease resistance.
- Test for SCN and select SCN-resistant varieties.
  - SCN proliferates in long-term soybean cropping systems.
  - Resistant varieties can reduce SCN reproduction by 70-80%.

Seed Treatments

- Use a fungicide seed treatment to protect against diseases such as *Pythium* and *Phytophthora* that can increase in severity under continuous soybean production.
- Pioneer® brand soybeans treated with ILeVO® fungicide seed treatment provides control of sudden death syndrome and certain soil-borne nematodes such as soybean cyst and root knot nematodes.
  - Soybeans treated with ILeVO fungicide treatment produced significantly higher grain yield (4.9 bu/acre) in high SCN environments in DuPont Pioneer testing (O'Bryan and Burnison, 2016).
  - In moderate SDS environments the addition of ILeVO fungicide treatment increased grain yield 4.5 bu/acre.

Soil Fertility

- Growers often routinely rely on carryover fertilizers for soybean when rotated with well-fertilized corn. Soybean after soybean may require additional fertilizer, especially potassium.

Disease Management

- Many diseases can overwinter on soybean residue, some can be managed with fungicide, some cannot.
  - Stem canker and pod and stem blight can overwinter on residue but fungicides are not as effective on these.
  - Septoria brown spot and frogeye leaf spot are two diseases that can be managed with foliar fungicides.
- Scout fields regularly to check for disease problems.

Weed Management

- Any weed escapes in the previous soybean crop are likely to result in greater weed management challenges in second-year soybean.
- Use multiple modes of action
- Soil residual herbicides applied pre-emergence and with a post-emergence application can help manage problem weeds.

Grove, J. 2017. Yield penalty from second year soybean. Univ. of Kentucky.https://graincrops.blogspot.com/2017/01/yield-penalty-from-second-year-soybean.html. Lauer, J., P. Porter, and E. Oplinger. The corn and soybean rotation effect. Univ. of Wisconsin. http://corn.agronomy.wisc.edu/AA/A014.aspx. O'Bryan, K. and M. Burnison. 2016. Performance of soybean seed treatments against SDS and SCN in on-farm trials. DuPont Pioneer Agronomy Research Update. https://www.pioneer.com/home/site/us/pioneer_growingpoint_agronomy/2016/soybeans-ILeVO-sds-scn/ OMAFRA. 2009. agronomy guide for field crops. http://www.omafra.gov.on.ca/english/crops/pub811/2tillage.htm Image courtesy of Case IH.

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