

Crop Profile for Sorghum in Illinois

Prepared February 2000

General Production Information

Acres Planted:	160,000
Acres harvested for grain:	155,000
Acres harvested for silage:	1,000
Grain sorghum	
U.S. Rank/ Percent:	6 th / 2.2%
Average bushel/acre yield:	91.0
Production (bushels):	14,105,000
Average price per bushel:	\$2.40
Value of production:	\$33,852,000
Sorghum silage	
Average ton/acre yield:	12
Production (tons):	12,000

Grain sorghum is typically grown in the southern part of Illinois. The number of acres planted to sorghum has been decreasing for about 15 years. Because of its tolerance for drought, grain sorghum is often grown the year after a dry spell, as farmers seek to assure that they do not experience two successive years of crop failure. The use of grain sorghum in Illinois is principally as feed for cattle. A low market value, yields lower than corn, and difficulty in controlling weeds in the crop, generally restrict the amount of acres planted to sorghum in any year. Sorghum is often planted (double cropped) after winter wheat is harvested. If the grain does not mature before frost the crop is harvested for ensilage.

Insect Pests

In a year, major insect pests can cause severe economic damage in 15% or more of the total acreage.⁽³⁾

Avg. Crop Loss and % Crop Area Infested by Major Arthropod Pests

Common Name	Scientific Name	Avg. % Crop Loss	% Crop Area Infested
Armyworm	<i>Psuedaletia unipuncta</i>		
Black Cutworm	<i>Agrotis ipsilon</i>		
Corn Leaf Aphids	<i>Rhopalosiphum maidis</i>		
Corn Rootworm, Northern	<i>Diabrotica barberi</i>		
Corn Rootworm, Western	<i>Diabrotica virgifera</i>		
Fall Armyworm	<i>Spodoptera frugiperda</i>		
Grasshoppers	<i>Malanoplus spp.</i>		
Twospotted Spider Mites	<i>Tetranychus urticae</i>		
White Grubs	<i>Phyllophaga</i>		
Wireworms	<i>Limonius spp.</i>		

Avg. Crop Loss and % Crop Area Infested by Minor Arthropod Pests

Common Name	Scientific Name	Avg. % Crop Loss	% Crop Area Infested
Billbugs	None		
Clover Leaf Weevil	<i>Hypera punctata</i>		
Cutworm spp.	<i>Agrotis gladiaria</i>		
Garden Webworms	<i>Achyra rantalis</i>		
Grape colaspis	<i>Colaspis brunnea</i>		
Japanese beetle	<i>Popillia japonica</i>		
Pea Aphid	<i>Acyrtosiphon pisum</i>		
Seedcorn maggot	<i>Delia platura</i>		

Pesticide Use Rate and Application on Grain Sorghum

Active Ingredient	% Area treated	Rate lbs/ac	Total lbs Applied
2,4-D	15	0.25	6
Alachlor	30	1.7	82
Atrazine	80	1.2	154
Bentazon	1	0.25	0.4
Bromoxynil	1	0.2	0.3
Chlorpyrifos	5	0.5	4
Dicamba	10	0.2	3.2
Dimethenamid	10	1.2	19
Glyphosate	20	.5	16
Methomyl	3	0.25	1.2
Metolachlor	40	1.5	96

Insecticide Active Ingredients, Rates, REI, PHI and Primary Targets

Component Ingredient	Trade Name	Product rates		Unit	REI	PHI	Primary Target	Restrictions
		low	hi					
Carbaryl	Sevin XLS Plus	2.0	4.0	pts		0	Corn rootworm, armyworm, flea beetles, grasshoppers, Japanese beetles	
Carbofuran	Furadan	2.5/1,000 ft row		fl oz		30	Corn rootworm larvae, cutworms, white grubs, grasshoppers	

Chlorethoxyfos	Fortress 2.5G	6.0/1,000 ft row		oz			Corn rootworm, black cutworm, white grubs	
Chlorethoxyfos	Fortress 5G	3.0		oz			Corn rootworm, armyworm, flea beetles, grasshoppers, Japanese beetles	
Chlorpyrifos	Lorsban 4E	0.5	4.0	pts		35	Black cutworm, corn leaf aphids, corn rootworm, corn borer, white grubs, armyworm, billbugs, flea beetles, grasshoppers, stalk borer	Apply a maximum of 15 pts per acre/per crop season
Chlorpyrifos	Lorsban 4E	0.5	4.0	pts		35	Black cutworm, corn leaf aphids, corn rootworm, corn borer, white grubs, armyworm, billbugs, flea beetles, grasshoppers, stalk borer	Apply a maximum of 15 pts per acre/per crop season

Chlorpyrifos	Lorsban 15G	3.5	8.0/1,000 ft row	oz			Black cutworm, corn leaf aphids, corn rootworm, corn borer, white grubs, armyworm, billbugs, flea beetles, grasshoppers, stalk borer	Apply a maximum of 16oz/ft row/acre/crop season, or 13.5 lbs/acre/crop season
Cyfluthrin +Tebupirimphos	Aztec 2.1G	6.7/1,000 ft row		oz			Black cutworm, corn rootworm, white grubs	Apply a maximum of 7.3 lbs per acre/per season; apply in as in-furrow or T-band where runoff may contaminate water supply; apply in in-furrow within 20 yds of aquatic sites
Dimethoate	Dimethoate 400	0.66	1.0	pt		14	Corn leaf aphids, corn rootworm, grasshoppers, spider mites	Make no more than 3 applications per year; do not apply to corn during the pollen-shed period

Esfenvalerate	Asana XL	5.8	9.6	oz			Black cutworm, corn rootworm beetle, armyworm, flea beetles, grasshoppers, stalk borer, cinch bug	
Fonofos	Dyfonate II 15G	4.0	8.0	oz			Corn rootworm larvae, corn borer, white grubs	Make no more than 3 applications per year; do not apply to corn during pollen-shed
Lambda-cyhalothrin	Warrior 1EC	1.92	3.84	oz			Black cutworm, corn rootworm, corn borer, flea beetles, grasshoppers, stalk borer	Do not apply more than 0.96 pts per acre/per season; do not apply more than 0.48 pts after silk initiation; do not apply 0.24 pts after corn has reached the milk stage
Malation	Malation 57% EC	1.5		pt		5	Corn leaf aphids	
Methyl Parathion	Penncap-M	1.0	4.0	pts		12	Corn leaf aphids, corn rootworm beetles, corn borer, armyworm, flea beetles, grasshoppers	Spray over rows

Permethrin	Ambush 2E	6.4	12.8	oz			Black cutworm, corn rootworm, corn borer, armyworm, flea beetles, hop vine borer, stalk borer	
Permethrin	Pounce 1.5G	6.7	13.3	lbs			Black cutworm, corn rootworm, corn borer, armyworm, flea beetles, hop vine borer, stalk borer	
Permethrin	Pounce 3.2EC	4.0	8.0	oz		30	Black cutworm, corn rootworm, corn borer, armyworm, flea beetles, hop vine borer, stalk borer	Apply a maximum of 0.6 lbs a.i. per season; do not make treatments less than 6 days apart; apply prior to the brown silk stage
Phorate	Thimet 15G	8.0/1,000 ft row		oz			Corn rootworm larvae, white grubs, wireworms	

Phorate	Thimet 20G	6.0/1,000 ft row		oz		30	Corn rootworm larvae, white grubs, wireworms	Do not apply more than twice per season or make any applications after cultivation treatment
Tefluthrin	Force 1.5G	8.0	10.0/1,000 ft row	oz			Black cutworm, corn rootworm, white grubs, wireworms	
Tefluthrin	Force 2.0G	4.0	5.0/1,000 ft row	oz			Black cutworm, corn rootworm, white grubs, wireworms	Rotational crops may be planted no sooner than 30 days after application; do not apply this product within 20 yards of water
Terbufos	Counter CR	6.0/1,000 ft row		lbs			Corn rootworm, white grubs, cutworms, wireworms	Only 1 treatment may be used per season, either at planting, PE incorporated, or at cultivation. Do not exceed 6.5 lbs per season

Major Arthropod Pests:(2,10)

Black Cutworm (*Agrotis ipsilon*)

Black cutworm adult moths migrate to southern Illinois from March-May and lay eggs in vegetation in or around sorghum fields. The eggs hatch and larvae feed on available vegetation, Earlier instars feed on leaves; later instars cut the plants off near the ground. Fields subject to cutworm infestation often have preplant infestations of weeds, heavy surface debris, poor drainage, or a history of cutworm damage. An annual average of 3% of all fields are treated with post harvest insecticides, and up to 7% of acreage is treated with preplant or preplant-incorporated insecticide applications.

Corn Leaf Aphids (*Rhopalosiphum maidis*)

Winged corn leaf aphids are blown into Illinois by the prevailing winds. Hot, dry weather is unfavorable for natural enemies and can lead to severe infestations of aphids, Heavy infestations will wilt, curl, and cause necrosis of the upper leaves. Aphids excrete honeydew, which coats leaves and reproductive structures and may interfere with pollination.

Corn Rootworm, Western (*Diabrotica virgifera*), **Corn Rootworm, Northern**(*Diabrotica barberi*)

The larvae of corn rootworm beetles cause the most economic damage every year in Illinois. The larvae overwinter in the soil and undergo three instars while feeding on roots, causing lodging and reducing nutrient and water uptake. Northern corn rootworm beetles can be controlled by rotating soybeans with first-year corn. The larvae cannot survive in the soybean roots and starve to death. Northern corn rootworm beetle is most damaging in corn and sorghum planted after corn. In the past few years, western corn rootworm beetles have apparently changed their behavior by laying their eggs in soybean fields. The conclusion is that crop rotation itself has selected for a rootworm strain that circumvents sorghum-soybean crop rotation. By laying their eggs in soybean fields the female beetles insure the survival of their larvae in the subsequent year because the field will be planted to corn or sorghum. These larvae have had a very damaging effect in first year sorghum planted after soybean in east-central Illinois, and the problem is spreading slowly to the west and more rapidly to the east.

Grasshoppers (*Malanoplus spp.*)

Grasshoppers populations usually thrive during hot, dry summers when their naturally-occurring pathogens are suppressed; populations also tend to increase the year after a drought. Grasshoppers occur throughout Illinois and are usually most damaging in the southern half of the state. Grasshoppers are of minor to moderate importance in Illinois, as they usually prefer to feed on weeds but will readily move into crops if weeds are not available. Up to 11% of field margins may be treated during outbreak years.

Twospotted Spider mites (*Tetranychus urticae*)

These mites suck fluids from corn and sorghum plants; heavy infestations of twospotted spider mites cause leaves to wilt, turn yellow, and die. In drought conditions, spider mites can cause devastating losses. Two-spotted spider mites are generally a minor pest and on the average, 1 percent of crop acres are treated annually.

White Grubs (*Phyllophaga spp.*)

White grubs chew off roots hairs, reducing water and nutrient uptake, and severely damaged plants will wilt and die, causing severe stand reductions. White grubs are relatively minor pests in Illinois, and

damage is usually minimal, with less than 1% of acres treated for grubs annually.

Wireworms (*Limoniusspp.*)

Wireworm larvae mature in soil in 2-5 years and feed on the germinating roots of sorghum plants. They are usually problematic in the southern half of Illinois and cause severe damage in bottomlands and on poorly drained upland soil. It is estimated that 2-3% of sorghum in Illinois is treated for wireworms annually.

Minor Arthropod Pests:

Billbugs^(8,9)

Billbugs are early-season seedling corn and sorghum pests that seldom cause economic damage. Billbugs can kill seedling plants and significantly reduce stands if their populations are large. When startled, billbugs often play "possum" by falling to the ground and not moving for several minutes. This behavior, plus the fact that they are usually dusted with soil, makes them difficult to find when scouting in areas of billbug-damaged sorghum.

A rescue treatment may be warranted if extensive billbug feeding is detected early and potential stand loss is significant.

Japanese beetle (*Popillia japonica*)

Japanese beetles are seldom a problem in Illinois corn fields, but the presence of certain weeds, such as smartweed, and in combination with warm to hot, dry weather where the beetle is abundant can increase the chances of severe silk clipping by Japanese beetle.

Armyworm (*Psuedaletia unipuncta*)

Fall Armyworm (*Spodoptera frugiperda*)

Clover Leaf Weevil (*Hypera punctata*)

Cutworm spp. (*Agrotis gladiaria, Feltia decens, Crymodes devastator, Euxoa detersa, Peridroma saucia*)

Grape colaspis (*Colaspis brunnea*)

Pea aphid (*Acyrtosiphon pisum*)

Seedcorn maggot (*Delia platura*)

Webworms, Garden (*Achyra rantalis*)

Diseases

In Illinois, farmers are utilizing conservation tillage systems that affect soil water retention. However, the presence of a mulch layer of residues from previous crops also modifies many of the physical, chemical, and biological components of the soil and its ecosystem. Numerous studies have documented changes in temperature, water retention capacity, soil microbiology, soil tilth and structure, and chemical composition when farmers have modified their tillage from conventional tillage to either reduced or no-tillage systems.

Population dynamics of root pathogens associated with crop residues may change dramatically as tillage systems change. *Fusarium* species of fungi, in particular, increase when residues are present. These fungi are common root rotters and also invade sorghum stalks, causing stalk rots. Another group of fungi that thrive in cool, wet soils are *Pythium* species. These fungi infect the mesocotyl region of grass crops (the mesocotyl tissue links the new plant with the primary root system). Mesocotyl infections, causing loss of the primary root system, result in reduced growth or death of the seedling. The cooler and wetter conditions associated with reduced tillage increase activity of *Pythium* fungi.

Ergot, *Claviceps fusiformis*, is a relatively recent problem in sorghum. Although currently limited in its scope the disease can cause devastating economic losses where the problem is present. Ergot infested grain is docked by elevators receiving grain for sale and if sufficiently contaminated the grain may have to be discarded.

Captan, mancozeb, PCNB and thiram are used as seed treatments on most sorghum seed, and are primarily effective for controlling seed rots, seedling blights, and smuts. Captan is used on more than 90 percent of the sorghum seed planted.

Foliar disease can also affect grain sorghum. Rusts, leaf spots, mildew, and sooty stripe are but three of the most common. Although localized infections can result in yield losses, the presence of excessive dew, high relative humidity, and crop stress result in conditions which may favor more widespread infection on leaves and stalks.

For sorghum, the most frequent diseases and pathogens are listed in the table below along with fungicides which are known to have an affect in reducing disease severity.

Disease	Scientific Name	Fungicide
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Anthracnose	<i>Collectotrichum graminicola</i>	
Bacterial blight or chocolate spot	<i>Pseudomonas syringae</i>	
Bacterial eyespot or leaf spot	<i>Pseudomonas syringae</i>	
Bacterial leaf stripe	<i>Pseudomonas syringae</i>	
Bacterial leaf streak	<i>Xanthomonas campestris</i>	
Bacterial stripe blight or leaf streak	<i>Xanthomonas campestris</i>	
Brown stripe or leaf streak	<i>Scolecotrichum Gramis</i>	
Charcoal rot	<i>Macrophomina phaseolina</i>	
Downey mildew	<i>Peronosclerospora sorghi</i>	
Ergot	<i>Claviceps fusiformis</i>	Propiconazole
Gray leaf spot	<i>Cercospora sorghi</i>	
Kernel smut	<i>Sporisorium reilianum</i>	
Leaf spots and blotches	<i>Stagonospora</i>	
Maize Dwarf Mosaic Virus	MDMV	
Root and stalk rot	<i>Fusarium spp</i>	
Root rot & seedling blight	<i>Pythium spp</i>	Captan
Rust	<i>Puccinia purpurea</i>	Triadimefon & Propiconazole
Selenophoma leaf spot	<i>Selenophoma bromigena, S. donacis</i>	
Sooty stripe	<i>Ramulispora sorghi</i>	
Stripe smut	<i>Ustilago striiformis</i>	

Diseases:

Common name(s): Brown stripe or leaf streak

(also called brown leaf blight and Scolecotrichum brown stripe)

Scientific name(s): *Scolecotrichum Gramis*

Aggravating factors:

- Cool, wet weather.
- Spring and autumn seasons.

How disease is spread:

- By splashing and wind-blown rain.
- Overwinters in living grass leaves and crop debris.

Control:

1. Sow only disease-free, well-adapted grass varieties.
2. If warranted, use a careful, controlled burning of dead grass.
3. Rotate at least two years with non-grass crops.
4. Keep down weed grasses by cultural or chemical means.
5. Avoid excessive rates of fertilizers high in quickly available nitrogen.
6. Avoid pure dense stands of a single grass variety.
7. Avoid close grazing and clipping.
8. Avoid leaving a heavy mat of hay on the grass during damp weather.
9. Where feasible, plow under cover crops and plant debris cleanly.

(RPD : no. 310)

Common name(s):Selenophoma leaf spot, speckle, blotch, or eyespot

Scientific name(s):*Selenophoma bromigena* and *S. donacis*

Aggravating factors:

- Cool, moist weather (60-70°).
- During spring or autumn.

How disease is spread:

- Spread by air currents and splashing rains.
- Can overwinter.

Comments:

- Fungi spores can remain alive for at least 18 months.

Control:

1. Sow only disease-free seed of well-adapted grass varieties.
2. Treat seed with a thiram- or captan-containing seed disinfectant.
3. If warranted, perform a controlled burning of dead grass in early spring.
4. Rotate with non-grass crops where practical.
5. Keep down weed grasses by cultural or chemical means.
6. Avoid excessive rates of fertilizers high in quickly available nitrogen.
7. Avoid pure, dense stands of a single grass variety.
8. Avoid close grazing and clipping.
9. Avoid leaving a heavy mat of hay in the grass during cool, damp weather.
10. Maintain adequate soil fertility, especially of potassium and phosphorus.
11. Cut early and remove any hay crop that becomes heavily infected.
12. Plow-under cleanly then cover crops and plant debris.

(RPD : no. 311)

Common name(s):Leaf spots or blotches

Scientific name(s): *Stagonospora*

Aggravating factors:

-Cool, damp weather (68-77°)

How disease is spread:

-By air currents and splashing rain.

Comments:

-With abundant moisture, the fungus will germinate and infect new host tissue within 72 hours.

Control:

1. Sow only certified, disease-free, well-adapted seed varieties.
2. Avoid excessive rates of fertilizers high in quickly available nitrogen.
3. Avoid pure, dense stands of a single grass variety.
4. Follow recommended mowing and grazing practices.
5. Avoid leaving a heavy mat of hay on the grass during damp weather.
6. Rotate with non-grass crops where practical.
7. Keep down weed grasses by cultural or chemical means.
8. If warranted, consider a careful, controlled burning of dead grass in the early spring.

(RPD : no. 312)

Common name(s):Anthracnose

Scientific name(s):*Collectotrichum graminicola*

Aggravating factors:

-Warm, moist weather (60-90°).

-Low fertility contributes.

How disease is spread:

-By wind, and rain splashing.

Control:

1. Maintain adequate to high, balanced soil fertility.
2. Sow only clean, certified, plump, disease-free seed.
3. Treat seed with a protective fungicide.
4. Where feasible, rotate with soybeans, forage legumes, or corn, for one year or more.
5. Avoid a sequence of closely related grasses and cereals.
6. Avoid pure, dense stands of a single grass variety.
7. Avoid leaving a heavy mat of hay on the grass during warm, damp weather.
8. Plant at the recommended rate in a fertile, well prepared seed bed.

9. Keep down weed grasses by cultural or chemical means.
 10. Where feasible, plow-under crop and weed debris cleanly.
- (RPD : no. 313)
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Common name(s):Stripe smut

Scientific name(s):*Ustilago striiformis*

Aggravating factors:

-Cool weather (50-60°).

How disease is spread:

-By rain, equipment, and wind.

Comments:

-Diseased plants may produce some healthy stems in which smut-free seed develop.

Loss average: 70% or more

Control:

1. Sow only certified, disease-free, well-adapted seed.
2. Treat the seed with a fungicide containing maneb, thiram, or captan.
3. Plow down severely infected fields cleanly.
4. Plant a non-susceptible crop for 2 or more years.
5. Keep down weed grasses by cultural or chemical means.

(RPD : no. 314)

Common name(s):Bacterial leaf stripe

Scientific name(s): *Pseudomonas syringae* (*P. andropogoni*)

Aggravating factors:

-Warm, moist weather (optimum temp. 71-82°)

How disease is spread:

-Seedborne and spread by splashing rain, and dripping dew.

-By wind or insects causing wounds.

-Can survive in plant residue.

-Mowing when foliage is wet.

Comments:

-The bacteria remain viable for 2 years or more within dried crop residues and seeds.

-Other plants that may become infected include grain, forage, sundangrass and broomcorn.

Control:

1. Sow only certified, disease-free seed of well-adapted grass varieties.

2. Grow varieties that are resistant to bacterial blight when they are available and recommended.
 3. Treat cereal and grass seed with a suggested fungicide.
 4. Avoid disease buildups by rotating grasses with non-grass crops, such as soybeans and forage legumes, for at least 2 years.
 5. Avoid leaving a heavy mat of hay on the grass during warm, moist weather.
 6. Cut early, and remove any hay crop that becomes heavily infected.
 7. Plow-under cleanly all cover crops, severely infected stands, volunteer cereals or grasses, and plant residues.
 8. Keep down weed grasses by cultural or chemical means.
 9. In early spring, use a careful, controlled burning of dead grass.
 10. Practice balanced fertility-do a soil test.
- (RPD : no. 315)
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Common name(s):Bacterial leaf streak

Scientific name(s):*Xanthomonas campestris (X. holicola)*

Aggravating factors:

-Damp or rainy weather (optimum temp. 83°)

How disease is spread:

-Seedborne by wind, splashing rain, dripping dew, and insects.

-Spread by insects, infected crop residue, and mowing foliage when wet.

Comments:

-The bacteria remain viable for 2 years or more within dried crop residues and seeds.

-Other plants that may become infected include corn, pearl millet, and foxtail millet. **Control:**

1. Sow only certified, disease-free seed of well-adapted grass varieties.
2. Grow varieties that are resistant to bacterial blight when they are available and recommended.
3. Treat cereal and grass seed with a suggested fungicide.
4. Avoid disease buildups by rotating grasses with non-grass crops, such as soybeans and forage legumes, for at least 2 years.
5. Avoid leaving a heavy mat of hay on the grass during warm, moist weather.
6. Cut early, and remove any hay crop that becomes heavily infected.
7. Plow-under cleanly all cover crops, severely infected stands, volunteer cereals or grasses, and plant residues.
8. Keep down weed grasses by cultural or chemical means.
9. In early spring, use a careful, controlled burning of dead grass.
10. Practice balanced fertility-do a soil test.

(RPD : no. 315)

Common name(s):Bacterial eyespot or leaf spot

Scientific name(s): *Pseudomonas syringae*

Aggravating factors:

-Cool, moist weather (optimum temp. 55°)

How disease is spread:

-Seedborne by wind, dripping dew, and splashing rain.

-Can be spread by insects, crop residue, and mowing when foliage is wet.

Comments:

-Bacterial eyespot can be distinguished from bacterial stripe and streak by the absence of streaks and bacterial exudate.

-Other plants that may become infected include broomcorn, pearl millet, foxtail millet, field or dent corn, sweet corn, and popcorn.

-The bacteria remain viable for 2 years or more within dried crop residues and seed.

Control:

1. Sow only certified, disease-free seed of well-adapted grass varieties.

2. Grow varieties that are resistant to bacterial blight when they are available and recommended.

3. Treat cereal and grass seed with a suggested fungicide.

4. Avoid disease buildups by rotating grasses with non-grass crops, such as soybeans and forage legumes, for at least 2 years.

5. Avoid leaving a heavy mat of hay on the grass during warm, moist weather.

6. Cut early, and remove any hay crop that becomes heavily infected.

7. Plow-under cleanly all cover crops, severely infected stands, volunteer cereals or grasses, and plant residues.

8. Keep down weed grasses by cultural or chemical means.

9. In early spring, use a careful, controlled burning of dead grass.

10. Practice balanced fertility-do a soil test.

(RPD : no. 315)

Common name(s):Bacterial blight or chocolate spot

Scientific name(s): *Pseudomonas syringae* (*P. coronafaciens* var. *atropurpurea*)

Aggravating factors:

-Wet weather, and when temp. is favorable.

How disease is spread:

-Seedborne by splashing rain, dripping dew, and wind.

-Spread by crop residue, insects, and mowing when wet.

Comments:

-The bacteria remain viable for 2 years or more within dried crop residues and seeds.

-No bacterial exudate is normally present.

-Other plants that may become infected include quackgrass, wild rye grasses, wheat grasses, prairie June grass and perennial ryegrass.

Loss range:

-Very serious in smooth brome grass.

Control:

1. Sow only certified, disease-free seed of well-adapted grass varieties.
2. Grow varieties that are resistant to bacterial blight when they are available and recommended.
3. Treat cereal and grass seed with a suggested fungicide.
4. Avoid disease buildups by rotating grasses with non-grass crops, such as soybeans and forage legumes, for at least 2 years.
5. Avoid leaving a heavy mat of hay on the grass during warm, moist weather.
6. Cut early, and remove any hay crop that becomes heavily infected.
7. Plow-under cleanly all cover crops, severely infected stands, volunteer cereals or grasses, and plant residues.
8. Keep down weed grasses by cultural or chemical means.
9. In early spring, use a careful, controlled burning of dead grass.
10. Practice balanced fertility-do a soil test.

(RPD : no. 315)

Common name(s): Bacterial stripe blight or leaf streak

Scientific name(s): *Xanthomonas campestris* (*X. translucens*)

Aggravating factors:

-Rainy, damp weather (optimum temp. 79°)

How disease is spread:

- Seedborne by wind, splashing rain, and dripping dew.
- Spread by crop residue, insects, and mowing when foliage is wet.

Comments:

-Other plants that may become infected include timothy, quick grass, barley, wheat, rye, oats, and a variety of brome grass.

-The bacteria remain viable for 2 years or more within dried crop residues and seeds.

Control:

1. Sow only certified, disease-free seed of well-adapted grass varieties.
2. Grow varieties that are resistant to bacterial blight when they are available and recommended
3. Treat cereal and grass seed with a suggested fungicide.
4. Avoid disease buildups by rotating grasses with non-grass crops, such as soybeans and forage legumes, for at least 2 years.
5. Avoid leaving a heavy mat of hay on the grass during warm, moist weather.
6. Cut early, and remove any hay crop that becomes heavily infected.
7. Plow-under cleanly all cover crops, severely infected stands, volunteer cereals or grasses, and plant

residues.

8. Keep down weed grasses by cultural or chemical means.

9. In early spring, use a careful, controlled burning of dead grass.

10. Practice balanced fertility-do a soil test.

(RPD : no. 315)

Weeds

In a typical year, about 97% of Illinois sorghum fields are treated with a herbicide. Although cultivation is sometimes used it is not universally practiced for grain sorghum. The occurrence and severity of weeds differs by region. Johnsongrass and shattercane tend to be more severe along the river basins and near St. Louis. Giant ragweed is more severe in heavy river bottom soils. There are also weeds which tend to be more of a problem in grain sorghum than in corn grown in the same area. Weeds which germinate late in the season, such as prickly sida, and hophornbeam copperleaf are two annual weeds which affect sorghum production more than field corn production.

Avg. Crop Loss and % Crop Area Infested by Weeds

Common Name	Scientific Name	% of Crop Infested	% Crop Loss
Barnyardgrass	<i>Echinochloa crusgalli</i>		
Canada thistle	<i>Cirsium arvense</i>		
Cocklebur	<i>Xanthium pennsylvanicum</i>		
Common Lambsquarters	<i>Chenopodium</i>		
Common Milkweed	<i>Asclepias syrica L.</i>		
Common Ragweed	<i>Ambrosia artemisifolia</i>		
Crabgrass	<i>Digiteria spp.</i>		
Eastern Black Nightshade	<i>Solanum ptycanthum</i>		
Fall Panicum	<i>Panicum dichotomiflorum</i>		
Foxtail	<i>Setaria spp.</i>		
Giant Ragweed	<i>Ambrosia trifida</i>		
Hemp dogbane	<i>Apocynum cannabinum</i>		

Hophornbeam copperleaf	<i>Acalypha ostryifolia</i>		
Jimsonweed	<i>Datura stramonium</i>		
Johnsongrass	<i>Sorghum halepense</i>		
Morningglories	<i>Ipomoea spp.</i>		
Pigweeds	<i>Amaranthus spp.</i>		
Prickly sida	<i>Sida spinosa</i>		
Smartweeds	<i>Polygonum</i>		
Velvetleaf	<i>Abutilon theophrasti</i>		
Yellow nutsedge	<i>Cyperus esculentus</i>		

Herbicide Use Rates and Primary Targets

Trade name	Compound Ingredients			Use Rate/ Acre	Primary Target
	Active A	Active B	Active C		
Lasso 4E/Micro-Tech 4CS	Alachlor		Needs safener	2.0-3.25 qt	Grass
Atrazine 4L	Atrazine			2.0 qt	Grass and Broadleaves
Atrazine 90DF	Atrazine			2.2 lb	Grass and Broadleaves
2,4-D,ester	Auxin				Broadleaves
Laddok S-12	Bentazon	Atrazine			Broadleaves
Buctril	Bromoxynil				Broadleaves
Buctril and Atrazine	Buctril	Atrazine			Broadleaves
Banvel/Clarity	Dicamba			1.0 pt	Broadleaves
Marksman 3.3L	Dicamba	Atrazine		3.5 pt	Broadleaves
Frontier	Dimethenamid		Needs safener	20-30 fl oz	Grass
Roundup	Glyphosate				Grass and Broadleaves

Permit	Halosulfuron				Broadleaves
Dual II	Metolachlor		Needs safener	0.75-1.5 qt	Grass
Bicep II 5.9L	Metolachlor	Atrazine	Needs safener	1.5-3.0 pt	Grass and Broadleaves
Bicep Lite 4.6L	Metolachlor	Atrazine	Needs safener	1.5-3.0 pt	Grass and Broadleaves
Pentagon 60WG	Pendimethalin			1.5-3.4 lb	Grass
Prowl 3.3E	Pendimethalin			2.0-4.8 pt	Grass

Weeds:

Prickly Sida (*Sida spinosa*)

Annual. From one to three feet tall. Plant has a stiff, upright stem. Germinates and thrives late in the season. Also known as teaweed.

Hophornbeam copperleaf (*Acalypha ostryifolia*)

Annual. From twelve to 30 inches tall. Mostly found in the southern portion of the state. Also known as three-seeded Mercury.

Velvetleaf (*Abutilon theophrasti*)

Annual. Velvetleaf is a serious competitor for moisture in drought conditions. Cultivation can somewhat control velvetleaf when used in the early season. Also known as butterprint, elephant ear, and buttonweed.

Foxtail spp. (*Setaria* spp.)

Annual. The three species of foxtails in Illinois are giant foxtail (*Setaria faberi*), green foxtail (*S. viridis*) and yellow foxtail (*S. glauca*). Giant foxtail is the most competitive of the three species. Foxtails are considered the most important weeds species in Illinois. One plant may produce several heads with 500-1000 seeds per head that can germinate in one to several years after production. These plants are adapted to most Illinois conditions, tend to compete with crops and make cultivation and plowing difficult. All foxtails are more serious in reduced and no-till fields.

Common Milkweed (*Asclepias syrica* L.)

Perennial. Reproduces by seeds and adventitious buds that sprout from underground roots. Seedlings produce vegetative buds 18-21 days after germination, and seeds may remain viable for up to three days. Seeds may germinate from as deep as 2 inches in the soil, and undisturbed fields or fields with reduced tillage and moist soils are favored. Problems with common milkweed has been increasing due to the decrease in tillage and row cultivation.

Hemp dogbane (*Apocynum cannabinum*)

Perennial. This weed is capable of regrowth from vegetative plant parts if cut down within six weeks of emergence. The underground root system may extend laterally 20 feet per year and downward as far as 14 feet. The northwest quarter of the state is usually most severely infested with dogbane. Tillage can reduce dogbane infestations, but is ineffective once populations are established.

Common Lambsquarters (*Chenopodium album*)

Annual. Common lambsquarters produce numerous small seeds which germinate after an overwintering process. Optimal temperature for germination is 70F, but can germinate between 40 to 94, which suggests early germination capabilities. Survival is favored by rains which dilute or leach herbicides from the soil surface.

Yellow nutsedge (*Cyperus esculentus*)

Perennial. Yellow nutsedge causes severe weed infestations and is quite serious across Illinois. It reproduces from tubers as the seed does not survive overwintering, and tubers can adapt to almost any soil type and conditions. Tubers germinate at up to 12 inches of soil and remains viable for up to three years in soil.

Smartweeds (*Polygonum* spp.)

Annual. Grows best on wet soils and is widely distributed across Illinois. Smartweed emerges early in the spring and can be a severe problem if tillage is delayed on wet soils, as seedbed preparation may result in transplanting larger plants rather than destroying them.

Giant Ragweed (*Ambrosia trifida*)

Annual. Wet weather favors giant ragweed, and this weed may be a severe problem in isolated fields. The seeds of giant ragweed may remain viable in the soil for several years. Small seedlings can be controlled with row cultivation and tillage. Although sometimes known as horseweed this name is misleading and may result in confusion with the plant more generally known as horseweed (*Conyza canadensis*).

Cocklebur (*Xanthium pennsylvanicum*)

Annual. Cocklebur seeds are spread by attaching to animal fur. Cocklebur is a serious competitor for moisture. Cultivation, tillage, and mowing will all help control cocklebur establishment.

Pigweeds (*Amaranthus* spp.)

Annuals. Pigweeds are prolific seed producers, and one plant can produce over 100,000 seeds in one growing season. The seeds of this plant may remain viable for years. Pigweeds are a problem in no-till systems because undisturbed soils favor germination of the minuscule seeds, and the debris keeps the field moist and allows for extended germination. Other favorable germination locations are where excess nitrogen is available, and where no soil applied herbicides have been used. Localized populations of some biotypes of pigweed have shown triazine or acetolactate synthase (ALS)-inhibitor resistance. The pigweeds include both tall and common waterhemp.

Canada thistle (*Cirsium arvense*)

Perennial. Canada thistle has a vigorous, rhizomatous root system. Propagation is by rootstock and seeds; only female plants produce seed. Canada thistle is listed as a noxious weed in Illinois, and is most severe in the northern counties of Illinois. Preplant tillage and row cultivation can control small seedlings but are less effective in controlling plants arising from rootstocks.

Morningglories (*Ipomoea* spp.)

Annual. Tall morningglory and ivyleaf morningglory are the two major annual morningglory species found on Illinois soils. The seeds of these summer annuals may survive for several years in soil. Infestations are most common in moist soils along river bottomland, but these plants can be found most anywhere in the state. Annual morningglories adapt to crops by vining about the crop, so shading by the canopy is not particularly successful in reducing growth. Newly emerged seedlings can be controlled by tillage and cultivation, but this may result in conditions that favor emergence by weeds deeper in the soil profile. After vines begin to twine about the stems of the crop, cultivation may not be as effective.

Eastern Black Nightshade (*Solanum ptycanthum*)

Annual. This weed produces thousands of berries; each berry contains up to 50 seeds. While nightshade is generally not considered a serious pest in Illinois, severe infestations in individual fields do occur. Tillage and row cultivation are effective for early, newly emerged seedlings.

Common Ragweed (*Ambrosia artemisiifolia*)

Annual. Common ragweed is a summer annual that is favored by moist soils and can be a serious problem in individual fields. Control of common ragweed with tillage or row cultivation is effective in controlling small seedlings.

Jimsonweed (*Datura stramonium*)

Annual. Jimsonweed produces several hundred hard-coated seeds per plant which may remain viable in the soil for years. Grows best under warm temperatures and moist soils. Jimsonweed infestations harm crops via competition for water, especially in dry years. The shade of its leaves in shorter crops increases yield loss due to decreased nutrient uptake. Jimsonweed also contains the alkaloids, atropine, hyoscyamine, and hyoscyne, which are toxic. Even small amounts of jimsonweed can cause harvest problems.

Barnyardgrass (*Echinochloa crusgalli*)

Annual. This weed germinates from 0 to 5 inches deep in the soil. The seeds remain viable for several years, and plants may emerge throughout the summer. Barnyardgrass is most troublesome in low, moist, warm areas.

Crabgrass spp. (*Digitaria* spp.)

Annual. A warm season grass most often troublesome in the southern and southeastern part of the state. The plants generate stolons and may result in a severe infestation from a single plant. May be most severe during the late part of the growing season after herbicides have degraded or and holes remain in

the canopy. Tillage, row cultivation also control.

Johnsongrass (*Sorghum halepense*)

Perennial. Johnsongrass is a noxious weed in Illinois and produces prolifically via rootstock and seeds. Rhizomes overwinter; both rhizomes and seeds sprout in the spring. Seeds may survive for several years before germination. Johnsongrass produces hydrocyanic acid under stressed conditions. Mowing is not an effective control.

Fall Panicum (*Panicum dichotomiflorum*)

Annual. Fall panicum is a weed that grows best in warm, wet, fertile soils. The plant tillers profusely and in late August and September the tillers open and scatter hard-coated seeds. These seeds may remain viable for years, and fall panicum is most often a problem in reduced or no-till fields whose undisturbed soils are favorable for germination. Fall panicum has shown some resistance to atrazine, and is one of the most serious grass weeds in the state.

Contacts

David Pike

S-310 Turner Hall
University of Illinois
1102 S. Goodwin
Urbana, IL. 61801
(217) 333-4424

Kevin Steffey

S-322 Turner Hall
University of Illinois
1102 S. Goodwin
Urbana, IL. 61801
(217) 333-4424

Mohammed Babadoost

N-533A Turner Hall
University of Illinois
1102 S. Goodwin
Urbana, IL. 61801
(217) 333-4424

David R. Pike, Illinois PIAP Coordinator

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