SDSU Extension

iGrow Corn

BEST MANAGEMENT PRACTICES

Chapter: 40
Grass and Grasslike Weeds in South Dakota Cornfields

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There are many grass or grasslike weeds that reduce corn yields. The purpose of this chapter is to provide estimates on how different weeds reduce corn yields, information on expected emergence time, and guidelines for identifying important grass or grasslike weeds. Selected characteristics of grass and grasslike weeds are provided in Table 40.1. Current chemical weed management options can be found online at extension.sdstate.edu.

Herbicide Use Disclaimer

When choosing an herbicide, always read and follow label instructions. It is a violation of federal pesticide laws to use an herbicide in a manner not compliant with labeling as to rate, timing, and other restrictions. Read the entire label prior to use. Always follow applicator safety instructions. Protect water quality by preventing chemical accidents and spills, back siphoning, mixing, and applying away from water sources. Herbicide applicators are responsible for following all herbicide label directions and precautions.

Volunteer corn (Zea mays)

Volunteer corn is an annual plant that typically emerges just before or just after corn planting depending on soil temperature and moisture conditions. The plants are from seed or from previous crops.

Plant Description: Looks like hybrid corn but is outside the row or in clumps if corn ears are present. Problems are heightened by corn monoculture systems or when herbicide-resistant varieties were planted in previous years.

Areas of Infestation and Yield-loss Potential: Volunteer corn typically is scattered throughout past year's cornfields. Volunteer corn actually increases corn yield if ears develop. If no ears develop, then 15% to 20% yield loss may occur. The problem is that corn grain from volunteer corn may be of poor quality or wetter than hybrid corn.

Cultural Management: Use techniques that minimize harvest loss discussed in Chapter 36. If a glyphosate-tolerant (WSSA Group 9) or glufosinate-tolerant (WSSA Group 10) variety was planted, rotate to a broadleaf crop and use a grass herbicide and cultivate interrow areas. If a sethoxydim-tolerant (ACCase inhibitor, WSSA Group 1) variety was planted, use glyphosate or glufosinate for control because ACCase inhibitors may not control these volunteer plants.

Table 40.1 Timing of weed emergence and yield-loss potential of the selected grass and grasslike weeds. Information on herbicide-resistant weeds is available in Chapter 43.

Time of emergence	Weed	Yield-loss potential	Notes
Early season	Volunteer corn	Low to moderate	May be resistant to several herbicides depending on the hybrid used in past years.
Early to midseason	Woolly cupgrass	Moderate	Postemergence grass herbicide provides good control, and not controlled by most preemergent grass herbicides.
Early season	Jointed goatgrass	Unknown	Can be troublesome after wheat crop. May germinate as a winter annual in October.
Early season	Foxtail barley	Moderate	No resistance reported.
Early season	Downy brome	Low	
Early season	Japanese brome	Unknown	
Early season	Quackgrass	Unknown	
Early season Midseason Midseason	Giant foxtail Yellow foxtail Green foxtail	Moderate	May be resistant to ACCase inhibitors (WSSA Group 1, e.g., sethoxydim), ALS inhibitors (WSSA Group 2, e.g., sulfonylureas/imidazilinones), microtubule assembly inhibitor (WSSA Group 3, e.g., trifluralin), and Photosystem II inhibitors (WSSA Group 5, e.g., atrazine).
Midseason	Robust green foxtail	Unknown	
Midseason	Bristly foxtail	Unknown	
Midseason	Yellow nutsedge	Low	Found in wet areas but can spread to drier sites. Reproduces from nutlets that can be spread through cultivation.
Midseason	Stinkgrass	Unknown	
Midseason	Shattercane	Unknown	
Late season	Longspine sandbur	Low	No herbicide resistance reported.
Late season	Barnyardgrass	Low	May be resistant to ACCase inhibitors (WSSA Group 1, e.g., sethoxydim) and Photosystem II inhibitors (WSSA Group 5, e.g., atrazine).
Late season	Large crabgrass	Low	May be resistant to ACCase inhibitors (WSSA Group 1, e.g., sethoxydim).
Late season	Witchgrass	Low	May be resistant to Photosystem II inhibitors (WSSA Group 5, e.g., atrazine).
Late season	Wild proso millet	Moderate to high	No resistance reported.
Late season	Fall panicum	Moderate	No resistance to herbicides in the U.S.
Late season	Switchgrass	Unknown	Found in CRP fields or field edges that bordered CRP.
Late season	Scouring rush Field horsetail	Low	No resistance reported, although difficult to control; found in areas that may have been flooded or very wet.

[a]High yield-loss potential = > 5% yield loss with 1 plant or fewer per foot of row
Moderate yield-loss potential = > 5% yield loss when plant density is 5 to 10 plants per foot of row
Low yield-loss potential = > 5% yield loss when plant density is > 10 plants per foot of row

Herbicide Resistance: Hybrid dependent based on transgenic traits; glyphosate (Roundup Ready® varieties), glufosinate (LibertyLink® varieties), or sethoxydim (WSSA Group 1).

Woolly cupgrass (Eriochloa villosa)
Woolly cupgrass (Figure 40.1) is an annual that reproduces by seed and emerges before or just after corn planting. Germination may occur over an 8- to 10-week period from cold or warm soil, under dry or wet conditions, and due to large seeds, can germinate from up to 6" deep. While the seed does not need light to stimulate emergence, if the crop canopy is opened due to hail or other factors, woolly cupgrass will emerge if seed is present.

Plant Description: The cotyledon (seed leaf) and first true leaf are very wide. Leaves are covered in fine soft hair (hence the name woolly). One of the leaf margins on each leaf generally is crinkled. This plant is often confused with foxtail grass species, but typically does not tiller as much as a foxtail. The seed head of woolly cupgrass is a distinctive panicle with compressed rows of seed that are only on one side of the rachis (the stem of the plant that bears the flowers and seeds). The seeds are oval and vary in color from tan to brown to green. Seeds in the soil can remain viable for up to 5 years.

Areas of Infestation and Yield-loss Potential: Woolly cupgrass is found in fertile loam to clay loam soils. If uncontrolled, low to moderate densities can cause up to 50% yield loss in corn. However, due to glyphosate (WSSA Group 9) or glufosinate (WSSA Group 10) applications, woolly cupgrass has become less of a problem. Tillage or rotary hoeing corn can be an effective cultural control. Rotating to soybean or alfalfa (with multiple cuttings) can also help reduce the infestation.

Herbicide Resistance: None has been reported although preemergent grass herbicides that act to inhibit very long-chain fatty acid synthesis (WSSA Group 15, e.g., acetamides) often do not provide adequate control.

Figure 40.1 Woolly cupgrass seedling (Picture courtesy Iowa State University), leaf edge with crinkled margin, seed head (Picture courtesy of Michael Moechnig), and infestation on the edge of a cornfield (Pictures courtesy of Kevin Bradley).

Figure 40.2 Images of jointed goatgrass. Note the long stiff hairs on the leaf margin (Steve Dewey, Utah State University, Bugwood.org). Jointed goatgrass seed head, note the cylindrical shape of the seeds (Picture courtesy of Joseph M. DiTomaso, Univ. Cal. Davis. Bugwood.org). Jointed goatgrass has a thinner appearance than wheat (Picture courtesy of USDA APHIS PPQ Archive, Bugwood.org).

Jointed goatgrass (Aegilops cylindrical)
Jointed goatgrass (Figure 40.2) emerges as a winter annual or in the spring before corn planting.

Plant Description: Jointed goatgrass is an annual, reproducing by seeds. This plant lacks auricles (small projection at the base of the leaf that wraps

around the stem) at the leaf opening. Leaf blades are flat without hair or with short hairs. Leaf margins have hairs near the blade base. The leaf ligule (the appendage projecting from the inner side of the leaf) is membranous. The inflorescence (arrangement of flowers) is a compact spike. Seeds are cylindrical and about the same size as wheat.

Areas of Infestation and Yield-loss Potential: Found in many different types of soil along the roads and in pastures. This weed is problematic in wheat crops, but at this time, no information on corn yield loss is available. Deep tillage to bury seed is often an effective method for control of jointed goatgrass.

Herbicide Resistance: No reported resistance.

Foxtail barley (Hordeum jubatum)

Foxtail barley (Figure 40.3) is a cool-season perennial grass that emerges early in the season. Overwintering plants can start growth very early in the growing season and will produce a seed head by late-May or early-June. It is a clump grass, that does not spread widely, but seed will start new infestations.

Figure 40.3 Foxtail barley collar region and mature plant with inflorescence. (Photos courtesy of Joseph M. DiTamoso, Univ. Cal. Davis, Bugwood.org and Caleb Slemmons, National Ecological Observatory Network, Bugwood.org)

Plant Description: The vegetative stems of foxtail barley are round and hairless. The ligule is membranous, blunt, and with a few hairs. Clasping auricles are found at the collar region. The glumes and lemma of the seed have long (1/2 to 3") awns that are often purplish in color.

Areas of Infestation and Yield-loss Potential: Foxtail barley grows well in saline, wetland sites and is often found in field edges and roadsides. This plant is more problematic in no-till fields due to lack of tillage disturbance. Due to soil problems, corn growth may be poor and yields low in the area where this weed is growing. However, the yield reductions may not be primarily due to foxtail barley interference. Soil management to decrease water and salt problems in infested areas may be warranted. The areas may be too saline to produce corn.

Herbicide Resistance: No known resistance.

Downy brome (Bromus tectorum)

Downy brome (Figure 40.4) is an annual plant, reproducing from seed that typically emerges in the fall or early spring.

Figure 40.4 Image of downy brome (Bromus tectorum). (Photos courtesy http://mining.state.co.us/SiteCollectionDocuments/DownybromeandJapanesebromeliteraturereviewColoradoDRMSDec09.pdf, K.George Beck and James Sebastian, Colorado State Univ. Bugwood.org).

Plant Description: Leaves and sheathes of downy brome plants have soft hairs. The ligule is a short membrane (~1/30" or 1 mm), rounded and may be toothed. The inflorescence is a drooping panicle with many branches. There are long awns on the seed. The plant dries early in the summer and can be a fire hazard. Typically occurs in localized areas.

Yield-loss Potential: Yield loss is undetermined for corn; however, this plant can cause high yield losses in wheat. Use cultural practices with crop rotation (if planting winter wheat, 3-to-4 year rotation before wheat is planted again is recommended), control preplant if possible using burn-down type applications prior to planting

Herbicide Resistance: Biotypes in the U.S. have been reported to be resistant to ACCase inhibitors (WSSA Group 1), and ALS inhibitors (WSSA Group 2, e.g., imidazolizone and sulfonylurea). Around the world, other biotypes have been reported that are resistant to urea-type herbicides, and Photosystem II inhibitors (WSSA Group 5).

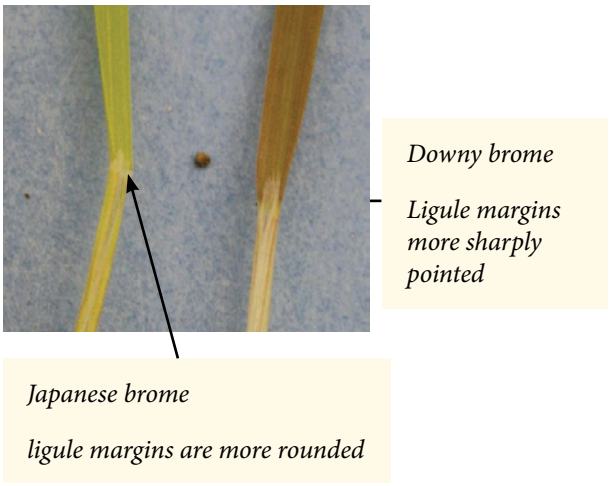

Figure 40.5 Difference between Japanese and downy brome. (Photos courtesy http://mining.state.co.us/SiteCollectionDocuments/DownybromeandJapanesebromeliteraturereviewColoradoDRMSDec09.pdf)

Japanese brome (Bromus japonicus)
Japanese brome (Figures 40.5 and 40.6) is a winter annual that germinates from seed in the late fall and remains vegetative until spring.

Plant Description: Leaf sheath is hairy while the blade is hairless. Short awns on the seed. More upright seed head than downy brome.

Areas of Infestation and Yield-loss Potential: Typically occurs in localized areas. Yield loss is undetermined in corn.

Herbicide Resistance: Biotypes in the U.S. have been found to be resistant to ALS inhibitors (WSSA Group 2).

Figure 40.6 Japanese brome ligule and seed head. (Photos courtesy http://mining.state.co.us/SiteCollectionDocuments/DownybromeandJapanesebromeliteraturereviewColoradoDRMSDec09.pdf)

Cheat (Rye Brome) (Bromus secalinus)
Cheat (Figure 40.7), an annual grass, typically emerges in the fall or early spring – before or just after corn planting depending on soil temperature and moisture conditions. Cheat initiates its reproductive growth in mid-March, flowers in May, and matures in early June.

Plant Description: The ligule of cheat is rounded and may be toothed. There are short awns on the seed. At the seedling stage, this plant is very similar in appearance to the closely related species downy brome, but cheat becomes less hairy as it matures.

Areas of Infestation and Yield-loss Potential: Typically occurs in localized areas, prefers dry soil conditions. Yield loss in corn is undetermined. Use cultural practices with crop rotation (if planting winter wheat, 3- to 4-year rotation is recommended before wheat is planted again). Control this plant using preplant herbicides if possible or use burn-down type applications.

Figure 40.7 Line drawing of cheat (rye brome). (Courtesy of USDA-NRCS Plants Database; Hitchcock, 1950)

Herbicide Resistance: Biotypes in the U.S. have been found to be resistant to herbicides with ALS inhibitor mode of action (WSSA Group 2).

Quackgrass (Elymus repens)
Quackgrass (Figure 40.8) is a perennial plant, which reproduces primarily through rhizomes and seed. It is a non-native, cool-season grass emerging before corn.

Plant Description: The leaf sheath is rough, flattened toward the collar without hair. The leaf blades are flat and either smooth without hairs or slightly hairy. The ligule is membranous and short (< 1/30" or 1mm), and auricles may be seen clasping the sheath. The seed head is slender. Rhizomes are extensive and sharply pointed.

Areas of Infestation and Yield-loss Potential: Found in moist soils. Yield losses are moderate, although if high densities occur with rhizomes present, yield losses can be high. Unfortunately, tillage will spread rhizomes and increase pockets of infestation.

Herbicide Resistance: No reported resistance.

Figure 40.8 Photo of quackgrass plants arising from rhizomes, rhizomes, and clasping auricles. (Photos courtesy of Steve Dewey, Utah State University archived at Bugwood.org)

Giant foxtail (Setaria faberii)
Giant foxtail (Figure 40.9), an annual reproducing by seed, emerges before or just at the time of corn planting when temperatures are warm. Seeds do not require a dormancy period and if seeds mature in midsummer, they can sprout in late summer or fall if temperatures and moisture are favorable.

Plant Description: Giant foxtail is infrequently found in South Dakota. The upper leaf surface is densely covered with short hairs and the plant has a hairy ligule. Giant foxtail has long (3 to 5") nodding heads, whereas green, yellow, and bristly foxtails have straight panicles. Giant foxtail can grow up to 7 ft tall.

Figure 40.9 Upper leaf blade of giant foxtail covered with short hair (Photo courtesy msuturfweeds.net) and nodding seed head of giant foxtail (Picture courtesy of John D. Byrd, Mississippi State University, Bugwood.org).

Areas of Infestation and Yield-loss Potential: Common in several soil types and in many climates. Yield losses are moderate to high. This foxtail is much more aggressive than green or yellow foxtails. Tillage and postemergence cultivation can be effective control measures. Solid-seeded legume or grass crops, or narrow-spaced row crops can provide an effective shade canopy to reduce giant foxtail growth.

Herbicide Resistance: Giant foxtail has been reported to be resistant to Photosystem II inhibitors (WSSA Group 5, e.g., atrazine), ALS inhibitors (WSSA Group 2, e.g., sulfonylureas and imidazolinones) and ACCase inhibitors (WSSA Group 1, e.g., sethoxydim).

Yellow foxtail (Setaria pumila)
Yellow foxtail (Figures 40.10 and 40.11) is an annual plant, reproducing by seed, and emerges toward the end of corn planting.

Plant Description: Common in eastern South Dakota fields. Yellow foxtail has long yellow hairs near the

ligule, a flattened stem, and larger seeds than green or giant foxtails.

Areas of Infestation and Yield-loss Potential: Common in several soil types and in many climates. Depending on density, corn yield losses can approach 50%. Tillage may control yellow foxtail.

Herbicide Resistance: Biotypes of these foxtails have shown resistance to a number herbicides with different modes of action. Yellow foxtail has been reported to be resistant to ALS inhibitors (WSSA Group 2) and Photosystem II inhibitors, such as atrazine (WSSA Group 5). Yellow foxtail is more tolerant to labeled rates of atrazine when compared with giant or green foxtail.

Figure 40.10 Photographs of yellow foxtail and green foxtail collar regions. (Photos courtesy of Michael Moechnig)

Figure 40.11 Photographs of yellow foxtail and green foxtail inflorescences. Note the large seeds on yellow foxtail vs. small seeds on green foxtail. (Photos courtesy of Michael Moechnig)

Green foxtail (Setaria viridis)

Green foxtail (Figures 40.10 and 40.11) is an annual plant, reproducing from seed and emerging toward the end of corn planting. Typically, green foxtail will emerge before yellow foxtail.

Plant Description: Green foxtail has no or few hairs on the leaf blade, a round stem, and seeds are small.

Areas of Infestation and Yield-loss Potential: Common in several soil types and many climatic regions. Depending on density, corn yield losses can approach 50%. Tillage, crop rotation, and postemergence cultivation may be effective control measures.

Herbicide Resistance: Biotypes of these foxtails have shown resistance to a number of herbicides with different modes of action. Green foxtail has been reported to be resistant to microtubule assembly inhibitors [dinitroanaline (trifluralin)] (WSSA Group 3), ALS inhibitors (WSSA Group 2), ACCase inhibitors (WSSA Group 1), very long-chain fatty acid inhibitors (acetamide) (WSSA Group 15) and Photosystem II inhibitors (WSSA Group 5).

Bristly foxtail (Setaria verticillata)

This warm-season annual grass emerges after corn emergence, usually at the same time as yellow foxtail.

Plant Description: Bristly foxtail (Figure 40.12) can have a height of 1 to 4 feet with branching stems that bend sharply upward and without hair. The ligule has a fringe of hairs from a membranous base. Inflorescence is panicle, cylindrical, and spikelike. Bristles within the inflorescence and seed adhere to animals and clothing and can be identified from other foxtails by firmly touching the inflorescence to determine whether it lightly sticks to the skin.

Figure 40.12 Bristly foxtail seed head. Note the way the leaf sticks to the seed head. (Photo courtesy of Forest and Kim Starr, Starr Environmental archived at Bugwood.org)

Areas of Infestation and Yield-loss Potential: Bristly foxtail is found in waste places, gardens, and cultivated fields in the central and eastern Great Plains. No yield-loss data for corn is available. Tillage, crop rotation, and postemergence cultivation may be effective control measures to reduce stand numbers.

Herbicide Resistance: No cases of resistance reported in North America.

Yellow nutsedge (Cyperus esculentus)
Yellow nutsedge (Figures 40.13 and 40.14) is a perennial plant that will emerge before or at planting.

Plant Description: Yellow nutsedge is a non-native plant that reproduces by seeds, rhizomes, and tubers (nutlets). This plant has erect, triangular stems without hair that appear waxy. The leaves are grasslike-looking blades, pale green without hair. The seed heads are compact.

Areas of Infestation and Yield-loss Potential: Found by streams and wet areas in fields. Yield-loss potential is low, however, because of the habitat, corn yield may be low due to wet conditions and not due to competition with yellow nutsedge. Adequate water drainage to wet parts of the field may reduce yellow nutsedge problems. Chemical control is limited, but glyphosate (WSSA Group 9) may provide control of emerged yellow nutsedge.

Herbicide Resistance: None reported at this time.

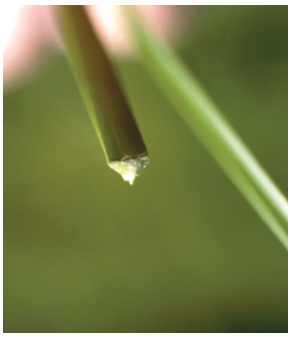

Figure 40.13 Yellow nutsedge with rhizome and tubers and three-sided, triangular stem (Photo courtesy of Steve Dewey Bugwood.org, and The Ohio State University Weed Lab Archive at Bugwood.org)

Figure 40.14 Individual yellow nutsedge plant (Photo Steve Dewey, Utah State University at Bugwood.org) and infestation (Photo courtesy of Howard F. Schwartz, Colorado State University, at Bugwood.org).

Stinkgrass (Eragrostis cilianensis)
Stinkgrass (Figure 40.15) is an annual reproducing from seed. It is a warm-season grass that emerges after corn planting.

Plant Description: The blade is flat with warty glands on margins and backsides. Stiff hairs may be present at the collar region. Ligule is a short fringe of hairs. If crushed, stinkgrass has an unpleasant odor.

Areas of Infestation and Yield-loss Potential: Roadsides, fields, or heavily grazed pastures. Yield loss is undetermined in corn, but heavy infestations will reduce yields.

Herbicide Resistance: None reported.

Figure 40.15 Stinkgrass plant, stinkgrass stem, and heavy infestation in corn. (Photos courtesy of Forest and Kim Starr, Starr Environmental, and Steve Dewey, Utah State University, all archived at Bugwood.org)

Shattercane (Sorghum bicolor)
Shattercane (Figure 40.16) is an annual plant, reproducing by seed. It is a warm-season grass that emerges after corn.

Plant Description: Shattercane is an erect, "cornlike" plant with a jointed stem. The sheath is round. The ligule is membranous and ciliate that is rounded or blunt and rarely pointed. This plant has a panicle inflorescence that is loose and often droops to one

side at maturity. Mature seeds disperse from seed head easily, promoting the plant's re-infestation in a field.

Areas of Infestation and Yield-loss Potential: Found in many crop fields such as corn, grain sorghum, and soybeans. Significant yield loss in corn occurs when shattercane is allowed to reach 12 inches in height, even though it is removed soon after that. This weed is difficult to control in corn. Tillage, crop rotation, and postemergence cultivation can be effective control measures to reduce stand numbers. Pre-emergent and postemergent grass herbicides typically used in corn can be used for control.

Figure 40.16 Image of shattercanes. (Photos courtesy of Forest and Kim Starr, Starr Environmental, Bugwood.org and Weeds of the Northeast.)

Herbicide Resistance: Resistance to certain ALS inhibitor herbicides (WSSA Group 2) have been reported in Nebraska, Kansas, Iowa (e.g., Primisulfuron-methyl, nicosulfuron, imazethapyr) as well as a few other states across the country.

Longspine sandbur (Cenchrus longispinus)
Longspine sandbur (Figure 40.17) is a non-native, warm-season grass, reproducing from seed and emerging after corn planting.

Plant Description: This annual plant has flattened stems that have hair, and leaves may be rough to the touch. The plant has a short-fringed, hairy ligule. Seeds are enclosed in sharp, spiny, hairy burs that are characteristic and give the plant its name. If it is sat on (accidentally), the spines will go through the heaviest denim.

Areas of Infestation and Yield-loss Potential: Found in sandy soils, although may be found in fertile loam to clay loam soils. Yield loss is often low. Nuisance plant due to sharp burs. Tillage may be effective when sandbur is small. Crop canopy closure provides competition with shading and reduces growth. Glyphosate is an adequate control measure for longspine sandbur.

Figure 40.17 Longspine sandbur seedling, mature plant, and seed head. (Photos courtesy of (1) L.L. Berry, Bugwood.org; (2 and 3) Michael Moechnig, SDSU)

Herbicide Resistance: None has been reported.

Barnyardgrass (Echinochloa crus-galli)
Barnyardgrass (Figure 40.18) is a warm-season, annual grass that reproduces by seed and emerges after corn planting.

Plant Description: This grass has flattened, smooth, and branched stems without an auricle or ligule. This grass has broad leaves and typically is reddish or purple at its base. Barnyardgrass size can vary from 2" tall with only 1 tiller to over 4 ft tall with 50 +

Figure 40.18 Barnyardgrass collar region and seed head. (Photos courtesy of Michael Moechnig, SDSU)

tillers.

Areas of Infestation and Yield-loss Potential: Larger plants are found around field edges, in wet areas, or in areas with poor canopy cover. Yield loss is often low due to late emergence. Tillage may be effective when plants are small. Shade under a crop canopy reduces growth.

Herbicide Resistance: Biotypes have been reported to be resistant to Photosystem II inhibitors (WSSA Group 5, e.g., atrazine), ACCase inhibitors (WSSA Group 1, e.g., sethoxydim), and other chemicals.

Large crabgrass (Digitaria sanguinalis)

Large crabgrass (Figure 40.19) is an annual, warm-season grass, reproducing by seed and emerging after corn emergence.

Figure 40.19 Large crabgrass collar region and mature plant. (Photos courtesy of Michael Moechnig, SDSU)

Plant Description: Large crabgrass has hairs everywhere on plant, a flattened stem, membranous ligule, and the seed head appears to be fingerlike spikes. This grass can grow from 6" to 2 ft tall.

Areas of Infestation and Yield-loss Potential: No specific growing requirements. Yield losses are low, even at high densities. Tillage, crop rotation, and postemergence cultivation may be effective management tools to reduce stand numbers. This grass is often difficult to control postemergence and should be controlled with pre-emergence chemicals.

Herbicide Resistance: Herbicide resistance has been reported to ACCase inhibitors (WSSA Group 1, e.g., sethoxydim) in Wisconsin.

Wild proso millet (Panicum miliaceum)

Wild proso millet (Figure 40.20) is an annual grass, reproducing from seed, and emerges late in the season, after corn emergence.

Figure 40.20 Wild-proso millet seedling, ligule and seed head. (Photos 1 and 3 courtesy of Steve Dewey, Utah State University archived at Bugwood.org; Photo 2 courtesy of Weed Science Society of America)

Plant Description: This warm-season grass has a round stem with membranous ligule tipped with a fringe of hairs. Seedlings look like corn but are hairy. Leaf blades are flat. Hairs may or may not be on the blade and sheath but hairs are present at nodes. This grass can grow up to 6 ft tall. Seeds are large and shiny. They vary in color and may be white, green-striped, olive-brown, or black. The seed often remains on the root of seedlings, which helps in identification. Nonblack seeds in soil are usually not viable after two seasons; black seeds have been reported to remain viable for up to 4 years.

Areas of Infestation and Yield-loss Potential: Tolerates sandy, dry soils, and high temperatures. Yield loss is moderate to high. Tillage may be effective when plants are small. Shading by the crop canopy reduces growth. Sanitation of equipment is suggested to prevent spread.

Herbicide Resistance: None noted at this time.

Witchgrass (Panicum capillare)
Witchgrass (Figure 40.21) is a warm-season, annual grass, reproducing by seed, and emerges after corn emergence.

Plant Description: Witchgrass has a flat stem with long, soft hairs covering most of the plant. The ligule is a fringe of hair. Panicles are an open inflorescence, spreading, hairy, and large. The panicle may be 1/2 or 2/3 of the size of the whole plant. When mature, the panicle can break off and tumble along the ground.

Areas of Infestation and Yield-loss Potential: Witchgrass grows well in sandy, droughty soil. Due to late emergence, yield loss is low, even at high densities.

Herbicide Resistance: A biotype of witchgrass, resistant to Photosystem II inhibitor herbicides (WSSA Group 5, e.g., atrazine) has been reported in Canada.

Figure 40.21 Images of witchgrass (Photos courtesy Steve Dewey, Utah State University, Bugwood.org and Robert Videki, Doronicum Kft, Bugwood.org).

Fall panicum (Panicum dichotomiflorum)
Fall panicum (Figure 40.22) is a warm-season, annual grass, reproducing by seed. Plants emerge late in the season, after corn has emerged.

Plant Description: Vegetative stems often are confused with witchgrass, although fall panicum has few hairs. Sheath is round. Leaves emerge from the nodes in an alternate fashion. Blade is hairless and midrib is usually white and prominent. Seeds are bigger than witchgrass seed, but not as large as proso millet seed.

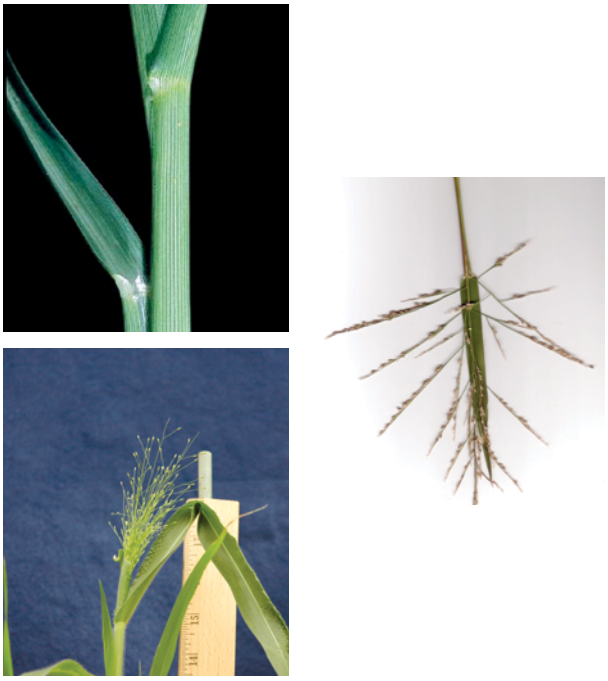

Figure 40.22 Fall panicum collar region, inflorescence emerging, and mature inflorescence. (Photos courtesy Joseph M. DiTomaso, University of California - Davis, Bugwood.org ; (2) Bruce Ackley, The Ohio State University, Bugwood.org and (3) Lynn Sosnoskie, University of Georgia, bugwood.org)

Areas of Infestation and Yield-loss Potential: Fall panicum grows well in sandy or droughty soil types. Yield-loss potential is moderate.

Herbicide Resistance: Worldwide, only Spain has reported resistance to Photosystem II inhibitor herbicides (WSSA Group 5).

Switchgrass (Panicum virgatum)
Switchgrass (Figure 40.23) warm-season, perennial grass emerges late in the season from seed and rhizomes after corn has emerged.

Figure 40.23 Image of switchgrass head. (Photo courtesy James H. Miller, USDA Forest Service, Bugwood.org, and Howard Schwartz, at Bugwood.org)

Plant Description: The plant often escapes from waterways or other areas, where it may be grown for soil stabilization. Vegetative stems are sometimes confused with witchgrass. There is a V-shaped patch

of hair on the upper leaf surface near the stem. Bands of white hairs are located on the ligules, and the stem has dark-colored, swollen nodes. Plants can grow up to 6 ft tall. Switchgrass is grown in stands for biofuel but escaped plants can be problematic.

Areas of Infestation and Yield-loss Potential: Switchgrass grows well in sandy or droughty soil types, but is used in waterways for stabilization. Yield-loss potential is moderate. Pre-emergence grass herbicides other than atrazine may provide acceptable control.

Herbicide Resistance: Escaped plants can be difficult to control and are tolerant of atrazine (WSSA Group 5).

Scouringrush (Equisetum hyemale) and Field horsetail (Equisetum arvense)

These warm-season, grasslike plants are perennials that reproduce from rhizomes and spores and are slow to establish. Plants usually emerge after corn emergence.

Plant Description: Both scouring rush and field horsetail have hollow stems. Scouring rush (Figure 40.24) stems are erect, green, and unbranched. Most field horsetail (Figure 40.25) plants have many branches that occur in whorls at the stem joints. Stems of both plants contain silica and were used to scrub pans.

Figure 40.24 Image of scouringrush. (Photo courtesy of Steve Dewey, Utah State University, Bugwood.org)

Figure 40.25 Image of field horsetail. (Photo courtesy Ohio State Weed Lab , The Ohio State University, Bugwood.org).

Areas of Infestation and Yield-loss Potential: Commonly found in wet roadside ditch areas. These plants encroach into field edges but are often slow to spread. Corn will not grow well in the wet soils where high infestations of these plants are found. Therefore, these infestations appear to be highly competitive with corn. In drier soils, these plants can establish, but at this time, no specific yield-loss data is available. Due to the perennial rhizomes of these weeds, tillage may spread the problem, but repeated mowing may exhaust the rhizome carbohydrate supply.

Herbicide Resistance: None reported.

References and Additional Information

Center for invasive species and ecosystem health available at http://bugwood.org/

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