

Crop Profile for Sorghum in Nebraska

Prepared: June, 2000

General Production Information

- **Acres Planted:** 730,000
- **Acres Harvested for Grain:** 700,000
- **Acres Harvested for Silage:** 30,000

Grain Sorghum

- **US Rank:** Second
- **Average yield (bushels per acre):** 94
- **Total bushels produced:** 56,000,4000
- **Value of production:** \$98,700,000

Silage Sorghum

- **Yield (avg. tons/acre):** 11
- **Tons produced:** 30,000,000

General

Sorghum is grown primarily in the southern counties of Nebraska. Much of the acreage is planted as a non-irrigated crop because of its ability to produce under drought conditions. Also that region of the state has little access to sufficient ground or surface water for extensive irrigation. The physiology of the sorghum plant allowing it to cease growing during hot, dry spells, and again progress to maturity when rains occur, enhances its value in Nebraska's climate.

Sorghum planting usually occurs after other row crops have been planted. The major acreage is planted under a minimum or no-tillage system. This allows full utilization of accumulated soil moisture. Most of the acreage is planted in rows 30 inches apart. Some however, is planted 36 inches apart. Rotation with soybeans and/or wheat is commonly practiced. Where wheat is grown, short season soybeans may be planted into the wheat stubble, making two crops to be harvested that year. The next year, a short season sorghum may be planted, to be harvested in time for a winter wheat planting that same fall.

Both grain and silage sorghum are used for livestock feed.

As corn varieties have been improved, over the years, to better withstand dry weather, corn has gradually replaced acreage formerly planted to sorghum. A series of dry years would probably reverse the trend.

Insect Pests

Greenbug (*Schizaphis graminum*). This aphid, also a potential wheat pest, occurs much less frequently of recent years. Varieties of sorghum resistant to various greenbug strains have predominated. Occasional outbreaks can still be devastating, when a new greenbug strain appears. Parasitism is a frequent aid in curtailing such outbreaks. Most frequently used chemicals are Lorsban, parathion and dimethoate, when greenbugs reach economic thresholds before parasites have taken firm hold.

Chinch bug (*Blissus leucopterus*). A primary pest of Great Plains crops for as long as land has been farmed in the area. In two to 3 years out of 10 it may be a serious pest of corn and sorghum in the southeastern 2 or 3 tiers of counties. Overwintering in bunch grasses, such as big and little bluestem, it migrates into wheat in the spring where it lays eggs for the next generation. As wheat matures, the young chinch bugs, reddish in color, migrate from wheat into adjoining sorghum or corn, killing edge rows. When populations are sufficiently high, the bugs may decimate an entire 40 or 50 acres.

The chinch bug is cyclical in nature, with the population increasing during and following hot dry weather. During more wet, humid conditions, the fungus, *Beauveria bassiana*, tends to keep it under control. Parathions and Furadan have been most successfully used in chinch bug control. Neither has been highly efficacious. The new seed treatment shows promise.

Cornleaf aphid (*Rhopalosiphum maidis*). Probably migrating from the south in early summer, this aphid increases its numbers in the whorls of corn or sorghum plants. It exudes its honey-like secretions, coating stems, leaves and sorghum heads as the plant grows. In high populations the aphids appear to be killing the leaves by their feeding activities. Parasitism frequently brings them under control in late July or early August, before serious damage has occurred.

Other arthropods: Occasionally, in some years and scattered fields, armyworm, fall armyworm, corn earworm or two-spotted mites reach economic levels. On rare occasions sorghum webworms have been a pest.

Diseases

Major diseases attacking sorghum in Nebraska are seldom a problem. Losses are generally prevented by the inherited resistance bred into the plants. Application of chemical disease control materials is seldom necessary, except in the production of hybrid seeds. The only exception is the use of fungicides on seed to provide protection against seed attacking disease organisms.

Weeds

Control of weeds in Nebraska sorghum is primarily accomplished with pre-emergence herbicides. These are supplemented with post-emergence products when necessary. A rotational system (soybeans/sorghum) allows for better grassy weed control in the bean year. This reduces the pressure of grassy weeds during the sorghum year, and vice versa. It also helps slow development of weeds resistant to herbicides being used.

Grassy weeds are most difficult to control in the sorghum crop, particularly if rotation is not followed.

Primary weed problems:

Shattercane (*Sorghum bicolor*). Annual. Reproduces by seeds in cultivated ground. Difficult to control in continuous sorghum, or other annual grass crops. Hybridizes readily with planted sorghum, thus is highly variable in height and color.

Johnsongrass (*Sorghum halepense*). Perennial. Reproduces by seeds and rhizomes. Pest in southern two tiers of Nebraska counties, in cultivated fields, moist soils of pastures and roadsides. Well established stands require heavy tillage along with grass herbicides over a two-year span for control.

Foxtails (*Setaria species*). Three species. Annuals. Reproduce by seeds. Most serious in reduced and no_till fields throughout Nebraska.

Bindweed (*Convolvulaceae* family) Perennial. Several members of the morningglory family, Hedge and field bindweed are most common in reduced and no_till situations. They can smother plants if left uncontrolled for several years. Easily controlled with broadleaf herbicides applied post emergence.

Honeyvine milkweed (*Cynanchum laeve*). Perennial. Reproduces by rhizomes and seeds. Late emerging but rapidly growing climbing vine. In all soil types and all crops of eastern Nebraska. Most common in reduced and no-till situations. Can smother plants if left uncontrolled for several years. Easily controlled with broadleaf herbicides applied post emergence in the sorghum year.

Other weeds of note are sunflowers, cockleburs, velvetleaf, hemp dogbane, various pigweeds and eastern nightshade.

Vertebrate Pests

Such vertebrates as kangaroo rats, ground squirrels, field mice, pocket gophers, prairie dogs and pheasants are occasional pests. In-field treatments to control depredations are generally not followed.

INTEGRATED PEST MANAGEMENT (INTEGRATED CROP MANAGEMENT)

IPM and ICM imply that the cropping unit of an agricultural producer is managed in a fashion that will minimize environmental insult but produce an economic return. To do this, any practice to be put in place on the cropping unit must be compatible with every other practice, as nearly as possible. It must be a system, and flexible enough to allow changes as problems develop through each season.

Moisture management through minimum or no tillage is an important part of milo (sorghum) production. Milo, soybean, and wheat rotations, plus judicious use of herbicides, supports the moisture management system.

Varieties provide excellent resistance to most diseases and some species of pest insects, including many of the greenbug types.

Use of insecticides is generally based on need, and economic thresholds.

Re-entry Intervals (REI) are universally followed by commercial applicators and growers alike. Personal protective clothing requirements are generally followed by applicators, but less by farmers. Credit for the success of the protective clothing and re-entry intervals programs can be laid at the door of the WPS educational certification program. The distribution of the certification card at the end of the training also

is psychologically supportive.

Most applications of pesticides are accomplished by commercial applicators after the crop has emerged, following planting.

Summary Of Pesticide Use In Nebraska Sorghum (MILO)

Herbicides. Nearly 100% of Nebraska's milo acreage is treated with pre-plant or pre-emergence herbicides for the control of the grassy weeds. Additionally, approximately 50% of the acreage is treated with post-emergence herbicides, primarily for broadleaf weed control. (See Appendix Table A)

Insecticides. About 5 years out of 7 it is unnecessary to use an insecticide on a large percentage of Nebraska's milo. This is because the aphid pests (the greenbug strains or corn leaf aphid) and chinch bug, do not reach treatment thresholds many years. (See Appendix Table B)

Fungicides. Seed production fields are usually the only acreage treated with fungicides post-emergence. The fungicide seed treatments are used on all commercially sold sorghum seed.

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Appendices

Table A: Principle Herbicides Applied To Nebraska Sorghum

(Estimated for the period 1995_ 1999)

Application			Acres Treated
Herbicide	Formulation/A	Time of year	Annual Percent
Atrazine DF	2 lbs	Pre,PP	55
Roundup	1.5 lbs	Early PP	40
Othres		Early PP	5
2,4_D (Amine, Ester)		Post	30
Banvel/Clarity		Post	20
Other		Post	5

Key:

Early PP, PRE - 70% commercially applied.

Post - 10% commercially applied

Table B: Principle Insecticides Used On Nebraska Sorghum. ***

(Estimated for the period 1995_ 1999)

Insecticide	Active Ingred. Per Acre	When Applied	Avg Acres Treated annually (Percent)	Method of Treatment
GREENBUG AND CORN LEAF APHID				
Chlorpyrifos	0.3 lb	July	10	Aerial
Dimethoate	0.4 lb	July	1	Aerial
Ethyl Parathion	0.4 lb	July	1	Aerial
CHINCH BUG				
Counter	1.3 lb	May	0.3	In furrow at plant
Carbofuran	1.3 lb	May	0.3	In furrow at plant
Carbofuran	0.5 lb	June/July	2.1	Basal Spray

***Annual acreage treatment for insect control on sorghum is difficult to predict. Outbreak years of these pests are one to two years out of ten. The figures in this table reflect averages based on the occasional outbreak year, averaged over the 5-year period.