Florida Sweet Corn Timeline

Crop Production

For 2000-01, 37,200 acres were harvested, with an average yield per acre of 348 42-lb crates (14,600 lb/acre). Total production was 12, 950,000 crates. At an average of $9.41 per crate, the yearly crop was worth an estimated $121,900,000. All of the production is for fresh market.

A survey of Florida's sweet corn producers in the mid-1990's revealed that approximately 75 percent of sweet corn acreage is produced on organic muck soils, about 17 percent on loam or sandy loam soils, and about 8 percent on rockland (limestone) soils (1). This remains the current pattern for Florida sweet corn production.

Sweet corn seeds can be planted any time from August through April, depending on the specific production region. However, growers usually plant in north Florida from February to April, in central Florida from January to April, and in south Florida from October to March. Standard spacing allows for approximately 30 inches between rows, with seeds typically planted about one inch deep, 6-8 inches apart. Maximum plant population is approximately 24,000-32,000 plants per acre. A total of 64-90 days elapses from seeding to harvest. Sweet corn is wind pollinated, so isolation of varieties must occur to produce desired characteristics. Typically, a distance of at least 300 feet is needed to avoid cross-pollination (2,3).

Sweet corn harvest can occur from mid-November through mid-July, with the most active harvest period occurring from April through May (4,5). Sweet corn ears are harvested only once, using either hand or mechanical methods. Harvested ears may be packed on a harvest aid or taken to an assembly area in the field or packinghouse for grading and packing. Greater selection for marketable ears can occur with hand harvesting, which predominates in the Florida market (>75 percent). Mechanical harvesters cut the part of the stalk that contains the ears, which are then removed from the stalk by "strippers." The principal packing container used in Florida is a wire-bound crate that holds 4.5-5 dozen ears of sweet corn, weighing approximately 42 pounds. Sweet corn is sometimes packed in a waxed fiberboard carton with the same volume as the wire crate. While wire crates are most adapted to hydro-cooling, fiberboard cartons are best adapted to cooling with liquid ice (6).

Maintenance of appropriate temperature during the post-harvest period is essential for sweet corn, because quality is determined by sugar content and volatile flavor compounds, which decrease rapidly at room temperature. Particularly important is the pre-cooling process of removing field heat from the sweet corn. Maximum quality is retained when the corn is pre-cooled to near 32°F (0°C) within an hour of harvest and held at that temperature

during marketing. However, several factors such as the volume of sweet corn harvested in Florida, availability of equipment, and economic and marketing considerations all contribute to these ideal conditions not usually being achieved. At 32°F, sweet corn remains marketable for 5 to 8 days (and up to three weeks with the supersweet varieties), but no more than 2 days when held at 50°F (10°C) (6-8).

The most common method of pre-cooling sweet corn in Florida is hydro-cooling by showering or immersion in water. Corn in crates may be hydro-cooled for over an hour to bring it to a temperature of 41°F (5°C). Hydro-cooling is more efficient when done on bulk corn rather than crated corn, because it allows greater contact between the water and the corn. An alternate pre-cooling treatment involves the use of slush icing (package icing) in fiberboard cartons. Corn intended for local markets remains marketable for up to 2 days without pre-cooling, as long as it is kept cool after harvest (6,7). The entire sweet corn crop in Florida is sold on the open market.

Worker Activities

Land Preparation

Soils are generally freshened prior to planting or during the seeding process. Freshened simply refers to the process of running a disc through the field to break up clods and surface crust. This activity involves one person driving an enclosed-cab tractor. Florida sweet corn production is done on bare ground. Consequently, no workers are required for bed formation since sweet corn is not grown on raised beds (4).

Planting Method

Seed and fertilizer are placed mechanically at planting. This process requires one operator in an enclosed-cab tractor. Due to the excellent germination of corn seed, no thinning operations are performed (4).

Irrigation

Irrigation is set shortly after planting, and this may require from two to eight workers for one or two days. This process involves positioning sections of metal tubing throughout the field to insure appropriate coverage (4).

Cultivation

Fields are cultivated and side-dressed with fertilizer mechanically once before the corn is higher than the tractor clearance. This process also requires only one operator in an enclosed-cab tractor which covers approximately 120 acres per day (4).

Scouting and Pesticide Applications

Scouting takes place at least weekly. Certified crop advisors and their assistants review their counts and consult on crop protection methods, if so needed by the grower. In

addition to the ground-applied preemergence herbicide and insecticide, post-emergent sprays are applied by air or ground by custom applicators (4).

Based on the 2000 Vegetable Chemical Usage Summary, it appears that about a dozen sprays are used for a 90-day crop, probably eight for a 64-day crop. The last census of Agriculture in 1997 had 7 % of the Florida sweet corn on farms from 1 to 250 acres in size. This would all be ground applied. The remaining production (93 percent) is on larger farms, which would utilize aerial spraying shortly after emergence (i.e., 80 to 90 percent of the applications would be aerial). These metrics would project that from 17 to 27 percent of the applications would be by ground and from 73 to 83 percent of the applications would by done by air.

Harvest

The only time agricultural workers come in contact with the sweet corn crop is during harvest, which is usually done by hand in the field. Currently, over 90 percent is hand-harvested versus machine-picked. The apparatus employed for hand harvest is referred to as a harvest aid. This mobile platform has conveyored wings on which ears are placed. The belts guide the corn to packers who are on the platform. Approximately twenty people walk the rows pulling ears, while ten to fifteen people are grading and packing the corn on the aid and transporting it to the cooler. The workers dress in long-sleeve shirts and pants due to the abrasive nature of the corn foliage. Both packers and pullers wear gloves. Workers contact mechanically-harvested corn only during packing. The harvest aid, used by hand harvesters, is capable of harvesting approximately 80 acres per day. Under good conditions (i.e., machinery works, contiguous land, weather, etc.) mechanical pickers can average 50 to 75 acres per day. The remaining corn foliage is trampled as the harvest aid rolls over the area, and the plant residue is eventually incorporated into the soil. Since sweet corn is planted at staggered dates within different regions of Florida, harvest can occur in earnest during eight months of the year. After packing, the corn is immediately shipped by truck or plane due to the ephemeral nature of the product (4).

Pest Management

FALL ARMYWORM (*Spodoptera frugiperda*). Several types of armyworms may feed on the foliage of Florida sweet corn. However, the fall armyworm, which is the most important insect pest on sweet corn in Florida, is the most destructive, not only because it is a more consistent problem, but also because the resulting damage is more direct. Fall armyworm larvae, in addition to feeding on the leaves, will burrow into the growing point of the whorl, producing a characteristic row of long holes on the inner leaves. They may also enter the husk and feed directly on the kernels. Increase of fall armyworm populations is greatest when cool, wet springs are followed by warm, humid weather in the southern part of the state, where the pest overwinters (9).

Adults can be seen along the north Florida coast during all months but are most abundant from April to December. The fall armyworm does not enter diapause and cannot survive extended periods of low temperatures, instead maintaining populations in warmer areas from which adults move northward in the spring. The female moth is highly mobile, migrating each spring from frost-free areas in the southern part of the state and spreading throughout the southeast region of the country. Eggs are laid in masses of 100 to 150, and each moth may lay over a thousand eggs in total. Control at the egg stage is extremely difficult, due to the protective covering over the mass and its position on the underside of leaves. Although they may also feed on foliage, silks and ears, the larvae feed most often on the tender tissue of the whorl. Protected from insecticide sprays there, they can cause severe damage. When feeding on the ears, fall armyworm larvae enter from the side, feeding throughout the ear. After approximately two to three weeks, each larva drops to the ground and forms a pupa in the soil, at a depth of about 1 to 3 inches (2 to 8 cm). In Florida, the pupal stage lasts about eight to nine days during the summer and about 20 to 30 days during the winter. Although the life cycle of the fall armyworm can be completed in about 30 days during the summer, it can take 60 days in the spring and fall and up to 90 days during the winter (9,10).

Monitoring of fall armyworm populations is important for adequately timing control measures (10). For example, researchers have shown that early infestation of fall armyworm (during the pre-whorl to mid-whorl stages of the corn plant's development) does not produce loss of marketable sweet corn ears (11). However, as larvae grow and enter the later stages of development, damage to the whorl increases significantly. Mean densities of 0.2 to 0.8 larvae per plant during the late whorl stage have been found to reduce yield by 5 to 20 percent in Florida sweet corn (12). Results of further field studies show that insecticidal treatments are less effective in reducing numbers of older fall armyworm larvae in sweet corn whorls than in reducing numbers of younger larvae (13).

The larvae are generally managed with insecticides such as methomyl, lambda-cyhalothrin, chlorpyrifos, thiodicarb, cyfluthrin, and permethrin.

CORN EARWORM (*Helicoverpa zea*). Another of the most important insect pests of sweet corn in Florida is the corn earworm. These caterpillars, also called tomato fruitworms and cotton bollworms, attack a wide variety of vegetable and field crops. Although they occasionally feed on foliage, the principal damage that corn earworms inflict results from boring into and feeding upon the ears. After migratory flights, moths arriving on corn plants lay eggs on the silks. Upon hatching, the larvae feed on the silk and then enter the ear to feed directly on kernels, primarily at the silk end of the cob. Greatest economic damage occurs when larval feeding peaks during the silking stage. Florida sweet corn has sustained damage to as much as 60 percent of ears when larval development coincides with silking. The cannibalistic habit of the larvae limits them to 1 to 2 individuals per ear, which is still sufficient to inflict substantial cosmetic damage. There

are 2 to 3 generations per season, and timing of control measures is critical, since this pest cannot be controlled once it enters the ear. Insecticide management is important, since the corn earworm has a history of developing resistance to various insecticides in several classes. Additionally, the use of broad-spectrum insecticides against this pest has led to many cases of pest outbreaks by what were previously minor pests, one example being mites. The Helicoverpa zea nuclear polyhedrosis virus, marketed as Gemstar®, is a biological control agent registered for this crop (10,14).

The larvae are generally managed with insecticides such as methomyl, lambda-cyhalothrin, chlorpyrifos, thiodicarb, cyfluthrin, and permethrin.

CORN SILKFLY (*Euxesta stigmatis*). This picturewing fly is a major pest on sweet corn, particularly in south Florida. In untreated fields, it can cause losses to the crop of up to 95 percent, and economic losses have been reported even after insecticide treatments have been applied. Heavy infestations produce corn with no market value, and light infestations can reduce the grade of the product. Additional host plants of the corn silkfly in southern Florida include field corn, sorghum, sugarcane, guava, banana, orange, atemoya, orchid and potato, but it is most abundant on sweet corn (15,16).

Development time from egg to adult has been found in the laboratory to be 28.3 ± 0.6 days at 86°F (30°C) and 33.8 ± 1.6 days at 77°F (25°C). Adult flies were found to live an average of 26.7 ± 8.0 days at room temperature. In the field, adult corn silkflies gather on tassels to mate, mainly at dawn and dusk. The female lays its eggs in groups of 2 to 40 at the tip of the ear, within the silks. Larvae develop and feed inside the corn ear, moving down into the ear in groups upon hatching from the eggs. Therefore, foliar insecticide applications are not effective against eggs and larvae. In addition, during the later part of the growing season, the thick canopy inhibits adequate insecticide coverage, and by the time ears are mature, few insecticides are available because of the required pre-harvest intervals. The biology and monitoring for this fly are poorly understood and it is becoming more of a problem lately in Florida. Given the difficulty in applying chemical controls to this pest, researchers are in the process of developing a clearer understanding of the corn silkfly's biology in Florida, in order to develop a more effective management strategy (15,16).

This pest in incidentally suppressed when using lambda-cyhalothrin for lepidopteran larvae.

LESSER CORNSTALK BORER (*Elasmopalpus lignosellus*). A serious pest in some years on Florida sweet corn, the lesser cornstalk borer also attacks over 60 other plant species in the state. Stalk borer populations can build up on previous grass or sod crops. The pest favors sandy soil as well as hot, dry weather. Symptoms on corn plants include distorted, wilted, or curled plants, and entrance holes and tunnels at the base of the plant indicate feeding activity of the larvae, which wriggle strongly when disturbed (10,17).

After emerging from the soil and mating, the female moth deposits its eggs at the base of the corn plant, with each female laying about 125 eggs. Within a week the eggs hatch, and the newly emerged caterpillars feed on the foliage. Later, they burrow into the stem, forming tubes at or just beneath the soil surface. The silk tunnels around their feeding sites protect them during the two to three weeks it takes for them to complete larval development. They pupate in the soil or tunnels, and after another two to three weeks, the adults emerge. There are several generations per year, and overlap of generations occurs in late summer. Timing of control is important, since borers cannot be controlled after entering the stem. Soil insecticides used for stalk borer control must be applied at or just after planting (10,17).

The larvae of this insect are generally managed with insecticides such as methomyl and lambda-cyhalothrin.

WIREWORMS (Family Elateridae). Several species of wireworms may be present in Florida corn fields, including corn wireworm (*Melanotus communis*), eastern field wireworm (*Limonius agonus*), Gulf wireworm (*Conoderus amplicollis*), southern potato wireworm (*C. falli*) and tobacco wireworm (*C. verpertinus*). While the Gulf wireworm is the most common in Florida, *C. rudis* is one of the most important and is found throughout the state. *Conoderus* spp. wireworms are present in all sweet corn fields in Florida (18).

Wireworms, which are larvae of click beetles, are among the most destructive of soil insect pests. Eggs are laid in the soil near plant roots, and upon hatching, the larvae feed on the nearby roots. The larvae, which can live up to several years, may be present at a soil depth of 1 to 5 feet (0.3 to 1.5 meters). Wireworms damage sweet corn by eating the seeds and feeding upon the roots or stems of seedlings. They may occasionally bore into larger roots. Attacking a wide variety of crops, they can strike quickly and can leave poor stands and weak seedlings. Applying soil insecticides a few weeks before planting is the most common control measure for wireworms in sweet corn (10,19,20).

Wireworms are generally managed with insecticides such as tefluthrin and phorate.

CORN DELPHACID (*Peregrinus maidis*). The corn delphacid, also referred to as the corn planthopper, has historically been a severe pest of sweet corn in Florida, particularly on late-planted corn, because it is more abundant in the summer. Once corn plants have reached the tasselling stage, they are less susceptible to planthopper damage. Corn delphacids tend to aggregate in corn leaf axils, with both adults and the immature nymphs feeding together. In addition to direct feeding damage, the corn delphacid is the only known vector of maize mosaic rhabdovirus (MMV) and of maize stripe tenuivirus (MStV), which have the potential to be serious problems in tropical and sub-tropical production areas. Maize stripe tenuivirus was first reported in Florida in 1975, and south Florida experienced a serious outbreak in 1979-1980. The corn delphacid is also a major pest of

sorghum and can develop on goosegrass, barnyardgrass, and gamagrass. Itch grass, a serious weed pest, is the most important alternate host for the corn delphacid between growing seasons in south Florida and is also a host of maize stripe tenuivirus (20-22).

Planthoppers are incidentally managed with insecticides such as methomyl and lambda-cyhalothrin.

APHIDS. Several types of aphids can colonize sweet corn in Florida, most commonly the corn leaf aphid (*Rhopalosiphum maidis*), but also the bird cherry-oat aphid (*Rhopalosiphum padi*), the melon aphid (*Aphis gossypii*), the rusty plum aphid (*Hysteroneura setariae*), the potato aphid (*Macrosiphum euphorbiae*), and the green peach aphid (*Myzus persicae*). The corn leaf aphid frequently infests the sheaths of sweet corn ears. Aphids feed by inserting their needle-like mouthparts into plant tissue and sucking up plant juices. In addition to depleting the plant of nutrients, they can transmit viral diseases and inject toxins that produce abnormal plant growth. For example, several aphid species including the melon aphid and the green peach aphid can transmit maize dwarf mosaic virus, which occasionally affects Florida sweet corn (10,23).

Throughout the state, aphid populations are exclusively female and are able to reproduce abundantly. The immature nymphs feed as well, and within just a few days they mature and begin producing more young. As a result of this rapid reproduction, aphid populations can increase dramatically. When populations are high, winged aphids begin to be produced and fly to new plants. Despite the potential for rapid increase in population, control of aphids is not difficult. Since aphids remain on the exterior of the plant and do not lay eggs, all stages are susceptible. When applying insecticides, complete coverage is necessary, since aphids tend to be more numerous on the underside of leaves and in protected areas of the plant. In addition, there are several natural enemies active in sweet corn fields that help to maintain aphid populations at low levels (10).

Aphids are managed with insecticides such as methomyl and lambda-cyhalothrin.

Disease Management

RUST (caused by *Puccinia* spp.). Although both common rust (caused by *Puccinia sorghi*) and southern rust (caused by *Puccinia polysora*) occur on sweet corn in Florida, common rust has become the most important disease on the crop in recent years. These two rust diseases are often difficult to differentiate in the field, but they usually occur at different times of the year. Common rust occurs every spring on sweet corn, and southern rust occurs nearly every fall. Symptoms can vary depending on the corn variety, strain of the fungus, and environmental conditions such as temperature and light. Common rust produces small yellow spots on both leaf surfaces that later turn rusty or cinnamon brown, while the equivalent pustules produced by southern rust are generally limited to the upper

leaf surface. The spores released from these characteristic pustules are easily spread by the wind, although rain and insects can play a role (24-26).

Common rust occurs under cool weather conditions, with optimum temperatures for spore germination occurring at 59 to 63°F (15 to 17°C). It is therefore considered to be a spring sweet corn disease, because the cooler temperatures of late fall, winter and early spring allow inoculum levels to build up considerably, while the hot weather occurring from the late spring through early fall in South Florida inhibits disease development. Upon reaching the plant, spores can germinate within 1 to 6 hours, and within 1 to 2 days spots may be seen on the foliage. Generation time ranges from 5 to 16 days, depending on temperature, with most rapid pustule formation occurring at 59 to 68°F (15 to 20°C). *Oxalis* spp. weeds serve as an alternate host for the common rust fungus, but the significance of their role in the life cycle of *P. sorghi* in Florida is not well understood (25,26).

Southern rust, which is potentially more serious than common rust in the northern part of the state, is a greater problem in warmer weather. It is considered a fall sweet corn disease, because development of significant levels of inoculum require high temperatures, which are present in early fall throughout Florida. In north Florida, where sweet corn is planted late within a double cropping system, the disease may therefore be more severe. Optimum temperatures for spore germination are between 81 and 82°F (27 to 28°C). Spots can be seen on the leaf in 6 to 7 days, and within 9 to 14 days, pustule formation occurs. Pustule development stops when temperatures reach 90°F(32°C) (25,26).

Rust diseases are generally not serious on Florida sweet corn unless husks are infected. Severe rust infections are rarely seen, particularly in south Florida, possibly due to the control of potentially serious leaf blights with fungicides that are also effective against rust organisms (24,26).

Rust is managed by fungicides such as mancozeb and propiconazole.

NORTHERN CORN LEAF BLIGHT (caused by *Helminthosporium turcicum*). Northern corn leaf blight was for many years considered the most important sweet corn disease in southern Florida, incurring losses of up to 80 percent. It is still significant, occurring every spring and occasionally at the end of the fall. However, varietal improvements in host plant resistance have reduced its impact. Initial symptoms of the disease include yellow spots that develop on the foliage, eventually enlarging to form tan or straw-colored dead areas about 4 to 6 inches long and one-half inch wide. Progressively moving higher on the plant, the disease does not infect ears, although it may produce lesions on the husk. If the disease begins before silking and is severe, yield losses of up to 50 percent may occur, but later initiation of the disease produces little yield loss. Northern corn leaf blight is a greater problem on spring sweet corn, because the pathogen requires the cooler temperatures of late fall, winter and early spring to build inoculum levels. It develops most rapidly at temperatures of 64 to 80° F (18 to 27° C) and stops development at the high

temperatures commonly experienced in south Florida from late spring through early fall. Large amounts of spores can form in humid weather, during which time fungicide applications are recommended (24,25,27,28).

Northern corn leaf blight is managed by fungicides such as mancozeb and propiconazole.

SOUTHERN CORN LEAF BLIGHT (caused by *Helminthosporium maydis*). Southern corn leaf blight may occur simultaneously with northern corn leaf blight, but can be distinguished by the lesions produced, which are smaller, lighter in color, and more parallel-sided than those of northern corn leaf blight. In south Florida, it occurs nearly every fall and occasionally at the end of the spring. Plants infected with this disease may be more susceptible to stalk rot because of the early death of leaves. Southern corn leaf blight is favored by warm, moist conditions. Therefore, long periods of dry, sunny weather between rains inhibit development of the disease. The fungus survives in crop debris from season to season. Like southern rust, it is considered to be a fall sweet corn disease, because it requires the high temperatures of early fall, and disease development is inhibited by the cooler temperatures occurring during the late fall. Southern corn leaf blight is generally less severe than northern corn leaf blight, unless

weather conditions are very favorable for disease development and the variety is susceptible (24,26-28).

Southern corn leaf blight is managed by fungicides such as mancozeb and propiconazole.

BACTERIAL LEAF SPOT (caused by *Pseudomonas avenae*). Bacterial blight occurs sporadically on sweet corn in Florida, and its presence appears to depend on the sweet corn variety and the occurrence of rainy weather during the appropriate crop stage. Corn that is just pushing the tassel through the whorl appears most susceptible, but any corn in the whorl stage may exhibit new infections. Once the corn stalk has fully expanded and leaves have had time to harden off, bacterial blight is rarely observed (25).

The bacterium responsible for leaf spot can also cause a stalk rot and a basal ear rot. The disease produces dark spots on leaves emerging from the whorl that later turn white or straw-colored and elongate to several inches. Under severe disease conditions, leaves may shred easily. Among other plants attacked by the disease, vaseygrass has been found to be the primary source of inoculum in Florida. The pathogen does not survive, however, in plant debris or soil. Warm, rainy conditions cause the disease to progress most rapidly (24,27).

No anti-bacterial pesticides are registered for Florida sweet corn.

DAMPING-OFF (caused by *Fusarium* spp., *Pythium* spp., and *Rhizoctonia solani*). Several soil-borne fungi can affect corn seeds and seedlings, causing rot and softening of

seeds and seedling damping-off. The greatest damage from these pathogens occurs during the pre-emergence stage, causing poor germination of seeds or poor emergence of seedlings. Damping-off produces chlorosis of the seed leaf, and while plants infected when older will seldom die, they often experience dark lesions on roots, slower growth, and reduced yields. Captan, fludioxonil, and thiram are recommended for use as seed treatment in Florida sweet corn (24). In general, seedling diseases such as damping-off have become less important in recent years due to the effectiveness of chemical seed treatments and improved varieties with good early vigor. When the shrunken-2 varieties were first introduced, seedling damping-off was a very significant problem. Now, while some does occur, particularly following saturated field conditions, it is not as prevalent (25).

CORN SMUT (caused by *Ustilago maydis*). Although sweet corn is generally more susceptible to smut than other corn varieties, losses from the disease are variable. While plants infected when very young will produce no yield, and individual fields may be completely destroyed, overall losses are usually no greater than 2 to 5 percent. Temperatures of 79 to 93°F (26 to 34°C) are optimal for development of the disease. Infection can occur wherever spores land on the plant. Galls, which begin to form one to several weeks after infection, can be produced on all aboveground parts, but yield loss is greatest when they occur on or above the ears. At first greenish-white in color, the galls develop into large [up to 6 inches (15 cm) in diameter] masses of dark powdery spores appearing like soot. Frequently, infected plant parts may be distorted. The fungus survives in the soil, and smut on Florida sweet corn is often more severe in soils with high nitrogen content. Mechanical plant injury from cultivation or from blown sand or hail can also make corn plants more susceptible to smut (24,27,29).

Smut may be incidentally controlled with fungicides such as mancozeb and propiconazole.

Weed Management

PIGWEED (*Amaranthus* spp). Pigweeds (amaranths) are summer annual broadleaf herbs with erect stems that can grow to 2 meters (6.5 feet) tall. Several species of amaranth are among the most common weeds in Florida sweet corn. The species present in Florida include smooth pigweed (*Amaranthus hybridus*), spiny amaranth (*Amaranthus spinosus*), and occasionally livid amaranth (*Amaranthus lividus*). Pigweeds reproduce solely by seed, producing very small, dark seeds. Smooth pigweed flowers from July to November and spiny amaranth flowers from June to October. Pigweeds prefer open areas with bright sunlight (30,31).

PURSLANE (*Portulaca oleracea*). Purslane is a taprooted summer annual with multiple branched stems that often form large mats. It reproduces by seed, flowering from August

to October. Being resistant to drought, it is a difficult plant to eliminate (30,31).

JOHNSONGRASS (*Sorghum halepense*). Originally introduced from the Mediterranean region and cultivated as a hay and pasture crop, Johnsongrass is one of the most difficult perennial grasses to control because of its thick rhizome system. The plant can grow to approximately six feet and can form dense clumps. It is most common in fields, fence rows, and ditch banks, and it may be toxic to livestock (32).

CRABGRASS (*Digitaria* spp.). Crabgrasses are annual grass plants that reproduce mainly by seed, but also by spreading and rooting of stems at the base. They germinate during the summer, flowering from June or July to October and quickly establish clumps. The plant thrives in moist soil (30,31).

GOOSEGRASS (*Eleusine indica*). Goosegrass is similar in appearance to crabgrass, but grows more densely. It is also a summer annual, and it prefers sunny, moist conditions. Reproducing by seed, it flowers from July to October (30,31).

All of these weeds are controlled most commonly by atrazine or metolachlor.

Vertebrate Pests

There are no significant vertebrate pests associated with Florida sweet corn production.

Post-harvest Diseases

When sweet corn is graded and pre-cooled properly, post-harvest diseases are not significant. The need to store sweet corn under cool conditions to prevent reduction in quality from loss of sugar ensures adequate post-harvest handling (6).

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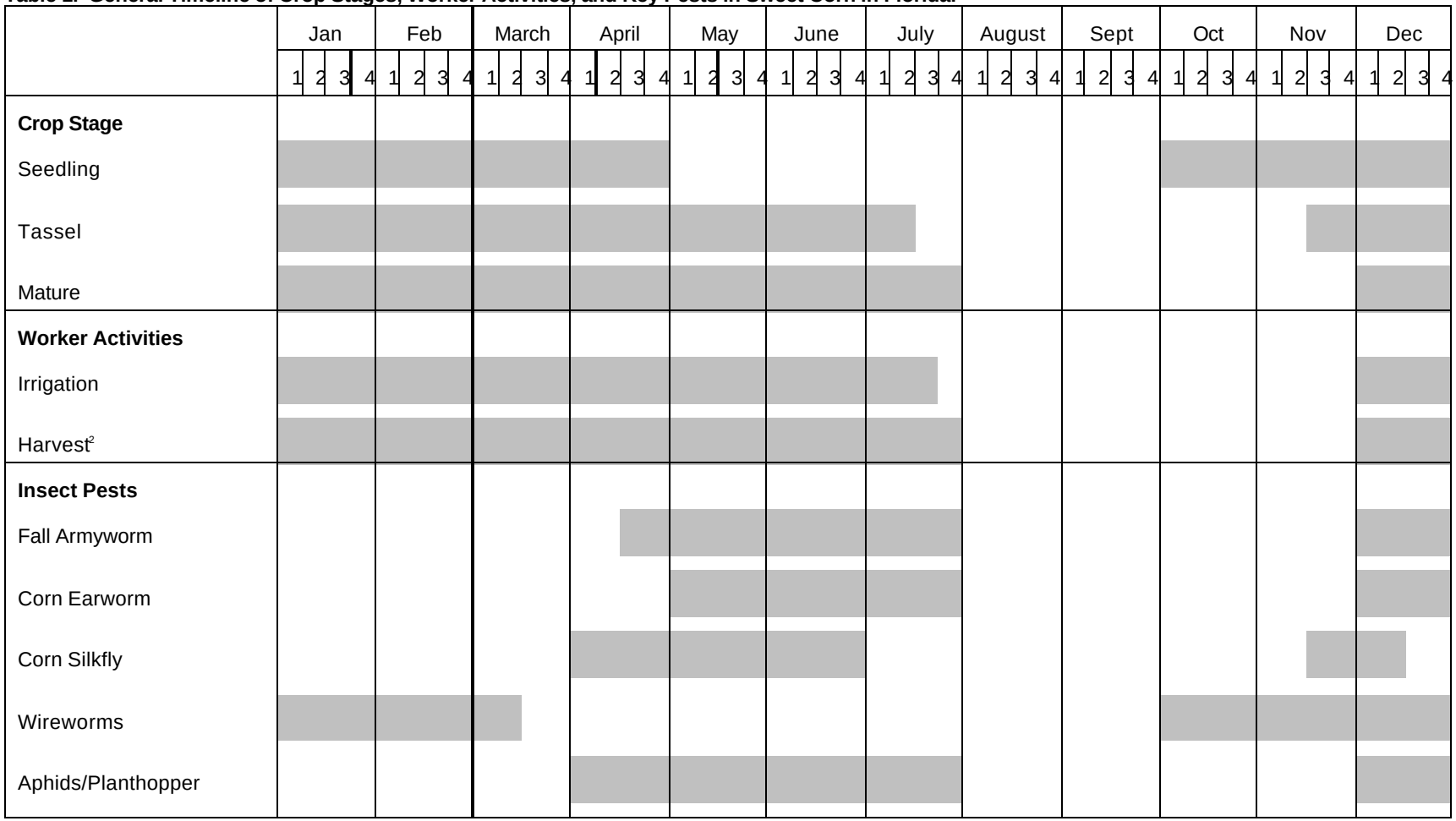
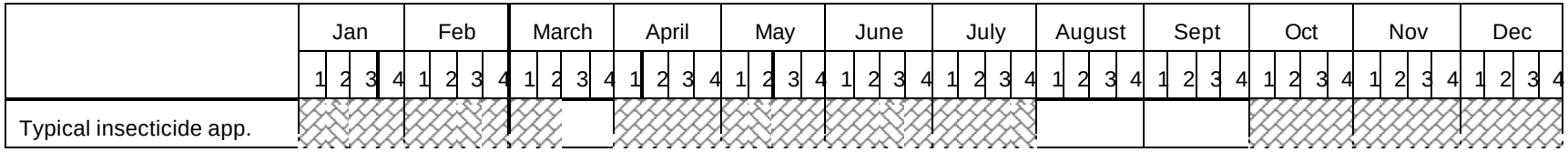
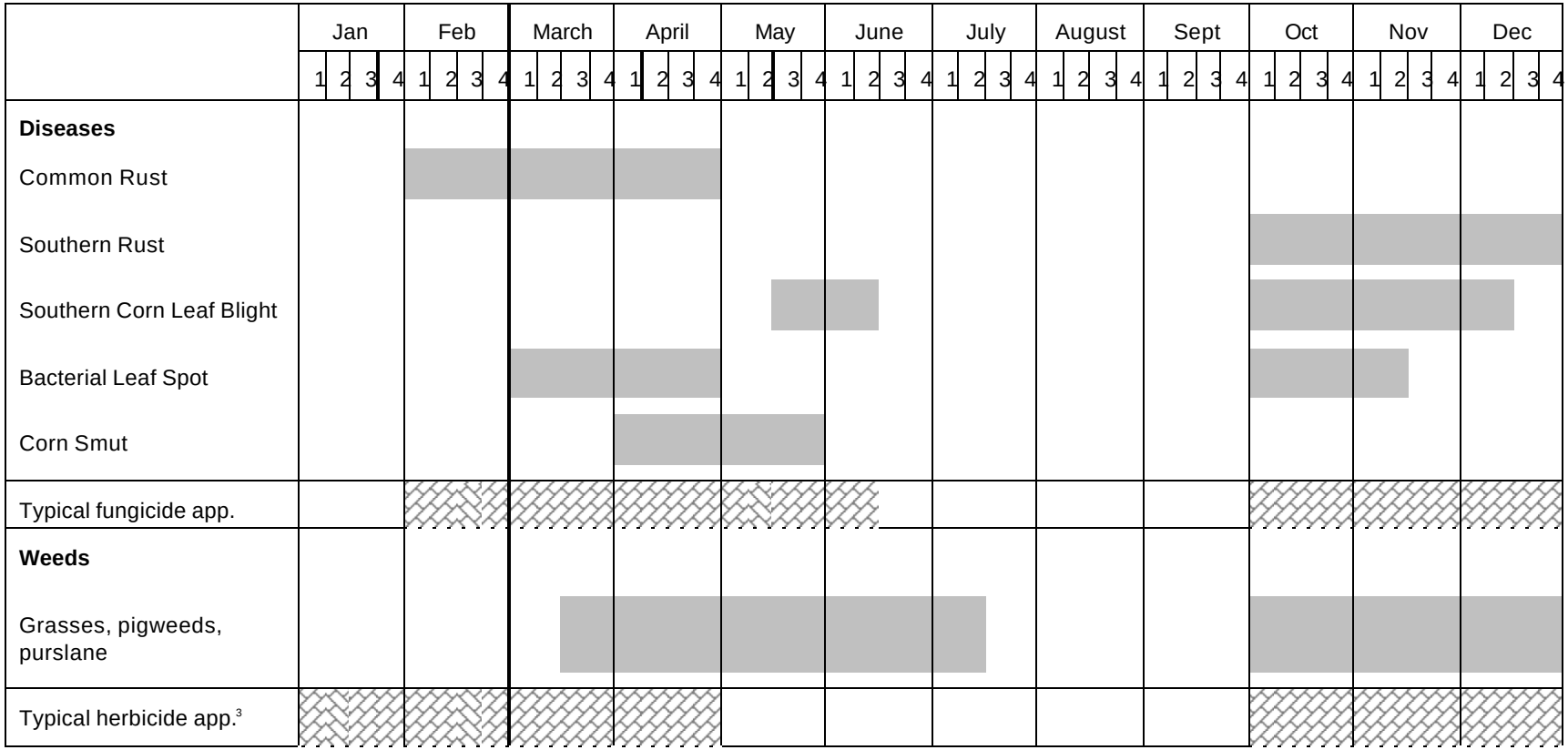
Table 1. General Timeline of Crop Stages, Worker Activities, and Key Pests in Sweet Corn in Florida.[1]



[1]Planting dates: South FL - October-March; Central FL - January-April; North FL - February-April. Stagger-planted at two-week invervals.

[2]Harvest occurs 60-90 days after planting.


Jan
Feb
March
April
May
June
July
August
Sept
Oct
Nov
Dec
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4
Typical insecticide app.



[3]Almost entire herbicide application made at planting.