

Weed Management in Corn - 2008¹

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Successful weed control is essential for economical corn production in Florida. Weeds reduce corn yields by competing for moisture, nutrients, and light during the growing season and interfere with harvest. Producing a good crop of corn is only half the battle and will not be profitable unless the corn can be harvested. Late-season weeds can result in excessive yield losses, inefficient equipment operation, and provide a source of weed seed for the following season. Weeds can be controlled in corn; however, this involves good management practices in all phases of corn production.

Crop Rotations

Crop rotations are beneficial not only in reducing weed problems in corn, but also in crops following in the rotation. Other benefits include reducing insects, diseases, and nematodes in corn and in succeeding crops.

Crop Competition

Crop competition is one of the most important—but often overlooked—tools in weed

control. A good stand of corn, which emerges rapidly and uniformly and shades the middles early, is very important in reducing weed competition. This involves utilizing good management practices, such as choosing a well adapted hybrid, good fertility, maintaining proper soil pH, and using adequate plant populations. Utilizing these good management practices is necessary for controlling weeds and producing high yielding corn. The plant that emerges and grows most rapidly is usually the plant that will have the competitive advantage, therefore, everything possible should be done to ensure that the corn—and not the weeds—has this competitive advantage.

Know Your Weeds

Know your weeds and choose a herbicide that is effective for your specific weed problems. Generally, for preplant and preemergence applications, the weed problem must be anticipated since the weeds have not emerged at the time of application. This can best be done by observing the field in the fall and recording those weeds which are present and in what areas of the field they occur. These "weed maps" can be very useful the next spring in refreshing your memory and

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making decisions on which herbicides to purchase. Once your weed problems have been determined, Tables 4 and 5 can be helpful in determining the herbicide(s) that is most effective.

Cultivation

Cultivation is still a good and economical means of weed control. Few benefits other than weed control have been attributed to cultivation, and in fact, there are disadvantages to cultivation. Cultivation can disrupt the roots of corn, increase moisture loss from the soil, and bring more weed seed to the surface to germinate. Therefore, if good weed control has been achieved with herbicides, then the need to cultivate is questionable

Herbicides

Herbicides are one of the most effective tools for successful weed control in corn. Preplant or preemergence applications combined with the previously-discussed management practices are important for ensuring that the corn has the initial competitive advantage. If the corn is taller than the weeds, then postemergence directed applications can be utilized to extend the weed control through the season. If the weeds are as tall as the corn, then this option is not available. Late-season, over-the-top applications can be used to aid in harvest efficiency, although in most cases this will not be needed if good weed control was achieved throughout the season and the corn is harvested when mature.

The herbicides suggested in Table 1, Table 2, and Table 3 are those that have performed well in IFAS research. When choosing a herbicide, consideration should be given to the crop which will follow in a rotation and whether the herbicide will carry over and injure the succeeding crop. Read the label and follow all instructions and precautions. Accurate sprayer calibration is extremely important since rates too low may not provide adequate weed control and rates too high may injure the crop or result in carry over and injury to succeeding crops. Herbicides, like any pesticide, should be handled with care. Store herbicides behind locked doors in the original containers with the label intact and separated from seed, fertilizers, and other pesticides.

Weed Control in No-Till Corn

Production practices in no-till corn virtually eliminate effective cultivation, thus placing greater importance on effective chemical weed control.

Chemical weed control in no-till corn is similar to that in conventional planted corn with two basic differences:

- 1) Existing vegetative growth must be killed or suppressed with a herbicide at or before planting. These can be found under the Burndown Herbicides for No-Till Corn section (Table 1).

- 2) Herbicides requiring mechanical soil incorporation cannot be effectively used. All other herbicides listed in this report for preemergence or post-emergence application can be used in no-till corn just as in conventional corn.

Table 1. Burndown Herbicides for No-Till Corn.

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
Gramoxone Inteon 1 - 2 qt	paraquat	Higher rate should be used for woody plants or sod if they are present. A proper surfactant must be added. Apply in 20-30 gallons of solution per acre. Some regrowth from rye, oats, or wheat may occur after treatment. This may vary with small grain species, variety, and stage of growth. For these reasons, it is suggested that an application should be made 10-14 days prior to planting. If regrowth occurs, retreat at planting or prior to emergence of the corn. Good coverage is essential for effective control.
Several 1 - 2 qt	glyphosate	Lower rate should be used on annual weeds and higher rate on perennial weeds. Apply in 10-20 gallons of water. See label for additional information. For control of most annual weeds. Rate of kill may be slow during cool weather. Will not supply residual control and should be used in conjunction with a residual herbicide as previously discussed. Choose the residual herbicide or combination of herbicides based on anticipated weeds. Tank-mixes with certain residual herbicides such as atrazine may result in some reduction of activity. Consult label for appropriate tank mixes.

Table 2. Weed Management in Corn.

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
PREPLANT		
Atrazine ¹ or Aatrex (several formulations)	atrazine (1 - 2 lb)	Controls most broadleaf weeds and some grasses. Tank mix with a grass herbicide for broader spectrum control. Do not use more than 2.5 lbs ai/A/year.
PREEMERGENCE		
AAtrex or Atrazine ¹ (several formulations) 80W 90DG 4L	atrazine (1.0 - 2.5 lb)	Good broadleaf weed control but less effective on grasses. Use the lower rate on light sandy soils. Under dry conditions a shallow cultivation may improve control. Do not graze or feed treated forage to livestock for 21 days after application. Do not use more than 2.5 lbs ai/A/year.
Simazine 4L (several trade names) 1 - 2 qt	simazine	Refer to herbicide table and label for specific product. Similar to atrazine but requires more rainfall for activation and is generally less effective in control of certain broadleaf weeds. Good control of crabgrass and fall panicum.

Table 2. Weed Management in Corn.

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
Outlook 10 - 16 oz	dimethenamid	Similar to metolachlor.
Dual II Magnum or Dual Magnum 1 - 1.3 pt or Stalwart, Parallel, Me-too-Lachlor 1 - 1.3 pt	S-metolachlor metolachlor	Controls most annual grasses (except Texas panicum) and certain broadleaf weeds. Fair to good control of yellow nutsedge. Under cool, wet weather conditions, stunting or crop injury expressed as malformed, knotted, twisted top growth may occur. Corn normally outgrows early season injury. Metolachlor may be tank-mixed with atrazine or simazine. Metolachlor can be applied up to 40" tall corn. Available in several premixes with atrazine (Bicep II Magnum, Cinch ATZ, Stalwart Xtra, and others). The generic formulations of metolachlor (Parallel, Stalwart, Me-Too-Lachlor) have not provided the same length of residual control of certain weeds as similar rates of Dual Magnum formulations in some field trials.
POSTEMERGENCE		
Accent 2/3 oz	nicosulfuron	<p>Single Application Controls many annual and perennial grasses, including johnsongrass. DO NOT apply to corn treated with Counter insecticide due to severe crop injury or mortality. Can be applied over-the-top of corn up to 20 inches tall or before the V6 stage (whichever is more restrictive) and post-directed up to 36 inches tall. A nonionic surfactant (0.25% v/v) or crop oil concentrate (1% v/v) is required. Refer to manufacturer's label for additive rates. Do not apply Accent within 7 days to corn treated with foliar applied organophosphate insecticides or with herbicides containing bentazon or 2,4-D. DO NOT apply organophosphate insecticides within 3 days after applying Accent. Refer to manufacturer's label for sprayer cleanup. DO NOT apply within 30 days of harvest.</p> <p>Split Application For hard to control weeds, two applications of 0.67 oz/A can be applied 14 to 28 days apart. Follow all precautions listed for single application. DO NOT exceed 1.3 ozs/A/yr.</p>
Atrazine or AAtrex ¹ 1 - 2 qt	atrazine	Addition of a crop oil at the rate of 1 qt/A provides quicker kill of weeds. Apply before weeds exceed 2" in height and corn exceeds 12" in height. Most effective on broadleaf weeds. Do not apply with fluid fertilizer. Do not exceed 2.5 lb ai/A/yr.

Table 2. Weed Management in Corn.

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
Banvel, Clarity, Sterling 0.5 - 1.0 pt	dicamba	Good control of broadleaf weeds. Can be applied broadcast over the top at 1 pt from corn emergence to V5 or 8". From 8" to 36" tall corn, apply only 0.5 pt. Do not apply within 15 days before tassel emergence. Do not graze or harvest for dairy or beef feed prior to milkstage. Avoid spray drift to nearby sensitive crops. The addition of a surfactant is optional.
Basagran 0.75 - 1.5 qt	bentazon	Controls certain broadleaf weeds and yellow nutsedge. To control yellow nutsedge, 2 applications 7 to 10 days apart is generally required. Rate depends on weed species and size; therefore, refer to the label. Do not apply to corn that has been subjected to stress. Do not mix with other pesticides or fertilizers. Add crop oil at 1qt/A.
Buctril 2EC 1.0 - 1.5 pt	bromoxynil	Controls cocklebur, bristly starbur and certain other broadleaf weeds when less than 3 in. tall. Adjust rate according to weed size and species as noted on label. Applications of Buctril often results in leaf burning on corn. This injury generally lasts 7 days and does not affect yield.
Callisto 3.0 oz	mesotrione	Applications may be made up to 30" or 8-If stage and should contain crop oil concentrate with 28% nitrogen or ammonium sulfate. Callisto can be applied sequentially, >14 days apart, if needed. Do not exceed 6.0 fl oz/A/yr if applied postemergence, or 7.4 fl oz/A/yr if applied preemergence and postemergence. Do not apply in combination with organophosphate insecticides. Some bleaching may occur after application, but is temporary.
Distinct 4 - 6 oz	dicamba + diflufenzopyr	For control of broadleaf weeds. Use 6 oz/A for 4 to 10" corn, and 4 oz/A for 10 to 24" corn. Best if applied with nonionic surfactant (0.25% v/v) <u>and</u> 1-2 lb of sprayable nitrogen. Do not apply more than 10 oz/A/yr. Avoid drift to sensitive crops.
Dual II Magnum, Dual Magnum 1.0 pt	S-metolachlor	Dual + atrazine should be applied before weeds are past 2-leaf stage and before corn is 5" tall. Applications of Dual Magnum may results in temporary leaf burning on corn. Dual will not control emerged weeds.
Marksman 3.5 pt	dicamba + atrazine	For broadleaf weed control in corn from crop emergence to 5-If stage or 8" tall. When using Marksman, do not apply more than 1.6 lb of additional atrazine/A/yr. If applied after June 10, follow with corn or sorghum only. Small grains may be planted 10 months after application. Avoid drift to sensitive crops.

Table 2. Weed Management in Corn.

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
Pendimax or Prowl 3.3 1.8 - 2.4 pt or Prowl H ₂ O 2 - 3 pt ² + AAtrex or Atrazine ¹ (several formulations)	pendimethalin + atrazine	Prowl + atrazine should be applied before the corn is in the 4-leaf stage and before weeds emerge. Prowl 3.3 requires irrigation or rainfall within 7 days to activate. Prowl H2O is more tolerant to dry conditions after application.
Sanda 0.67 - 1.33 oz	halosulfuron	Controls yellow and purple nutsedge. Can be applied over-the-top from spike stage through layby stage. Use higher rates for nutsedge and larger weeds. The use of a non-ionic surfactant or crop oil is recommended. May be applied in a split application but do not exceed 2.67 oz/A/year.
Pendimax or Prowl 3.3 1.8 - 2.4 pt or Prowl H ₂ O 2 pt ²	pendimethalin	Apply postplant and incorporate for late season control of annual grasses and certain small seeded broadleaf weeds. Apply after corn is 4" tall but before the last cultivation. Do not apply if Prowl was used as a preemergence application. Existing weeds must be killed before application. Incorporate with either: (1) sweeps or rolling cultivator or (2) rainfall or irrigation as soon as possible after application.
Resource 2.0 - 4.0 fl oz	flumiclorac	Mix with Roundup for increased broadleaf control in transgenic Roundup Ready corn. Tall ivyleaf and entire leaf morningglory control is enhanced by adding Resource to glyphosate. Do not apply before the 2 leaf, or after 10 leaf, stage of corn development.
Treflan HFP or Trifluralin 4EC (1.0 - 2.0 pt) or Treflan TR-10 or Trifluralin 10G (3.75 - 7.5 lb)	trifluralin (0.5 - 0.75 lb)	Apply postplant and incorporate for late season control of annual grasses and certain small seeded broadleaf weeds. Apply after corn is a minimum of 8" tall as an over-the-top or as a directed spray. Must be incorporated by water or cultivation. If incorporated by water, a minimum of 0.5 to 1 inches will be necessary. Cultivate before application to kill existing weeds and throw soil to cover the base of corn plants. Incorporate with sweeps or rolling cultivator. Do not apply preplant or preemergence. Treflan TR-10 should be incorporated by cultivation. Use 5-7.5 lb of TR-10 to control fall or Texas panicum.

Table 2. Weed Management in Corn.

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
POST-DIRECTED		
Evik DF 1.25 - 2.5 lb	ametryn	Good control of grasses and broadleaf weeds. Most effective if weeds are less than 6" tall. Apply as directed spray after the smallest corn is at least 12" tall. Do not spray over top of corn. Use a surfactant at the rate recommended on the label. Do not graze or feed forage to livestock for 30 days after application. Can tank-mix with 2,4-D for improved broadleaf weed control.
Gramoxone Inteon 1.0 - 2.0 pt	paraquat	For control of emerged annual grass and broadleaf weeds. Apply as directed, spray after corn is 10" tall. Do not allow spray to contact more than the lower 3" of corn plants. Add 1 qt of a nonionic surfactant for 100 gal of spray. Do not mix with liquid fertilizer. Can be tank-mixed with several herbicides. See label.
Lorox DF 1.5 - 3.0 lb	linuron	Controls most grasses and broadleaf weeds up to 5" tall. Apply as a directed spray after corn is 15" tall. Use lower rate for 2" weeds and higher rate for 5" weeds. Do not spray over the top of corn. Use a surfactant at the rate recommended on the label. Can tank-mix with 2,4-D for improved broadleaf weed control.
2,4-D amine ² 1 pt	2,4-D	Controls broadleaf weeds, cocklebur, pigweed, ragweed, morningglory, and sicklepod (coffeeweed). Broadcast over the top when corn is spiking to 8" tall and weeds are small. Apply as directed spray to the base of the corn plant, to minimize injury, after corn reaches 8" in height. Do not apply when corn is silking or tasseling. Avoid spray drift to nearby sensitive crops.
<p>¹ RESTRICTED USE PESTICIDE. WARNING: THE FOLLOWING STATEMENT HAS BEEN ADDED TO THE ATRAZINE LABEL. THIS STATEMENT SHOULD BE HEADED BY ALL PROSPECTIVE USERS AND STEPS SHOULD BE TAKEN TO COMPLY WITH THIS LABEL CHANGE.</p> <p>ATRAZINE IS A CHEMICAL WHICH CAN TRAVEL (SEEP OR LEACH) THROUGH SOIL AND CAN CONTAMINATE GROUND WATER AS A RESULT OF AGRICULTURAL USE. ATRAZINE HAS BEEN FOUND IN GROUND WATER AS A RESULT OF AGRICULTURAL USE. USERS ARE ADVISED NOT TO APPLY ATRAZINE WHERE THE WATER TABLE (GROUND WATER) IS CLOSE TO THE SURFACE AND WHERE THE SOILS ARE VERY PERMEABLE, I.E., WELL-DRAINED SOILS SUCH AS LOAMY SANDS. YOUR LOCAL AGRICULTURAL AGENCIES CAN PROVIDE FURTHER INFORMATION ON THE TYPE OF SOIL IN YOUR AREA AND THE LOCATION OF GROUND WATER. IN ADDITION, SOME PRODUCT LABEL STATEMENTS INCLUDE AS A FURTHER QUALIFICATION OF RISKY SOILS, SOILS CONTAINING SINKHOLES, OVER LIMESTONE BEDROCK, SEVERELY FRACTURED SURFACES, AND SUBSTRATES WHICH WOULD ALLOW DIRECT INTRODUCTION INTO AN AQUIFER.</p> <p>² See fact sheet SS-AGR-12 <i>Florida's Organo-Auxin Herbicide Rule</i> for state rules pertaining to application of organo-auxin herbicides in Florida.</p> <p>NOTE: Herbicide recommendations in this report are contingent upon their registration by the EPA. If a registration is canceled, the herbicide would no longer be recommended.</p>		

Table 3. Postemergence Herbicide Tolerant Varieties.

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
Lightning (1.28 oz)	imazethapyr (0.042 lb) + imazapyr (0.014 lb)	Use on "Clearfield" corn hybrid varieties only! Lightning applications on non-tolerant varieties will result in severe crop injury and/or crop death! Can be applied pre-plant incorporated, preemergence, or postemergence to control many broadleaf and grass weeds. Postemergence applications are most effective. Provides good control of wild poinsettia, morningglories, pigweeds, and selected grasses. Do not tank mix with Accent. Do not apply within 45 days of grain or silage harvest. DO NOT apply to "IT-Corn" varieties treated with Counter or Thimet insecticides. Rotation restrictions: 4 months-wheat; 9 months-field corn (other than Clearfield-Corn), tobacco; 18 months-cotton, sorghum, sunflower, sweet corn.
Liberty 28 - 34 oz	glufosinate	USE ONLY ON "LIBERTY-LINK" CORN HYBRIDS. APPLICATIONS OF LIBERTY TO NON-TOLERANT HYBRIDS WILL RESULT IN SEVERE CROP INJURY AND/OR CROP DEATH!! Can be applied postemergence from the time of crop emergence until the corn has reached 24 inches in height or V7 stage. Broad-spectrum material with limited systemic activity. Possesses no soil residual activity. Effective on a number of grassy weeds including Texas panicum and several broadleaf species including sicklepod and morningglories. Thorough coverage is essential - use with at least 20 gallons water/acre. Should be tank-mixed with atrazine for broader spectrum and more consistent control. Liberty ATZ is a premix of Liberty + atrazine. No rotation restrictions exist with Liberty. Do not apply within 70 days of harvest. Requires the use of spray grade ammonium sulfate at 3 lbs/A or 17 lbs/100 gallons. Weak on arrowleaf sida. Do not apply more than 2 applications of Liberty or exceed a total of 62 ozs/A/season. Applications of Liberty should be made between dawn and 2 hours before sunset for optimum weed control. Rain-free period is 4 hours.

Table 3. Postemergence Herbicide Tolerant Varieties.

Trade Name and Broadcast Rate/Acre of Commercial Product	Common Name and Broadcast Rate/Acre of Active Ingredient	Remarks
<p>Roundup WeatherMax 16 - 22 fl oz (44 fl oz/A/yr)</p> <p>glyphosate (4 lb) 32 fl oz (64 fl oz/A/yr)</p> <p>glyphosate (5 lb) 26 fl oz (52 fl oz/A/yr)</p>	<p>glyphosate (0.75 - 1.5 lb)</p>	<p>FOR USE ONLY ON ROUNDUP READY CORN HYBRIDS APPLICATIONS OF GLYPHOSATE TO NON-TOLERANT HYBRIDS WILL RESULT IN SEVERE CROP INJURY AND/OR CROP DEATH!! Can be tank-mixed with atrazine, Dual, Harness, Harness Xtra, Micro-Tech, Bullet, Partner, or Permit herbicides. Various formulations of glyphosate are available. Not all formulations of glyphosate are labeled for use on RR corn hybrids. Please refer to specific product label. Sequence is a pre-mix of glyphosate + S-metolachlor. Expert is a pre-mix of glyphosate + S-metolachlor + atrazine.</p> <p>USE RATE TABLE (lb ae/A):</p> <p>RR-Corn 2 Normal Rate: 0.75 lb Maximum Rate: 1.12 lb Maximum Total In-Crop: 2.25 lb Application Timing: V8 or 30" (up to 48" w/ drop nozzles)</p> <p>RR-Corn Normal Rate: 0.75 lb Maximum Rate: 0.75 lb Maximum Total In-Crop: 1.5 lb Application Timing: V8 or 30"</p>

Table 4. Estimated Effectiveness of Recommended Herbicides on Common Weeds in Florida Corn¹

Herbicides	Sutan+	Atrazine	Dual Magnum	Python	Pendimax or Prowl or Prowl H ₂ O	Glyphosate	Marksman	Atrazine	Callisto	Accent
Time of Application	PPI	PRE	PRE	PRE	PRE	POT	POT	POT	POT	POT
WEEDS										
BROADLEAF										
Bristly starbur	P	G	P	E	P	G-E	E	E	-	P
Cocklebur	P	G-E	P	G	P	E	E	E	G	P
FL beggar- weed	P	E	F-G	F-G	P	G	G-E	G	-	P
FL pusley	G-E	E	G-E	E	G-E	F	E	E	-	P
Morning- glories	F-G	G	P	F-G	P	F-G	E	G	P-F	P
Pigweed	G-E	E	E	E	G-E	E	E	E	G	P
Ragweed	F	E	F	G	P	G-E	E	E	F-G	P
Sicklepod	F-G	G	P	G	P	G-E	E	E	-	P
GRASS										
Crabgrass	E	G	E	P	E	E	P	P	P	P
Goosegrass	E	G	E	P	E	E	P	P	P	P

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Herbicides	Sutan+	Atrazine	Dual Magnum	Python	Pendimax or Prowl or Prowl H ₂ O	Glyphosate	Marksman	Atrazine	Callisto	Accent
Time of Application	PPI	PRE	PRE	PRE	PRE	POT	POT	POT	POT	POT
Johnson- grass (from seed)	E	F	F	P	G-E	E	P	P	P	G-E
Sandbur	E	G	G	P	G-E	G	P	P	-	G-E
Texas panicum	G-E	P	P	P	G-E	E	P	F	-	G-E
Annual ryegrass	--	--	-	P	-	G	P	--	-	G-E
SEDGE										
Purple nutsedge	G	P	P	P	P	F-G	P	P	-	P
Yellow nutsedge	G-E	P	P	P	P	F-G	P	P	-	P
¹ Estimated effectiveness based on rates recommended in this report. Effectiveness may vary depending on factors such as herbicide rate, size of weeds, time of application, soil and weather.										
Weed Control Symbols: E = 90-100% control; G = 80-90% control; F = 60-80% control; P = less than 60% control. Time of Application Symbols: PPI = Preplant Incorporated; PRE = Preemergence; POT = Postemergence Broadcast.										

Table 5. Estimated Effectiveness of Recommended Herbicides on Common Weeds in Florida Corn, continued.¹

Herbicides	Basagran	2,4-D	Banvel/ Clarity	Distinct	Sempra	Liberty or Liberty ATZ	Clearfield Lightning	Treflan, Pendimax or Prowl	Evik	Lorox	Gramoxone
Time of Application	POT	POT	POT	POT	POT	POT	POT	POT	PDS	POT/PDS	PDS
WEEDS											
BROADLEAF											
Bristly starbur	E	G	G	G-E	G	G-E	P-F	P	E	G	G-E
Cocklebur	E	E	E	E	G	G-E	E	P	E	G-E	E
FL beggar- weed	P	G	G	G	P	G	P	P	E	G	G-E
FL pusley	F	G	G	G	--	G-E	P	E	G	G	G
Morning- glories	F-G	E	E	E	P-F	G-E	G	P	F-G	G	G
Pigweed	G	E	E	E	F-G	G	G-E	P	G	E	G-E
Ragweed	F-G	E	E	E	G	G	F-G	P	G-E	E	G-E
Sicklepod	P	E	E	E	P	G	P	P	G	G-E	G-E
GRASS											
Crabgrass	P	P	P	P	P	G-E	F	E	F-G	G-E	E
Goose- grass	P	P	P	P	P	G-E	F	E	G	G-E	E

Table 5. Estimated Effectiveness of Recommended Herbicides on Common Weeds in Florida Corn, continued.¹

Herbicides	Basagran	2,4-D	Banvel/ Clarity	Distinct	Sempra	Liberty or Liberty ATZ	Clearfield Lightning	Treflan, Pendimax or Prowl	Evik	Lorox	Gramoxone
Time of Application	POT	POT	POT	POT	POT	POT	POT	POT	PDS	POT/PDS	PDS
Johnson- grass (from seed)	P	P	P	F-G	P	E	P	G	P-F	E	G
Sandbur	P	P	P	-	P	G	P	G	E	E	G
Texas panicum	P	P	P	-	P	G-E	P	E	G	G	E
Annual ryegrass	P	P	P	-	P	F-G	P	F	F	F	F-G
SEDGE											
Purple nutsedge	P	P	P	P	G	F	F	P	P	G	G
Yellow nutsedge	G	P	P	P	G	F	F-G	P	P	GG-	G

¹ Estimated effectiveness based on rates recommended in this report. Effectiveness may vary depending on factors such as herbicide rate, size of weeds, time of application, soil and weather.

Weed Control Symbols: E = 90-100% control; G = 80-90% control; F = 60-80% control; P = less than 60% control.

Time of Application Symbols: PPI = Preplant Incorporated; PRE = Preemergence; POT = Postemergence Broadcast.