WEC 225

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Dove Fields in Florida[1]

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Mourning doves (*Zenaida macroura*) are the most hunted migratory game bird in North America. These, as well as white-winged doves (*Zenaida asiatica*), are also pursued by countless hunters in Florida. As migratory upland game, the management of both species falls to both the United States Fish and Wildlife Service and Florida Florida Fish and Wildlife Conservation Commission (FWC). Planting and manipulating supplemental food crops for doves through the establishment and management of dove fields is an important dove management tool (Figure 1). If prepared and managed properly, these fields can benefit dove populations by providing abundant, nutritious foods, and enhance dove hunting opportunities by attracting birds to specific areas. However, if planted areas (dove fields) are used for hunting, certain guidelines must be followed because, if planted and managed improperly, dove fields may be considered as baited. It is illegal (by federal law) to hunt doves over a baited field.

Figure 1. Planting and manipulating supplemental food crops for doves, such as this mourning dove, through the establishment and management of dove fields is an important dove management tool. Credits: J.C. Leupold, U.S. Fish and Wildlife Service.

Timing, Location, Size, and Number of Dove Fields

The timing, location, and size of dove fields are important to consider, particularly if their effectiveness is to be maximized.

1. This document is WEC 225, one of a series of the Department of Wildlife Ecology and Conservation, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences (IFAS), University of Florida. First published: August 2007. Please visit the EDIS Web site at http://edis.ifas.ufl.edu for more publications.

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Timing

If possible, provide supplemental feed year-round through plantings in dove fields. This will keep birds in an area and in better condition. Also consider how long different species will take to mature, and stagger plantings (Figure 2). Planting different species that mature at different times will be important to ensure a steady supply of food throughout the year or hunting season, and to avoid baiting issues.

Location

Aside from locating fields in areas with appropriate soil conditions, pick locations close to sources of grit (sand, gavel, or small stones that are consumed and aid in digestion), roosts (trees and shrubs along woodland and grassland edges, and fencerows), and during the breeding season, nesting habitat (trees and shrubs along woodland and grassland edges). Ideally for doves, an area will include 60-70% openings (e.g., dove fields, agricultural crops [particularly grains and other grasses], pasture, and fallow fields); 28-38% woodlands and shrublands (particularly areas with edge, mature fencerows, and similar habitats); and 2% open water. These three habitat components should be highly interspersed to minimize travel between them.

Size

Fields should be at least 2-5 acres in size. Larger fields can be used to support more hunters; provide at least 1 acre/hunter.

Number

The number of dove fields needed will be based on the amount of hunting opportunity desired and the quality and quantity of foraging habitat available. If foraging habitat is lacking (i.e., less than 60-70% of the area), more dove fields can be added.

What to Plant

If only one planting is possible, few good hunting opportunities will be available and the nutritional value to doves will not be maximized. No plant species can provide all the nutrition a dove requires, nor will a single species be available very long. Any good field is probably going to deteriorate quickly if many birds are using it, especially if the field is only planted in millet. Once a field is "used-up," it will not attract birds for the hunt. Planting multiple species also ensures that if one crop should fail due to drought, flooding, disease, or pests such as army worms, some food will remain available. If possible, never rely on one planting or plant species.

Figure 2. Planting different species that mature at different times is important to ensure a steady food supply throughout the year or hunting season. Credits: W.M. Giuliano.

Where possible, native plants should be used in doves fields, but many cultivated species are also preferred by doves. Examples include panic grasses, barnyard grass, Johnson grass, bristlegrass, crabgrass, paspalums, foxtails, browntop millet, proso millet, Japanese millet, other millets, barley, sorghum, oats, wheat, corn, sesame, buckwheat, peanuts, cowpeas, soybeans, sesame, sunflowers, crotons, mustards, ragweeds, pokeweed, pine, sweetgum, lespedezas, and others.

The most commonly used dove field crops, along with planting recommendations, are listed below. Many of these species come in several varieties, each with a different seeding rate. Check with the seed company before planting to determine appropriate rates. More information on planting these and other possible dove field plants can be found in the sources listed at the end of this document. Note that some

plant species may do poorly in many parts of Florida, with poor soils and extreme environmental conditions.

Browntop Millet—*Panicum ramosum*: Typical planting dates: June-September; maturation time: 60-70 days; seeding rate: 15-25 lbs/acre (15 lbs/acre drilled); planting depth: 1/2 inch; pH: 6.0; grows well with corn, sunflower, and millets.

Proso Millet—*Panicum miliaceum*: Typical planting dates: June-August; maturation time: 75-90 days; seeding rate: 10-30 lbs/acre (15 lbs/acre drilled); planting depth: 1/2 inch; pH: 6.0; does well on many soils; grows well with corn, sunflower, and other millets.

Japanese Millet—*Echinochloa crusgalli*: Typical planting dates: May-August; maturation time: 80-100 days; seeding rate: 10-20 lbs/acre (15 lbs/acre drilled); planting depth: <1/2 inch; pH: 6.0; does well on wet soils; grows well with other millets.

Sunflower—*Helianthus annuus*: Typical planting dates: May-July; maturation time: 90-120 days; seeding rate: 10-20 lbs/acre (5-10 lbs/acre drilled); planting depth: 1 inch; pH: 6.0-7.0; does best on well-drained soils; black variety best; grows well in alternating strips or rows of browntop millet and corn.

Corn—*Zea mays*: Typical planting dates: March-July; maturation time: 80-150 days; seeding rate: 8-15 lbs/acre (drilled); planting depth: 1-1 1/2 inches; pH: 6.0-7.0; does best on well-drained soils; should be planted in at least 4 rows for adequate pollination to occur; use tropical or late season varieties if planting in June-July; grows well with browntop millet and soybeans.

Sorghum—*Sorghum* spp.: Typical planting dates: March-June; maturation time: 75-150 days; seeding rate: 4-15 lbs/acre (5 lbs/acre drilled); planting depth: 1 inch; pH: 5.5-6.5; drought tolerant; avoid bird resistant varieties; grows well with many warm-season grasses.

Wheat—*Triticum aestivum*: Typical planting dates: September-November; maturation time: 180-260 days; seeding rate: 90-120 lbs/acre (drilled); planting depth: 1-2 inches; pH: 6.0; does best on well-drained soils; grows well with other grains.

Oats—*Avena* spp.: Typical planting dates: September-November; maturation time: 180-260 days; seeding rate: 96-128 lbs/acre (drilled) ; planting depth: 1-2 inches; pH: 6.0; does best on well-drained soils; grows well with other grains.

Buckwheat—*Fagopyrum esculentum*: Typical planting dates: March-August; maturation time: 40-50 days; seeding rate: 40-50 lbs/acre (drilled) ; planting depth: 1/2 inch; pH: 6.0; does best on well-drained soils, but will grow under a variety of conditions; grows well with many millets, sunflower, and sorghum.

Soybeans—*Glycine max*: Typical planting dates: March-July; maturation time: 180 days; seeding rate: 30-100 lbs/acre (60 lbs/acre drilled); planting depth: 1/2-1 inch; pH: 5.8-6.5; does best on well- and moderately well-drained soils; grows well with sorghum and corn.

Sesame—*Sesame indicum*: Typical planting dates: April-June; maturation time: 90 days; seeding rate: 5-12 lbs/acre (5 lbs/acre drilled); planting depth: 1 inch; pH: 6.0-7.0; does best on well-drained soils; grows well with other grains; can be an extremely high seed producer.

Planting

Proper site preparation is crucial for successful dove field establishment. Inadequate site preparation often leads to crop failure. Ideally, soil testing (see below) and seedbed preparation should begin several months prior to planting to provide sufficient time for liming and fertilization to be conducted and have an effect. The most appropriate method for seedbed preparation depends on a number of factors such as the species planted, condition of the planting site, and equipment available. However, with any preparation method employed, the ultimate goal should be to provide a moist, firm, level seedbed.

Tilling, followed by broadcast seeding, is the practice most commonly used in seedbed preparation. Tilling methods involve the plowing, turning, or loosening of the soil prior to seeding, with the goal of

removing all vegetation and providing a bare soil surface for planting. Seeds are then broadcast over the area or planted with a seed drill, usually followed by cultipacking or rolling. Because all competing vegetation is removed, crops are usually most productive if soil is fully tilled prior to planting. In addition, because tilling incorporates organic plant material into the ground, the process can improve nutrient status and water holding capacity of the soil for future crops. Nevertheless, this method of land preparation requires considerable labor and mechanized equipment, and establishment costs can be considerable.

Overseeding provides an alternative to tillage. Overseeding reduces the risk of soil erosion and seeds drying out prior to germination, as well as helping to maintain wildlife habitat in the area while dove field crops are initially growing. In addition, it is easier to grow both warm- and cool-season species on the same site using this practice. This method can be used when there is a desire to maintain perennial plants or leave some native vegetation standing. Typically, when overseeding, the area to be planted is first lightly disked or chopped. This causes disturbance to the soil surface and can provide a suitable seedbed for some larger-seeded species. After disking, seeds are broadcast over the plot area or planted using a seed drill. If seed is to be drill planted, simply mowing the area prior to planting may also be appropriate

As one season nears an end, the dove field can be lightly re-disked and seeds of the new seasons crop broadcast or drilled. This leaves some of the previous seasons vegetation standing while new plants germinate, providing doves with a continuous food supply. However, certain methods of overseeding require specialized equipment (e.g., cultipacker, pasture drill, or no-till drill). In addition, native vegetation and perennial pasture grasses often compete for resources with germinating seedlings, resulting in lower crop production than on fully tilled sites. To help overcome this, the seeds planted should be of a competitive species or variety. This is especially important during the warm-season, when application of fertilizer often enhances the growth of perennial grasses and native vegetation. Planting seeds before already-established vegetation gains enough height to crowd out new seedlings can aid in dove plot establishment, as can mowing or bush hogging tall grass and weeds. The use of a mower or bush hog may also be needed if crops planted in the previous season limit the germination of new plantings.

Whether tilling or overseeding a dove field, it is essential that the area be leveled and firmed before and/or after seeds are planted. A cultipacker or roller is often most useful for leveling and firming the seedbed prior to and/or after planting. However, if neither of these are available, dragging a weighted board or section of chain-link fence over the area serves as a good alternative. A firm seedbed ensures good soil-seed contact and enhances water movement to the seed, while leveling helps maintain a consistent planting depth. This is especially important for many of the small-seeded species, which can fail to successfully germinate if planted too deep. Site leveling is also important for water management, because it helps avoid the formation of standing water in low areas. This can be important in areas of south Florida prone to seasonal flooding (Figure 3).

Figure 3. Proper site preparation is the key to establishing a quality dove field. This includes creating a good seedbed through tilling and rolling or cultipacking, proper fertilization and liming, and rolling or cultipacking after seeding to assure proper seed-soil contact. Credits: J.F. Selph.

To avoid the problems associated with overseeding and to facilitate management while providing multiple plant species in a dove field, different crops can be planted in alternating strips 24-30 feet wide. To facilitate foraging by doves, it is also best to leave unplanted strips or rows between

plantings. The bare ground in unplanted strips should then be maintained by selective herbiciding or periodic disking.

Fertilization and Liming

Very few sites in Florida naturally contain appropriate amounts of nutrients to permit the successful establishment and growth of plant species typically planted in dove fields. Deficiencies in nitrogen, phosphorus, and potassium are most common. However, several other nutrients essential for plant growth but required in smaller amounts can also limit plant growth, such as calcium, magnesium, and sulphur. Soil testing is the best way to determine which soil nutrients are deficient and may potentially limit plant production. By conducting soil tests on dove field sites, the appropriate type and quantity of fertilizer can be added and plant growth and performance enhanced (Figure 3). In Florida, many dove fields are also unlikely to have a pH suitable for growth of dove forage species. Liming raises soil pH to a level that permits or improves plant growth and performance. Again, soil tests are essential to determine the pH of dove field soils and the amount of lime that should be applied. It should be emphasized that periodic soil testing, followed by liming and fertilization according to soil test recommendations, is very important if dove fields are to be productive. The first of these soil tests should ideally be conducted 4 to 6 months prior to the field being planted. This will allow appropriate quantities of fertilizer and lime to be added during site preparation. While lime may need to be applied well in advance of seeding for it to have an effect (up to 4-6 months prior to planting to increase pH in the rooting zone, if it is broadcast and not incorporated in the soil), fertilization is typically conducted closer to the time of seeding, so that nutrients are available to plants and not lost through leaching. If fields are being tilled prior to planting, fertilizer and lime can be broadcast and disked into the soil as the seedbed is being prepared. If a no-till system is used, fertilizer and lime will be broadcast but not mechanically incorporated into the soil. Soil tests should be repeated at least every 3 years to ensure additional fertilizer or lime application is not necessary. Additional information on soil fertility in fields can be found in UF/IFAS Extension Fact Sheet SL 248 *Soil Fertility Management for Wildlife Food Plots* (http://edis.ifas.ufl.edu/SS468). The University of Florida Extension Soil Testing Laboratory can supply information on how to take soil samples. For a nominal charge, they also conduct soil tests for landowners and provide fertilization and liming recommendations. For more information, visit their Web site at http://soilslab.ifas.ufl.edu.

Management

Doves prefer to forage on the ground. However, with weak feet and poor scratching ability, foods need to be on open ground and plainly visible. Therefore, it may be necessary to apply a prescribed burn, light disking, or selective herbicide before, during, and/or after planting to remove excess vegetation under crops and in unplanted rows and strips.

As crops mature, some management is often necessary to make them more attractive and available to doves, and to facilitate hunting (Figure 4). By silage-chopping (preferred), mowing, shredding, disking, or roller-chopping several rows or a strip of the crop every few days, forage is made more available on the ground and a field is opened up to facilitate hunting. After a few weeks, these strips or rows can then be replanted without disturbing other plantings, allowing for a continuous crop supply throughout the year. However, for legal reasons explained below, care should be taken to avoid hunting for at least 10 days after all new seed has germinated or has been drilled in.

An Example

Assuming the soil has been tested, limed, and fertilized and the seedbed properly prepared, first plant some sorghum, corn, and/or sesame, trying to time the maturity to about 1/2 -2/3 of the way through the hunting season (usually 1st week of October – early January). Then silage-chop a few rows, as needed, to enhance the field throughout the season. Corn, sesame, and sorghum maturation all vary by variety and growing conditions. However, for dove fields, use 110 days as a good bench mark for all three. Plant them on June 1 and they will often be ready by mid-September; plant them on July 1 and they will be ready by mid-October. However, there are pests that can be really hard on sorghum, and it

Figure 4. Doves prefer to forage on the ground in relatively open vegetation. Foods can be made more available to doves by silage chopping or mowing strips of crops to put them on the ground, and through the use of selective herbicides, prescribed fire, or mechanical treatments to reduce weed encroachment in and around crops. Credits: J.F. Selph.

may be best to plant it in May to keep the pests off. It will be mature well before the season, but seed will stay on the stalk for a long time. Also, sorghum resists drought better than most other crops, so if it does go dry for a month or so, there still may be a few hunts just from sorghum.

Next, plant millet, which matures in 60-100 days. Plant the first planting of millet in late June, then again around late July. Always plant millet in at least two plantings, so it does not all mature at once. Count on the millet early and a mixture of millet, sorghum, corn, and/or sesame later. For the first hunt, chop alternating strips in the millet. Also, mow or silage-chop (preferred), a small number of rows of sorghum, corn, and/or sesame at this time. After the first hunt, disk the strips previously mowed or chopped, and mow or chop some new rows. Continue this pattern throughout the hunting season. Similar patterns of plantings and management (e.g., chopping) can be done throughout the year to make the field most valuable to doves outside of the hunting season.

Dove Field Economics

Generally, it is cheaper to establish dove fields in existing openings (natural meadows, abandoned or fallow fields, edges of interior roads, utility rights of way, and fire lanes) than in wooded areas. Clearing an area of trees can significantly increase site preparation costs.

Table 1 provides an estimate of the establishment costs for a one-acre dove field. If land must be cleared of trees prior to site preparation, an additional $200-400 per acre should be added to this estimate. Seed costs have not been included as they will vary considerably depending on the seed selected and seeding rate. However, expect to spend between $20-100 per acre on seeds. Therefore, depending on the condition of the site where the dove field is to be located, amount of land preparation needed, and seeds planted, budget between $277 and $357 per acre plus the cost of seed for dove field establishment. There will be an additional cost associated with those fields that need to be fenced to prevent grazing and damage by livestock and feral hogs.

There will be annual maintenance costs associated with established dove fields. It will usually be necessary to conduct soil analyses and fertilize and lime according to soil test results. As many dove forages are annuals, be prepared to renovate and reseed fields on a yearly basis. Although many annuals will re-seed naturally, the artificial application of some seed is usually necessary.

Table 1. Estimated establishment costs for a 1 acre dove field where tree removal is not required.

Activity	Unit	Cost/Unit ($)
Soil analysis	Plot	7.00
Fertilizer	Acre	50.00
Liming	Acre	75.00
Plowing	Acre	45.00
Disking	Acre	44.00
Mowing	Acre	19.00
Seeding	Acre	17.00
Total	Acre	257.00

Dove Fields, Baiting, and the Law

While most people have a general knowledge of what baiting is, there are many people that still have questions about what they can legally do to attract doves in Florida. According to Title 50, Code of Federal Regulations, Chapter 1, Part 20.11, a baited

area is "any area on which salt, grain, or other feed has been placed, exposed, deposited, distributed, or scattered, if that salt, grain, or other feed could serve as a lure or attraction for migratory game birds to, on, or over areas where hunters are attempting to take them. Any such area will remain a baited area for 10 days following the complete removal of all such salt, grain, or other feed."

Furthermore, according to Title 50, Code of Federal Regulations, Chapter 1, Part 20. 21(i), doves may not be taken "by the aid of baiting, or on or over any baited area, where a person knows or reasonably should know that the area is or has been baited."

Title 50, Code of Federal Regulations, Chapter 1, Part 20.21(i)(2) also specifically allows the harvesting of doves "on or over lands or areas that are not otherwise baited areas, and where grain or other feed has been distributed or scattered solely as the result of manipulation of an agricultural crop or other feed on the land where grown, or solely as the result of a normal agricultural operation."

The United States Fish and Wildlife Service provides dove field managers some flexibility by inserting the word "manipulation." According to Title 50, Code of Federal Regulations, Part 20.11, manipulation means, "the alteration of natural vegetation or agricultural crops by activities that include but are not limited to mowing, shredding, disking, rolling, chopping, trampling, flattening, burning, or herbicide treatments. The term manipulation does not include the distributing or scattering of grain, seed, or other feed after removal from or storage on the field where grown."

There also is some confusion as to the definition of a normal agricultural planting. In Florida, the state agronomist establishes all normal agricultural practices, and practices vary from state to state. According to Title 50, Code of Federal Regulations, Chapter 1, Part 20.11 , "normal agricultural planting, harvesting, or post-harvest manipulation means a planting or harvesting undertaken for the purpose of producing and gathering a crop, or manipulation after such harvest and removal of grain, that is conducted in accordance with official recommendations of State Extension Specialists of the Cooperative State Research, Education, and Extension Service of the U.S. Department of Agriculture." However, this does not mean that a field is illegal if it was not planted according to IFAS recommended seeding rates, planting dates, or planting methods. A person may plant as they choose, but they may not hunt doves over that field until a minimum of 10 days after all seed has germinated or following complete removal of that seed.

The top-sowing of seed, without disking it in, is not considered a "normal agricultural planting" in Florida. Hunting over a top-sowed field that has already germinated and is actively growing or matured, and was manipulated to enhance the field to attract doves is permitted. However, any seed planted must be disked in well prior to 10 days before any hunt. If any seed remains on the soil surface, it is considered baiting. For this reason, it is recommended that planting during the season or split (i.e., the time between open seasons in a given year) be avoided. If planting during the season or split is needed (e.g., because a field flooded or army worms totally destroyed a field), then be certain that all seed is completely covered or germinated well prior to 10 days before hunting the field.

So, what is legal in Florida?

In Florida, as long as the grain was grown in the field, and is there as a direct result of mowing, shredding, disking, silage chopping, burning, etc., it is perfectly legal to hunt over it. Fields can be planted at any seed rate, and maturation timed to coincide with established dove seasons. However, once the grain leaves the field (even if it is grown there) it can never be brought back in, or the field is considered a baited area for 10 days following the complete removal of all such salt, grain, or other feed.

The take-home-message: be certain when planting dove fields that any seed planted is germinated or completely disked-in, well prior to 10 days before any hunt.

Finally, if a landowner, manager, or hunter is unsure of whether or not a field may be considered baited, call a regional office to have a Florida Fish and Wildlife Conservation Commission Officer inspect the dove field prior to hunting it. Remember,

it is the hunter that is responsible for determining whether or not a field is baited (Figure 5).

Figure 5. If a landowner, manager, or hunter is unsure of whether or not a field may be considered baited, call a regional office to have a Florida Fish and Wildlife Conservation Commission Officer inspect the dove field prior to hunting it. Remember, it is the hunter that is responsible for determining whether or not a field is baited. Credits: J.F. Selph.

Additional Sources of Information

- UF/IFAS Extension Fact Sheet WEC 226 *Mourning Doves in Florida* (http://edis.ifas.ufl.edu//uw267)
- U.S. Fish and Wildlife Service, Office of Law Enforcement: *Dove Fields and Baiting*: http://www.fws.gov/le/HuntFish/dovebaiting.htm
- FWC Regional Offices: http://myfwc.com/Contact/regnoffc.htm
- Dove Hunters' Hotine: http://myfwc.com/special/dove/