



Dove Field Management

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Mourning dove (*Zenaida macroura*, hereafter dove) are the most popular and widely distributed game bird in North America. The annual harvest surpasses all other migratory species combined at around 40 million birds. Nearly 500,000 dove are harvested in Oklahoma each year, which includes both resident birds and migrants from the north. Fall migration generally begins in mid-August, but can vary, depending on weather conditions to the north. The hunting season in Oklahoma typically is from September 1 to October 31 and the last week of December (visit wildlifedepartment.com for specific regulations).

Dove can be found in a variety of landscapes and plant communities, but they are most abundant in open country such as grassland, shrubland and cropland. They will nest in trees, shrubs or even on the ground. Two eggs are laid in a flimsy nest of small twigs and both parents contribute to care of the young. Doves readily re-nest and may produce multiple sets of young per year. Young dove grow rapidly as they are fed a rich diet of "pigeon milk," which is a regurgitated secretion from the crop (part of the digestion system in most birds) of the adult doves.

Dove avoid forests and dense understory vegetation. They require bare ground to forage because they are not able to move through dense litter. For this reason, they are common along edges of roads, fields and forests where they can feed on seeds. Seeds make up almost their entire diet throughout the year. A variety of both native seeds and cultivated crops are fed upon, depending on availability. Beyond food requirements, dove also readily use standing water if the ground is bare at the water's edge. Additionally, they roost in trees or on power lines where available. Snags (dead standing trees) are especially attractive to dove.

Managing for Mourning Dove

While some landowners actively manage for nesting dove, they are generally a by-product of open landscapes with abundant food resources. However, many landowners manage fields for the purpose of hunting dove during the fall. Fields for mourning dove can be as small as one acre, however larger fields will attract more dove for longer periods of time and can accommodate more hunters. Generally, fields at least 10 to 20 acres will be ideal for optimal dove hunting. Fields of this size

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Figure 1. This milo field was planted in strips. The fallow strips between the milo have adequate bare ground and allow dove to feed on grain from the adjacent milo plants. This is a good technique if you wish to plant a portion of the field and minimize mowing during the early part of the hunting season. The standing milo would be mowed or burned later in the fall to make the remainder of the field available. Notice that much of the vegetation in the fallow strips is preferred mourning dove food such as the pigweed in the foreground.

can generally accommodate 10 to 20 hunters safely, depending on field layout. There are several agronomic plants that can be managed for dove, including corn, cereal or small grains, grain sorghum, millets, soybean, sunflower (e.g. Perodovik) and buckwheat. Each of these plants is discussed in detail below under "Crop Selection."

The most important consideration for any managed dove field is that the seed must be available on relatively bare ground before dove can utilize it. This cannot be stressed enough. Dove fields with a thick thatch layer of litter or dense overstory of plant material will not be used! This means that some type of manipulation of the crop will be needed in most instances. Management practices that increase seed availability in dove fields include: burning, mowing (and potentially raking), disking, herbicide and grazing. Additionally, portions of fields or entire fields can remain fallow to provide openings and food availability for dove (Figure 1). Each of these various

practices has advantages and disadvantages, depending on the amount of litter, type of plant and time of year. Following is a list of practices and under what circumstances they might be useful.

Manipulation Practices

Burning can be useful for crops that produce a lot of dry flammable material such as monocots (grasses). This includes the millets, grain sorghums and corn. The plant material must be dry before a fire can effectively carry through the stand. This is an excellent strategy to quickly make seed available on a clean field surface. The downside to this technique is that it is difficult to burn sections of the field, if the manager wishes to hold some food in reserve for later in the season. Additionally, some seed could be damaged by the fire if the intensity is high.

Mowing is often used by landowners because it can be done with any crop and most landowners have a mower. It offers the advantage of targeting sections of fields, such as strips or blocks, so food can be held in reserve. The disadvantage is that litter remains on the field, which can impede doves from feeding. It may be necessary to mow several times to reduce the litter to small pieces (Figure 2). Alternatively, the field can be raked after mowing to produce windrows and bare ground strips.

Disking is another common practice for dove fields as it offers selectivity. The major disadvantage of disking is that it makes some seed unavailable for dove because the disk places seed and litter under the soil surface. Disking again later in the season can bring some of the seed back to the surface, but much of the seed will be either still covered or decomposed.

Herbicide can be used to “burn down” a field in some circumstances. However, in fields with abundant litter, this will still not create adequate bare ground. This practice has some application with soybean.

Grazing can be used to reduce the plant canopy and create bare ground. The disadvantage is that with many of the planted crops, cattle will consume much of the seed and



Figure 2. Waste grain from a mowed milo field is readily available in this field. By keeping row spacing wider and adequately shredding the milo stubble, mourning dove use is enhanced.

dove food will be reduced. Grazing has some application for sunflower fields because cattle movement and feeding will shatter the seed onto the soil surface and can create bare ground.

Timing of Manipulation

If the goal is to provide hunting opportunity during early September, then manipulation of the field should be started in July or August. Allow at least two weeks for concentrations of doves on manipulated fields. To have a field ready to hunt by September 1, the crop would ideally be mature by late July or early August to allow for time for manipulation and dove concentration. The number of dove that can be attracted will be based on food availability, local dove production, migration patterns and the landscape context.

To attract doves throughout the hunting season, stagger the manipulation every two weeks to ensure seeds are available through a longer time period. This can be done in strips or patches. Consider planting patches of different crops with varying maturity times (Figure 3). To hunt doves during the December season, it is critical to retain seed. This can be accomplished by delaying manipulation, planting larger fields and planting crops where the seed does not readily deteriorate (e.g. grain sorghum and corn).



Figure 3. Planting crops with different maturity dates can be effective to provide an extended window of food availability for mourning dove. Here, the landowner has mowed a stand of milo in preparation of the early season and has retained standing corn that will be mowed for the December season.

Crop Selection

Corn is an annual grain crop that is planted in early summer and will ripen by late summer or early fall, depending on the planting date and variety. It is highly attractive to dove and many other wildlife. It provides large amounts of energy and the seed does not quickly decompose. For these reasons, it makes a good planting for late season dove. However, corn is very responsive to nitrogen and uses high amounts of nitrogen fertilization. It is also sensitive to acidic soils and should not be planted if the soil pH is below 5.5. Due to the nutrient requirements and seed cost, corn can be expensive to grow.

Another drawback is the potential for aflatoxin in corn (see NREM-9021, *Aflatoxins in Wildlife Feed: Know How to Protect Wildlife*). If planting corn, plant a lower planting rate and wider row spacing (30 inches) to allow for more bare ground and less litter after manipulation. To minimize the risk from aflatoxins, plant as soon as the average daily soil temperature reaches 50 F. The Mesonet (<https://www.mesonet.org/>) can be used to determine soil temps. This will typically be around mid-March in Oklahoma. The amount of corn seed planted should be determined by soil texture and average rainfall amounts. In sandy drought prone soils, no more than 18,000 seeds per acre should be planted, while in loamy soils with higher rainfall patterns (eastern Oklahoma) up to 24,000 seed per acre should be planted. Once the corn plants have dried down in the late summer, they may be able to be burned under moderate wind. However, if plant interspaces are too large, the fire may not carry effectively. Mowing or mulching is a good option for corn fields and generally will be the most effective manipulation practice.

Small grains include wheat, cereal rye (not ryegrass), oats and triticale. Wheat is by far the most common small grain grown in Oklahoma. All small grains attract doves and management is similar. In Oklahoma, small grains are grown as a cool season crop that is planted in late summer or early fall and harvested early the following summer. While high levels of fertility are not needed, all small grains respond to nitrogen fertilizer and do better when phosphorus and potassium fertility is adequate and pH is at or above 5.5. Seeding rate should be adjusted based on time of planting. Seeding rates should increase later in the season and into November. After harvest, doves will use fallow wheat fields throughout the summer until the grain is depleted. To maximize dove use, do not harvest the grain. To maximize hunting opportunities, begin burning or mowing strips every two weeks starting in mid- to late summer. To broadcast small grain seed on the soil surface in the fall, it may be legal to hunt over this field as long as the local county Extension office lists this as a "bona-fide" normal agricultural practice. Make sure to not exceed the recommended seeding rates, or the field will be considered baited (see Legal Considerations below). Leaving a small grain field fallow generally results in some reseeding, although yields will be lower the next year.

The sorghum family includes several varieties of grain, but the most commonly planted in Oklahoma is milo, which is a type of grain sorghum. These seeds are highly attractive to dove, and similar to corn, do not readily decompose, making them ideal for late season use, especially varieties that mature later. They can certainly be utilized for early season hunting as well, if planted early in the year and when using a variety with a faster maturity date. Tannin concentrations vary between different varieties of grain sorghum. Sorghum with higher tannin levels have a dark red grain and inhibit bird use, so ask a grain salesman about varieties with lower tannin levels in the mature grain. White sorghums are more palatable for wildlife. The planting timing of sorghum is similar to that of corn. Higher yields of grain are typical when planting earlier in the year. Sorghum planting can typically begin when the average daily soil temp is at or above 55 F, which will occur in late April in Oklahoma. Both sorghum and corn can be planted in June, but this will delay maturity until October or November. Similar to corn, grain sorghum can be burned once the plant is dormant, but mowing is usually a better option.

Milletts including browntop, foxtail, pearl, proso and Japanese are all highly preferred dove foods. While millet is not commonly grown as a commodity crop in Oklahoma, it is one of the best grains to plant for dove. Browntop and Japanese ("wild") millet have shorter maturation times and are good choices for mid-summer planting (into July), but in general, millets are planted in May or June in Oklahoma. Browntop would be the choice for well-drained soils, and Japanese millet the choice in wet bottomland soils. Grass weeds can be problematic in millet plantings, but some of these weeds are also desirable dove foods. Burning or mowing will be required for millets because they produce thick litter layers. Even after mowing, it may be necessary to rake the litter into rows to provide bare ground for dove access.

Soybean is a good choice if white-tailed deer is also a management objective or if wanting a later-maturing crop for October hunting. Otherwise, choose another planting. The earliest maturity soybean varieties will not be mature until late September, and June-planted soybeans will be mature in November. Similar to corn, plant a wider row spacing (30 inches) and lower seeding rate to allow for bare ground in the field. However, late-planted soybeans (after May) do not grow very large, so planting with a grain drill can increase the grain yield. Soybeans are a legume, so they do not need nitrogen fertilization if an inoculant is used, however they are very sensitive to acid soils and need proper phosphorus fertility. If soil pH is below a 6.0, the ground should be limed, based on a soil test. Soybean seed deteriorates more rapidly than corn or grain sorghum and may not persist for the December dove season. Mowing or herbicides can be used to open up the canopy in soybean once the seed is mature. Alternatively, the soybean leaves will fall and rapidly deteriorate after frost and assuming that the row spacing was wide, doves will use the field without manipulation. Some varieties of soybean can be effectively reseeded.

Sunflower is one of the best foods for dove. While there are many native sunflower species, planted Perodovik (black oil) is often used as it produces large seed heads. When planting fields for dove, make sure the field size is at least one acre or herbivory from white-tailed deer will likely limit seed production. Sunflower can be planted from April through June. As sunflower requires nearly four months to produce seed, it must be planted by early May, if the intention is to hunt the field when dove seasons opens. Once the seed is ripe, the field can be mowed or chopped with a silage chopper. Alternatively, cattle can be used to shatter the seed and allow access to the grain.

Buckwheat is not often planted in Oklahoma, but it has many good traits for dove fields. It is drought tolerant, fast to mature and is readily consumed. Additionally, buckwheat will typically reseed during the same season, providing for continued seed and forage production. Buckwheat can be managed similarly as soybean because it can be mowed or allowed to drop leaves, making seed available.

Fallow Field Management

Fallow fields often contain abundant "weeds," many of which are highly desirable to dove including: ragweed, pigweed, croton (doveweed), native sunflower, Johnsongrass and bristlegrass (foxtail grass). If the planting date window is missed, allow for the seed bank to germinate and evaluate

Table 1. Grains most commonly eaten by doves.

<i>Crop</i>	<i>Growing Season</i>	<i>Planting Date</i>	<i>Seeding Rates (lbs per acre)¹</i>	<i>Planting Depth (inches)</i>	<i>Days till or Month of Maturity</i>	<i>Manipulation Options³</i>
Oats	Cool season	Sept-Oct	65-120 ²	1	June	D, B, M
Wheat	Cool season	Sept-Oct	75-100	1	June	D, B, M
Triticale	Cool season	Sept-Oct	75-100	1	June	
Rye	Cool season	Sept-Oct	75-100	1	June	
Corn	Warm season	Mar-Apr ⁴	10-20	1-2	80-140	D, B, M
Grain sorghum	Warm season	May-June ⁵	5-20	1	80-120	D, B, M
Perodovik sunflower	Warm season	Apr-June	5-25	1/2-1	110	G, D, M
Browntop millet	Warm season	May-July	15-30	1/4	65	D, B, M
Foxtail millet	Warm season	May-June	15-30	1/4	80	D, B, M
Pearl millet	Warm season	May-June	15-30	1/4	100	
Proso millet	Warm season	May-June	20-35	1/4	80	D, B, M
Japanese millet	Warm season	May-July	15-35	0-1/4	55	D, B, M
Soybean	Warm season	April-June ⁵	30-60	1-2	100-150	D, M, H
Buckwheat	Warm season	April-June	25-40	1	60	D, M

1 The lower seeding rates represent drilled while the upper represent broadcast seeding.

2 Increase seeding rate as planting date gets later.

3 Disking (D), Grazing (G), Burning (B), Mowing (M), Herbicide (H).

4 Soil temp needs to be 50 degrees, watch Mesonet.

5 Soil temp needs to be 50 degrees, watch Mesonet.



Figure 4. Leaving fields fallow is a beneficial practice for mourning dove. This wheat field was harvested in May and is now providing waste wheat seed (see inset). If the field had been prepared (deep disking) for planting during the summer it would be of little benefit to mourning dove. By delaying field preparation until late September, the landowner has allowed dove to use the field all summer and will be able to hunt for the first couple of weeks of the season before the field is replanted in wheat.

what is available. If a desirable plant community develops, limit herbicide use to only non-desirable plants (Figure 4). Additionally, dormant season disking can encourage many desirable plants, including ragweed, sunflower and croton. Common sunflower, a native sunflower that is commercially available, in particular can be effectively managed once established. Shallow disking (less than 4 inches) during the dormant season will encourage sunflower germination each year. If soils are deficient in phosphate, appropriate fertilization prior to disking is recommended by avoid nitrogen as it encourages grass competition and will lead to less bare ground under the sunflowers. The same practices used to manipulate cultivated plants can be used to manipulate fallow fields and improve access to seeds. Fallow fields can provide a surprising amount of dove attraction.

Additional Management Strategies

Dove use of a plot can be improved if a few trees, preferably snags, are present. Dead snags are magnets for doves flying into the field and make excellent ambush points for hunters trying to intercept the dove. If no snag is present, consider using herbicide or girdling to selectively create one where desired. The snag should be available for several years once the tree is dead, but it will eventually fall, making it of little use.

Dove use of an area can also be enhanced by water. Many hunters look for water sources, such as cattle ponds, to hunt around and do not even plant a dove field. Water is especially attractive during the early season when temperatures are warmer. To enhance dove use of a water source, make sure the slope leading to the water edge is shallow and that the ground is bare (Figure 5). Often, ponds are low during late summer and the ground will be bare by default. If this is not the case, management practices such as grazing, mowing or herbicide application can all be used to create a bare patch for doves to access the water. These bare patches do not need to be large for dove use. If a tree or snag is nearby, it will further enhance use of the water source.

If existing crop fields are not present and if the landowner wishes to minimize expense, manipulating native plant communities is an excellent option for dove management. Prescribed fire can be used in native grassland and shrubland to stimulate native or naturalized dove food and to remove litter and increase bare ground. Fire often encourages ragweed, croton, sunflower and snow-on-the-mountain, which are highly preferred native dove foods. Fires conducted during mid-summer are often the best, as they stimulate food producing plants and grass regrowth is not dense enough to limit dove access and feeding. Strip disking, as previously mentioned with fallow crop fields, can also be conducted to encourage desirable plants for doves. Plant response is best from dormant season disking. Disking after March often stimulates undesirable plants such as buffalo burr. Disking in sandy soils works well for doves, but tighter soils will typically have dense vegetation by late summer, making some other manipulation necessary to increase bare ground and seed access (Figure 6).

Legal Considerations

Doves are migratory birds protected under the Migratory Bird Treaty Act and certain restrictions apply. It is illegal to



Figure 5. Shallow-sloping bare ground along a pond edge is ideal for watering mourning doves. If a tree or snag is near the pond, this further enhances mourning dove use.



Figure 6. Disking in sandy soils often encourages common sunflower and croton (doveweed). Both are preferred native mourning dove foods.

hunt migratory birds with the aid of bait or in any area where it is known, or reasonably should be known, that the area has been baited. Baiting is defined as the direct or indirect placing, exposing, depositing, distributing or scattering of salt, grain or other feed that could lure or attract migratory game birds to, on, or over any areas where hunters are attempting to take them. Baited areas can be hunted only when the bait has been completely removed for at least 10 days. It is the responsibility of the hunter to know when an area has been manipulated in a manner that deems the area baited. It is also illegal to hunt areas where grain has been harvested, then redistributed in the same field because this is considered baiting. Fields that are mowed, disked or manipulated in other ways can be used for dove hunting as long as the grain or feed has been distributed or scattered solely as the result of manipulation of an agricultural crop or other feed on the land where grown, because this does not constitute baiting. However, waterfowl and cranes may only be legally hunted over grain or other feed if it was scattered or distributed solely as the result of a normal agricultural practice such as planting, harvesting, post-harvest manipulation or soil stabilization practices. Normal agricultural practices are defined by the Oklahoma Cooperative Extension Service. For all practical purposes, this means that it is illegal to hunt waterfowl or cranes over freshly planted wildlife food plots until 10 days after all seeds are germinated and growing, or consumed where grain or seed has been distributed, scattered or exposed because these plots are not normal agricultural plantings or normal soil stabilization practices.

Waterfowl and cranes can also not be legally hunted over food plots that have been manipulated solely for the purpose of wildlife use and were not a normal agricultural practice. This can be confusing because the regulations between waterfowl and dove are not entirely the same, so be sure to carefully review federal and state migratory bird regulations before manipulating hunting areas for dove or waterfowl. Federal and state regulations can be found at fws.gov and at wildlifedepartment.com, respectively. When in doubt, call the local wildlife officer to verify that a given practice is legal for the game you intend to hunt.

Summary

Mourning dove are an abundant game bird that is widely distributed across Oklahoma. Not only are hunters able to harvest resident birds, but many birds migrate into and through Oklahoma each fall. By understanding basic agronomy and plant succession strategies, managers can successfully produce and attract large numbers of dove to their property. There are several agronomic crops that can be useful to concentrate dove. Additionally, using some type of disturbance in native plant communities or taking advantage of water sources also can provide good hunting opportunities. Regardless of how doves and dove fields are managed, be certain to check current wildlife regulations at wildlifedepartment.com to ensure you are hunting in a legal manner.

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