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Ponds and Marshes for Wild Ducks on Farms and Ranches in the Northern Plains



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Washington, D.C.

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Caution: If you use herbicides, apply them only when needed and handle them with care. Follow the directions on the container label and heed all precautions. Dispose of empty herbicide containers in accordance with label instructions.

Drift may cause damage to desirable plants and to honey bees and pollinating insects. Avoid spraying when the wind is blowing.

Keep herbicides away from children, livestock, and pets. Store herbicides in closed, well-labeled containers in a dry place where they cannot contaminate food, feed, or water.

When handling herbicides wear clean, dry clothing. Launder clothing after each spraying operation before wearing again.

Do not inhale herbicides and avoid contact with spray mist and drift. Avoid repeated or prolonged contact of a herbicide with your skin. Avoid spilling it on any part of your body—especially your eyes, nose, and mouth. If you spill it on your body, wash it off with soap and water and remove contaminated clothing.

To protect fish, wildlife, and livestock, do not clean spraying equipment or dump excess spray material near lakes, streams, or ponds.



Ponds and Marshes for Wild Ducks on Farms and Ranches in the Northern Plains

By WADE H. HAMOR, HANS G. UHLIG, and LAWRENCE V. COMPTON, *biologists, Soil Conservation Service*

REGARDLESS of where you live in the northern Plains, chances are good that you can attract wild ducks to your farm or ranch. To do so you may need to build a pond or marsh or improve the ones you now have.

The center of wild-duck production in the United States is in the northern Plains and includes parts of North Dakota, South Dakota, Minnesota, Montana, Wyoming, Colorado, Nebraska, and Iowa. The numerous natural and man-made ponds and marshes along with fertile soil and favorable climate make this a region of ideal duck habitat. Many of these ponds and marshes are not producing ducks at their full potential. Some are too shallow, some are choked with emergent plants, and others are low in food and cover. Correcting these deficiencies can make the duck production of this region even greater than it is.

Habitat Requirements

For breeding habitat wild ducks are best satisfied by ponds and marshes that contain water throughout the year. Shallow areas that hold water for a few weeks in the spring are used for feeding, courting, and breeding and as a supple-

ment to the deeper areas that have a more permanent water supply. The best brood ponds and marshes have more than an acre of open water and contain scattered emergent plants such as cattails and bulrushes.

"Puddle ducks" nest on dry land. These ducks—mallard, pintail, gadwall, shoveler, and teal—select nest sites in grain stubble, hay fields, and idle areas and on lightly to moderately grazed range and pasture. Most nests are within 100 yards of water but some may be a mile or more away. The hen takes the brood to open water shortly after hatching.

"Diving ducks" such as redhead, canvasback, and scaup nest along the shore or over the water among the emergent plants.

Improving Natural Ponds and Marshes for Ducks

The ponds and marshes on your farm or ranch may be productive of wild ducks without improvements. If each acre of water is producing two to four young ducks each year, it would be difficult to increase the rate. If production is less than this, improvements can make your ponds and marshes more attractive as duck habitat.



MINN-1783

Good duck-brood habitat contains about half open water and half emergent vegetation.

Ponds and marshes that dry up in summer serve ducks during the spring migration and the breeding season but contribute little to brood habitat. To make them more useful, increase their depth so that the ducks will have open water throughout the summer.

If your pond or marsh has an outlet, raise the water level by closing the outlet with a simple dam. Where this is not possible, provide open water by digging or blasting pits in the bottom of your marsh. Pits with 500 square feet of surface area are good, but larger ones (2,000 to 5,000 square feet) are better for duck broods. Build pits at the rate of one for each 1 to 5 acres of marsh. Make one side of the pit with a slope of no more than 5 to 1; that is, the shore should drop 1 foot below the surface of the water for each 5 feet it extends into the water. At least one-fourth of the pit should be no more than 3½ feet deep. A crescent or an L-shaped pit is usually more useful to ducks than a square or rectangular one. Blasting should be done only by a licensed dynamiter.

If you dig a large pit, use the spoil to make an island for loafing and nesting.



ND-605

Ducks like to nest in vegetation that is high enough to conceal them and their nests.

Make the island at least 20 feet in diameter with a settled height no less than 2 feet above the water level. A part of the island should have a slope no steeper than 5 to 1. Smooth the top to assure good drainage. To prevent erosion from rainstorms or wave action, seed the island to grass and legumes as soon as possible after construction. Ducks will use the island for loafing and nesting, and it will make an ideal place for a blind. Blinds are useful for hunting, photographing, or simply watching the ducks.

Ponds and marshes overgrown with emergent plants such as cattails are low producers of ducks. You can improve them by creating open water. One way is to dig or blast pits to make the water deeper. Cattails and sedges seldom grow in water deeper than 3½ feet. Another is to kill patches of the plants with herbicides. To do this, spray herbicides on alternate strips 40 feet wide across the marsh or from shore to open water. Leave the unsprayed strips for protective cover. Some useful chemicals are 2,4-D, dalapon, and amitrole. For the correct chemical to use, consult a local dealer,



SD-716

Strips mowed in a marsh overgrown with cattails provide open water when spring rains come.



MINN-1743

Cattails were cut to form these open water areas. The bales of hay offer a loafing site for ducks.



WIS-810

Clean, open water of ponds attracts migrating ducks.



MINN-1784

Musk rats create open water by using the surrounding plants for food and for building houses.



MINN-1782

Marshes with bare shores produce fewer young ducks than those with grassed shores.



MINN-1700

Shores that are heavily vegetated offer no sites where ducks can rest out of the water.

the SCS conservationist, the State wildlife agency, or the Fish and Wildlife Service.

Cutting also controls cattails. Mow the plants at ground level when the marsh is dry. Mow the first time just before viable seed is formed—late June or early July—and the second time about a month later when regrowth is about 2 feet high.

If wet soil prevents summer mowing, you can get temporary control by mowing in late fall when the soil becomes dry enough to support machinery. In the wintertime you can scrape the old stalks off at ice level with a road patrol, manure loader, or blade. If early spring waters from melting snow or rains cover the stubble, strips treated this way will stay open for 2 to 3 years.

Grazing and trampling by livestock create open water by destroying or retarding cattails and other marsh plants. Grazing is most effective when it is heavy and is done in early spring when the plants are young. Avoid grazing that leaves the shores bare of all plant life.

Musk rats can help create open water. First, open an area about 15 feet in diameter with a scythe or with herbicides; then place bales of straw or hay in the opening. One bale placed crosswise on top of two bales is a good arrangement



OH-60571

Grassed areas within fenced ponds offer safe nesting sites for ducks.

where the water is 2 to 3 feet deep. Muskrats use the bales as a base for a house and create more open water as they cut the surrounding cattails for food and for building houses. Ducks use the bales and muskrat houses as loafing sites.

Ponds and marshes with bare shores are not high duck producers. Ducks shun a bare shore in favor of a grassed one except for daytime loafing. Trampling by cattle is the usual cause of bare, muddy shores although a drop in water level has the same results. If

cattle are the cause, you may need to fence them out or provide drinking water in another part of the pasture to reduce their use of the area you want to manage for ducks. Try to keep a well-sodded area at least 40 feet wide around your pond or marsh.

Ponds and marshes with heavy shore vegetation extending out into shallow water can be improved for puddle ducks by opening the plant growth at intervals. Open an area of shore 20 to 40 feet long and leave a similar area of



MINN-1781

Ponds with irregular, grassed shores attract nesting ducks.

vegetation standing. Use herbicides, scythe, or mower, or dig out spots along the shore. For diving ducks, open a few scattered spots along the shore but leave most of the vegetation standing.

Ponds and marshes with nearby trees are hazards to wild ducks. Crows and other birds perch in trees and prey on eggs and young ducks. To reduce this kind of predation, remove tall trees growing along the water's edge as well as in nesting areas.

Building Ponds and Marshes for Ducks

With good management, manmade ponds and marshes will attract and produce ducks and provide hunting opportunities.

Ponds and marshes without controlled water levels can be created by blocking a natural channel with a low dam. Where State water laws permit it, this is the simplest and least expensive

way to build a pond or marsh. The SCS man assigned to your local soil conservation district can help you with the location and design of the dam. He can also suggest management practices that will be favorable to duck production.

The best site is one where 50 to 75 percent of the land can be flooded to a depth of 3½ to 4 feet. At these depths, water usually remains free of emergent plants. The shallower parts produce some plants useful to ducks as food and cover. Control the growth and spread of cattails by cutting or spraying. Favor the growth of bulrushes, burreeds, smartweeds, and barnyardgrass. Even desirable plants may become so dense that openings must be made by cutting or spraying or digging or blasting pits.

If you plan to impound an area of 2 to 4 acres, build a small island near the center. Construct it with a bulldozer before the area is flooded, using specifications given on page 5.



MINN-1749

This 25-acre marsh was created by building a dam across a waterway. The marsh is protected from excessive siltation by soil-conserving practices on adjacent croplands.



MINN-1777

An island was built in this new pond to encourage greater duck use of the water.

Evaporation may lower the water level and expose a lot of bare or muddy shore. If this happens, disk the bare shore to encourage the natural growth of smartweeds and barnyardgrass or seed it to these plants. Food plants such as these attract ducks during spring and fall migrations and may encourage nesting and brood production nearby. Delay planting bulrushes, bur-reeds, and similar aquatic plants for 2 or 3 years. They usually come in naturally.

Ponds and marshes with controlled water levels are easier to manage for ducks. By raising the water level to at least $3\frac{1}{2}$ feet, you can drown out unwanted plants. By lowering it, you can encourage the growth of desirable ones. Or you can drain the area completely and plant and grow good duck foods.

The water-level control device can be a simple stop log structure or a pre-fabricated metal one. Because of the danger of ice damage in the northern Plains, it is best to place the control device in the dam instead of in the water as is done farther south. Ask your SCS man for his recommendations.

In building a pond or marsh, select a site with a dependable source of water. The water may be pumped into it from a well or a nearby stream, or a stream may be diverted into it. Water levels can

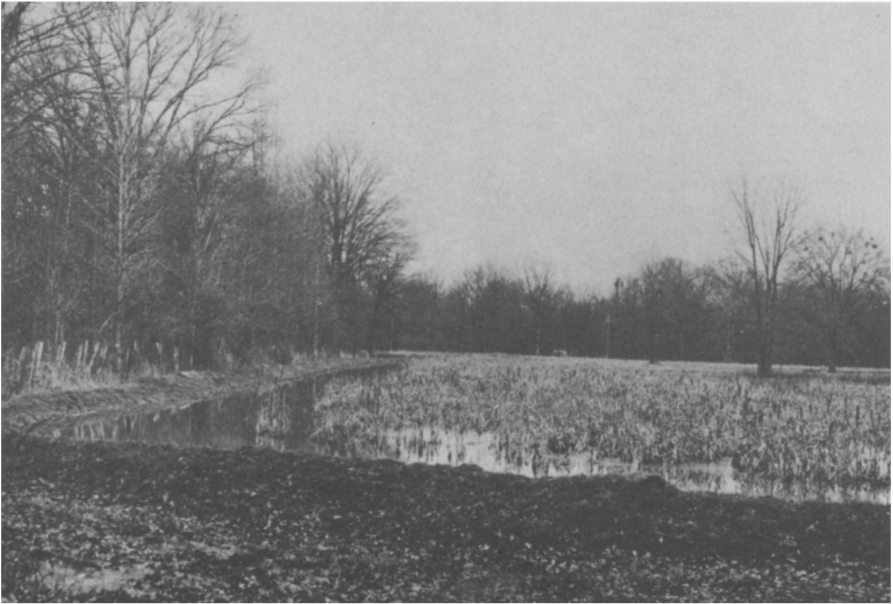
be easily controlled in a pond or marsh built downslope from a storage pond. By releasing water from the upper pond, water can be provided as needed in the lower one. Plan to grow duck-food plants in the lower pond in summer while the upper one is producing young ducks.

To attract spring and fall migrants, your regular crop fields of corn, wheat,



MINN-1779

Adding or removing flashboards controls water levels behind this structure.



LA-62064

Duck-food fields are flooded to attract migrating birds in the South. The practice works equally well in the North.

oats, and barley can be diked and flooded after the crop is harvested. Keep the water shallow because puddle ducks have a hard time reaching food that is under more than 15 inches of water.

The attractiveness of an area to ducks depends largely on the kind and quantity of food available, which, in turn, depends on soil fertility and good cultural practices. Fertilize the land where duck-food plants are grown as you would similar farm crops.

If you cannot drain the wet area completely, a partial drawdown will enable you to plant duck foods in the dewatered area. Even without planting, the drawdown will encourage the natural growth of such duck foods as barnyardgrass and smartweeds. Flood these in the fall to attract ducks.

Steps in growing duck foods in ponds and marshes with controlled water levels:

1. After the spring migration, release the water so the field will be dry by planting time.
2. Plant barnyardgrass, buckwheat, corn, grain sorghum, or proso millet. One of these properly managed

usually produces more pounds of food than two or more grown together.

3. When the fall migration starts, flood the field to a depth of 1 to 15 inches. If it has a gradual slope, flood only a part of it the first week, a part the second week, and so on until the entire area is flooded. This makes food available for many weeks.

If ducks are hunted on the flooded area, it is illegal to drag, mow, or otherwise knock down the food plants to make them available to ducks. You can deliberately flood the mature crop or you can harvest the crop in the usual way, then flood the field and hunt ducks attracted by the crop residue. Consult your game law enforcement officer for current regulations.

Improving Stock-Water Ponds and Pits for Ducks

The purpose of most manmade ponds and pits is to supply water for livestock. Wild ducks, however, use them for resting, breeding, and brood rearing. Duck use varies with the way the ponds are

built, their location, condition, and the surrounding land use. Most ponds and pits can be made more attractive to wild ducks.

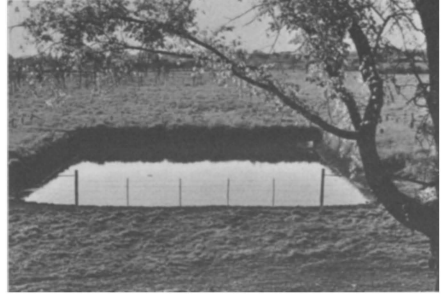
Ponds built by placing a dam across a waterway can be improved for ducks by sloping one shore 5 to 1 and increasing the area of water to 2 or more acres. Keep a grass cover 7 to 12 inches high around the pond for nesting cover. Delay mowing until after July 15 and mow only half of the area in any year. To maintain vigorous growth, fertilize the grass as you would a tame pasture.

If the water level drops by July 1, seed barnyardgrass or proso millet on the exposed area. Rising water in the fall will make the food available to ducks.

Pits (dugouts) are used less than ponds by ducks but are important because farmers and ranchers have built so many of them. Ducks make more use of stock-water pits that have an end or a side slope of 5 to 1 or flatter. Protect the grass around the pit for nesting ducks. Seeding the exposed shore to food plants is helpful. Place fences, if needed, at least 25 feet from the edge of the pit—40 feet is better. Include the spoil in the fenced area.

Providing Loafing Sites for Ducks

Ducks are attracted to water areas that have sites where they can safely get out of the water to rest, preen, and loaf. They will use bare spots on the shore, floating



MINN-1778

A pit still has water after the marsh is dry.



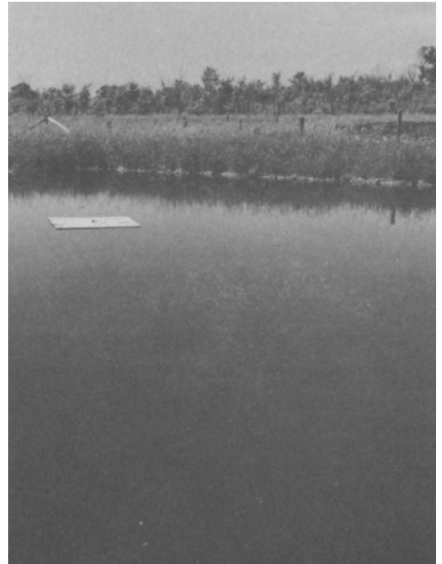
MINN-1809

Pits dug in shallow marshes provide open water during periods of dry weather.



MINN-1776

Pits dug where runoff from adjacent fields will keep them filled are used by livestock as well as ducks.



MINN-1780

Rafts anchored in ponds encourage greater use of the water area by ducks.



Pond fences should be at least 25 feet from the shore.

MINN-1775



Ducks find a complex of water areas more attractive than an isolated pond or marsh.
The large manmade pond supplements the smaller natural marshes to the right.

ND-762



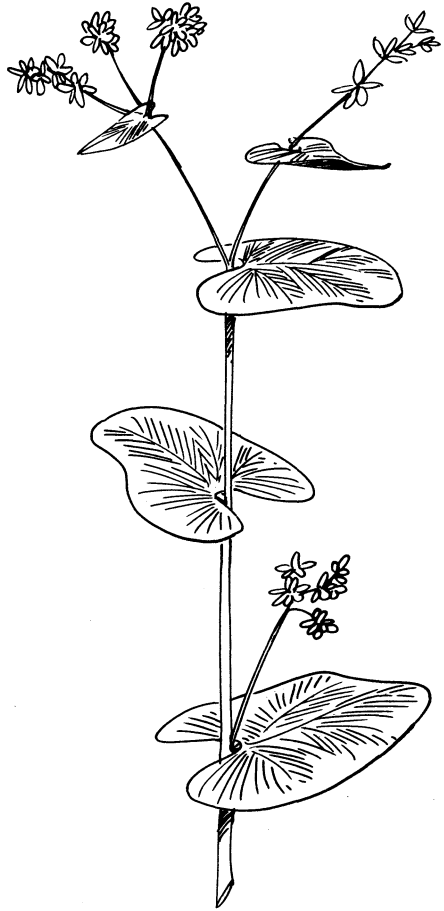
Barnyardgrass (*Echinochloa crusgalli*)

logs, piles of stones, bales of straw or hay, or floating rafts as well as islands.

You can make rafts of wood but be sure they are stable enough to prevent tipping when the ducks come aboard. Build a frame 4 feet square with 4 x 4's and cover the frame with 1-inch boards. Anchor the raft 20 to 30 feet from shore with No. 9 galvanized wire tied to a stone or other heavy object. Install three rafts for each acre of water.

Removing Carp from Ponds and Marshes

Scattered, emergent plants in water areas make attractive cover for brood rearing. If your pond or marsh has few or no plants, carp may be the cause. They muddy the water by their bottom-

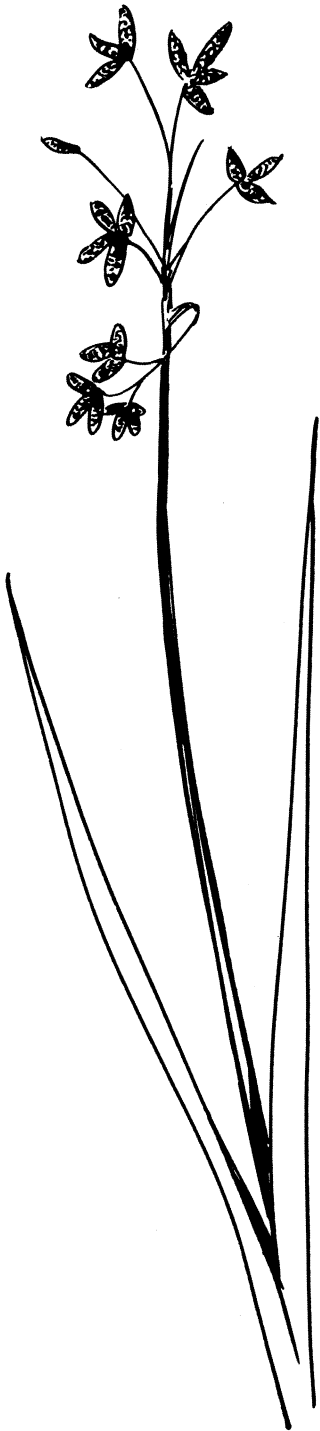


Buckwheat (*Fagopyrum sagittatum*)

feeding activities and either root out or cause some of the better food and cover plants to be shaded out. Efforts to manage a pond or marsh for ducks are likely to prove futile until the fish are removed. To do this, use a fish toxicant such as rotenone or drain the area and destroy the carp. You may need to install a carp barrier to prevent reentry. Before using fish toxicants, consult you game law enforcement officer for his official approval.

Hunting Suggestions

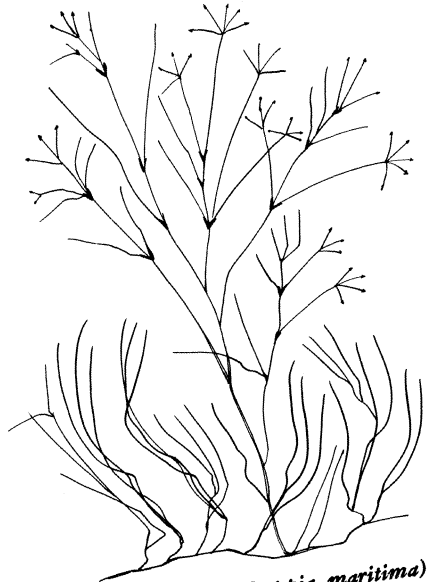
In the northern Plains where ducks breed and raise their young, it is easy to overhunt an area early in the season. This is commonly called a burnout. Ducks, particularly females, usually



Hardstem bulrush (*Scirpus acutus*)



Nodding smartweed (*Polygonum lapathifolium*)



Widgeongrass (*Ruppia maritima*)

return as long as they live to nest in the same vicinity where they were hatched. Therefore, it is possible by overhunting early in the season to destroy the breeding stock. Then it may take several years for pioneering ducks to repopulate the area. Early in the season, confine your hunting to either mornings or evenings and allow the ducks time to feed and rest unmolested.

The sale of duck-hunting leases may yield a profit on your investment if your water area is of high quality or is close to large towns or cities.

Selecting and Planting Duck Foods

Marsh plants will invade newly constructed marshes, but this may take 2 or 3 years. If you want earlier establishment, you can buy plants or get seeds or rootstocks from other marshes and plant them. In some States it is illegal to import certain aquatic plants or to move them from one location to another within the State. Check with your State conservation department. The following planting guide for duck-food plants includes some wild plants and cultivated annuals of importance.



Proso millet (*Panicum miliaceum*)

Planting guide for some important duck-food plants

WILD PLANTS:

- | | |
|---|---|
| barnyardgrass -----
(annual) | Grows best in acid to slightly brackish water. Plant 15 to 20 pounds of seed per acre in moist loam to sandy loam soil. May be planted in water in the spring if drawdown is planned. To do so, soak the seeds in water for 24 hours to make them sink. Complete water coverage destroys seedlings. Fall seeding may be done at low water stage. Cover the seeds lightly with soil. |
| naiad, northern -----
(perennial) | Grows best where the bottom soil is sandy. Plant in fresh-water ponds or marshes in areas where the water is 1 to 4 feet deep. Plant at the rate of 3 bushels of plants per acre. |
| pondweed, floatingleaf -----
(perennial) | Plant in neutral to acid water that is 2 to 5 feet deep; 3 feet is best. Bottom soil should be loam to loamy sand. Seeds can be planted between August 15 and November 1. Plant at the rate of 40 pounds per acre. Soak the seeds for 30 hours before planting and plant within 48 hours. Tubers may be harvested in the spring and planted between April 1 and July 1 at the rate of 1,200 per acre. Keep stalks and tubers wet until planted. Push tubers into soft bottom soil. Embed tubers in clay balls with sprout protruding when planting in deep water. |
| pondweed, sago -----
(perennial) | Grows best in neutral to alkaline or brackish water. All other conditions for planting are the same as for floatingleaf pondweed. |

- smartweed, marsh----- Likes neutral to alkaline conditions. Grows in moist
(perennial) loam soil with up to 6 inches of water until flowering. Plant seed at the rate of 20 pounds per acre between September 15 and July 1. Ground preparation without seeding often results in good stands. Plant stem sections between April 1 and July 1 at the rate of 3 to 5 bushels per acre.
- smartweed, water----- Grows best in acid to alkaline water. All other conditions for planting are the same as for marsh smartweed.
- smartweed, nodding----- Thrives in neutral to alkaline water. Plant seeds in moist loam soil that floods in spring and fall. Plant at the rate of 10 pounds of seed per acre between September 15 and July 1. Fall seeding assures best germination. Soak seeds for 72 hours before planting. Embed seeds in clay balls when planting in water.
- smartweed, Pennsylvania----- Thrives in neutral to brackish water. All other conditions for planting are the same as for nodding smartweed.

CULTIVATED ANNUALS:

- buckwheat ----- Use good cultural practices. Check local planting dates and plant 3 to 4 pecks per acre. Flood mature crop with 1 to 15 inches of water just before fall migration starts. If possible, hold water on the field until time to dry the soil and plant the next crop. Deteriorates rapidly under water or moist field conditions.
- corn ----- Follow same recommendations for planting and flooding as for buckwheat. Plant 7 to 12 pounds per acre.
- grain sorghum----- Follow same recommendations for planting and flooding as for buckwheat. Plant 5 to 15 pounds per acre. Deteriorates rapidly under water or moist field conditions.
- proso millet----- Follow same recommendations for planting and flooding as for buckwheat. Plant 30 to 40 pounds per acre.

Common and Scientific Names of Plants Mentioned

- barnyardgrass *Echinochloa crusgalli*
 buckwheat *Fagopyrum sagittatum*
 bulrush *Scirpus* spp.
 burreed *Sparanium* spp.
 cattail *Typha* spp.
 corn *Zea mays*
 millet, proso *Panicum miliaceum*
 naiad, northern *Najas flexilis*
 pondweed, floatingleaf *Potamogeton natans*
 pondweed, sago *Potamogeton pectinatus*
 smartweed, marsh *Polygonum coccineum*
 smartweed, nodding *Polygonum lapathifolium*
 smartweed, Pennsylvania *Polygonum pennsylvanicum*
 smartweed, water *Polygonum amphibium*
 sorghum, grain *Sorghum vulgare*
 widgeongrass *Ruppia maritima*