

Meeting Small Farm Needs with a Pond

Ponds can provide many benefits to small farms in New York if properly built and maintained. Many small farm operators struggle with the demands of production coupled with limited time due to off-farm employment. By prioritizing the maintenance aspects of ponds, and preventing problems before they start, small farm operators can maintain a safe, clean, and dependable supply of water for agriculture uses and recreation.

This fact sheet provides guidelines for agriculture uses of ponds on small farms; the recommendations apply to all sizes and types of agriculture operations.

Livestock and ponds

No matter the form of livestock, clean water and ample forage are equally important. Of these, water is the most economical portion of an animal's diet. Although some livestock can satisfy their water needs through leafy forages, rainwater, and dew, there are always animals that need access to clean water, especially lactating cows and does. If available water is insufficient, production always suffers. Mid to late summer are critical times to make sure livestock have access to clean water.

Pond water can serve the year-round water needs of livestock in New York. On many small farms, goats, cattle, and horses are allowed to roam free through ponds to obtain water – a practice that has damaging results on the pond and livestock health. Common problems include erosion, nutrient and algae build-up, pathogen contamination of the water supply, and occasional drownings. Large livestock can weaken a dike, especially if the dike is grazed.

Livestock should be fenced out of the water and off the

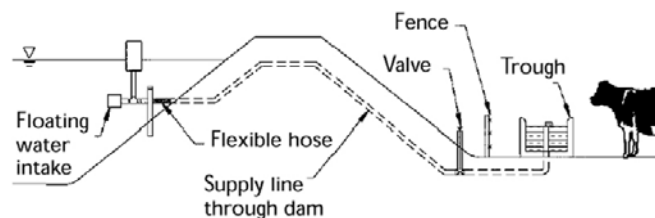


dike of a pond. If access to the pond is necessary, construct a watering ramp. This is a planned point of access away from the dike and pond outlet, with a stable, crushed stone surface and a fence line that restricts entry to a small portion of the pond bank. Even better, livestock can obtain pond water consistently from a gravity-flow pipe located downhill from the pond. A valve is used to fill a stationary water trough from which the livestock drink. The pond end of the pipe should be below the lowest water and ice line, outfitted with a strainer to prevent clogging. Around the trough, crushed stone prevents settling and erosion.

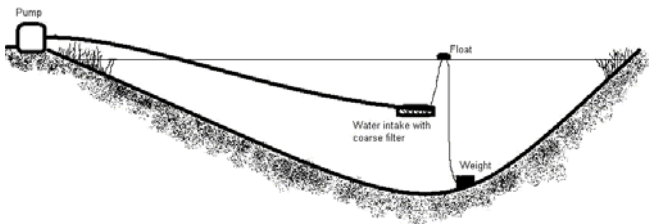
Irrigation

Farm ponds are now an important source of irrigation water, particularly for small farms with permanent crops like brambles, fruit trees, trellised fruits, and nurseries. Field crops and vegetables can also be irrigated with pond water during dry seasons. Irrigation is critical to meeting high yield goals and should be employed to meet the crop's peak water use rate.

Pond capacity must be adequate to meet crop requirements. Water requirements vary by crop, season, and weather conditions. Small farm operators should plan on applying water in the most critical stages of production to ensure high yield while retaining adequate supply in the pond. For many fruits and vegetables, bud stage and fruit enlargement are priority irrigation stages.



In assessing a pond's potential as a source of water for irrigation, determine the actual dimensions of the pond: length, width, and average depth. Multiply these numbers to determine the rough volume of the pond in cubic feet; to convert to gallons, multiply by 7.5. The pond should have a history of maintaining consistent water depth through the summer. Ponds whose levels fluctuate considerably will require an irrigation intake that can be adjusted to match water levels. The required storage capacity of a pond used for irrigation depends on water requirements of the crops to be irrigated, rainfall expected during the growing season, efficiency of the irrigation system, losses due to evaporation and seepage, and the expected inflow to the pond.



The second component of irrigation assessment is recharge. Ponds whose levels fluctuate considerably are typically sourced by runoff, rather than springs. Monitor the pond after heavy rainfall for sediments, cloudiness, and silt. These particles provide evidence of an unstable recharge process that may not be dependable over time. Runoff entering the pond should be free from road surface contaminants, manure, septic effluent, and floating debris. Nutrients entering the pond from runoff or groundwater can be detected with a water test or by excessive growth of algae and weeds.

Proper site selection for new irrigation source ponds is essential. Test pits will provide the most direct evidence of the water storage capacity of a particular site. Additional information can be derived from topographic maps, soil surveys, aerial photos, and on-site observations. These products and services are often available from local NRCS or Soil and Water Conservation District offices.

Pond water used for irrigation must be filtered to prevent clogging by suspended particles, plants, and chemical precipitates, particularly in trickle irrigation systems. An irrigation pond should be at least 10 feet deep to create a zone halfway between the surface and silty bottom to draw in water that is relatively contaminant free.

Herbicides used for aquatic weed control pose a hazard to plants being irrigated from the same source of water. Follow label restrictions on aquatic herbicides and consider using non-chemical methods for aquatic weed control in irrigation ponds.

Field and orchard spraying

Ponds can be used as a source of water to mix chemicals for crop protection. The amount of water needed for spraying is small, but it must be available when needed. If possible, develop a consistent method of conveying water from the pond to the spray tank. A series of check valves will prevent unintentional contamination of pond water while a tank is being filled. Pond water is not recommended as wash water for tanks because of runoff and bacterial contamination of the equipment and hoses.

Recreation

There are many non-agriculture uses of ponds, including swimming, boating, fishing, nature exploration, and aesthetics. The view of a well maintained pond can be pleasing for non-farm neighbors and your community. The recreational uses of a farm pond must be compatible with agriculture uses. Identify your goals for the pond before making decisions that will compromise other uses.

Some small farms gain supplemental income by providing fee access to ponds for recreational purposes. This is a sound practice, but has liability and maintenance obligations to consider. Generally, pond owners must eliminate and warn against hazards around a pond. This might include fencing off pond edges, supplying rescue devices, and establishing regular hours and rules of access. Ponds used for income should be dedicated solely to that purpose and thus are not available for agriculture uses.

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If you are interested in additional information about commercial farm pond management, please refer to the other fact sheets in this series:

- Farm Pond Maintenance Routines*
- Farm Pond Safety and Responsibility*
- Calculating Water Volume in Ponds*
- Farm Ponds and Fire Suppression*

You can access these and other pond management topics on-line at <http://pond.dnr.cornell.edu>