

ID-187

Woodland Winter Feeding of Cattle: Water Quality Best Management Practices

Steve Higgins and Sarah Wightman, Biosystems and Agricultural Engineering; Jeff Stringer, Forestry

Cattle maintain their body temperature in winter by burning more calories, which requires them to consume more feed. Livestock producers use wooded areas to provide protection for cattle from wind and low temperatures (Figure 1). That protection enables the cattle to conserve energy and eat less.

Using wooded areas for winter feeding makes practical sense, but producers need to consider several environmental issues when planning for it.

Problems with Open Forest Grazing

Woodland winter feeding should not be confused with open forest grazing, which generally is not a good practice. Open forest grazing doesn't provide adequate forage, and it harms forest ecosystems, damaging trees and vegetation, compacting soil, and ultimately degrading water quality.

Tree damage—Wintering cattle rub against trees and stomp roots. When cattle stand on tree roots, they compact them, which prevent the roots from adequately absorbing water and nutrients. Nearly all trees in cattle pastures have Heart Rot as a result. This disease hollows the inside of trees, severely damaging them and lowering their future value as a timber source. Cattle also eat saplings, effectively stopping the woodland regeneration process. Large, full-grown trees will still survive, but no new trees will grow and thrive.

Vegetation loss—Cattle eat ground-level vegetation and shrubs and remove the forest floor's litter layer, which is composed of leaves, moss, and organic soil. The loss of this vegetation and litter layer reduces the soil's capacity to absorb rainwater, which could lead to erosion and surface water pollution.



Figure 1. This woodland feeding area was installed to provide a shelterbelt, also known as a windbreak, for two adjacent pastures.

Soil compaction—Wintering cattle compact forest soils when walking and bedding in the woodland. Compacted soils hinder tree growth and can also contribute to erosion and surface water pollution by not allowing rainwater to be absorbed into the soil.

Reduced water quality—As a result of slowed woodland regeneration, vegetation loss, and soil compaction, runoff will not be filtered or absorbed sufficiently. Decreased absorption of rainwater produces an increase in surface runoff, which can cause erosion and the movement of pollutants, such as sediment and nutrients, to surface water bodies. Ultimately, the grazing of cattle in open forest leads to degraded water quality.

Recommended Best Management Practices

Although the U.S. Forest Service does not recommend feeding cattle in woodlands during winter months because of the forest degradation it causes, controlled woodland winter feeding

can be an acceptable practice if certain best management practices (BMPs) are implemented. This set of BMPs minimizes harm to local natural resources and provides a better environment for cattle.

Placement

First, understand that installing a woodland feeding area (WFA) will degrade the forest ecologically and for all future logging purposes, so do not choose an area with high-quality timber. Consult a forester with the Kentucky Division of Forestry to determine the optimal location for establishing a WFA. Generally, this location should be on the top of a saddle or ridge as far away as possible from water resources. It should also be near the edge of the woodlot to facilitate surface water diversion (Figure 2). Pay attention to the vegetation at potential WFA sites. Evergreen trees offer the best protection because of their foliage, but the trunks and limbs of deciduous trees can also provide protection from wind.

Also, do not choose a natural open area with rocky outcroppings for your WFA, as these areas often provide habitat for rare and endangered species.

Fencing

To avoid damage to the entire woodland, establish the feeding area in one location, fencing off the rest of the woods. Also, because the main purpose of a WFA is to provide supplemental feed to cattle, consider managing the area as an access to feed. In this system, cattle should not be confined in the WFA but should be allowed access to an adjacent pasture and water source. This reduces woodland damage and allows cattle to spread manure throughout the pasture, lessening the amount in the woodland feeding area.

Heavy-Use Areas

When you fence the WFA, establish hardened entrance points, lanes, and feeding areas. To prevent cattle and tractors from creating mud, reinforce these areas with NRCS-approved heavy use area pads. In spring, remove wasted hay and manure from the heavy-use areas and land apply using Code 590 of the NRCS standards. Inspect these pads yearly and topdress with new rock every five years or sooner if needed.

Controlling Surface Water Runoff

Do not divert runoff from the WFA into already-established woodland ditches; it will pollute the woodland's water resources. Instead, build diversion ditches to redirect clean runoff away from the WFA and towards fields and pastures. This will allow runoff to flow through a vegetated area, filtering out any contaminants. Diversion ditches can be constructed by moving dirt to form ditches and berms, or more simply, with logs or hay bales.

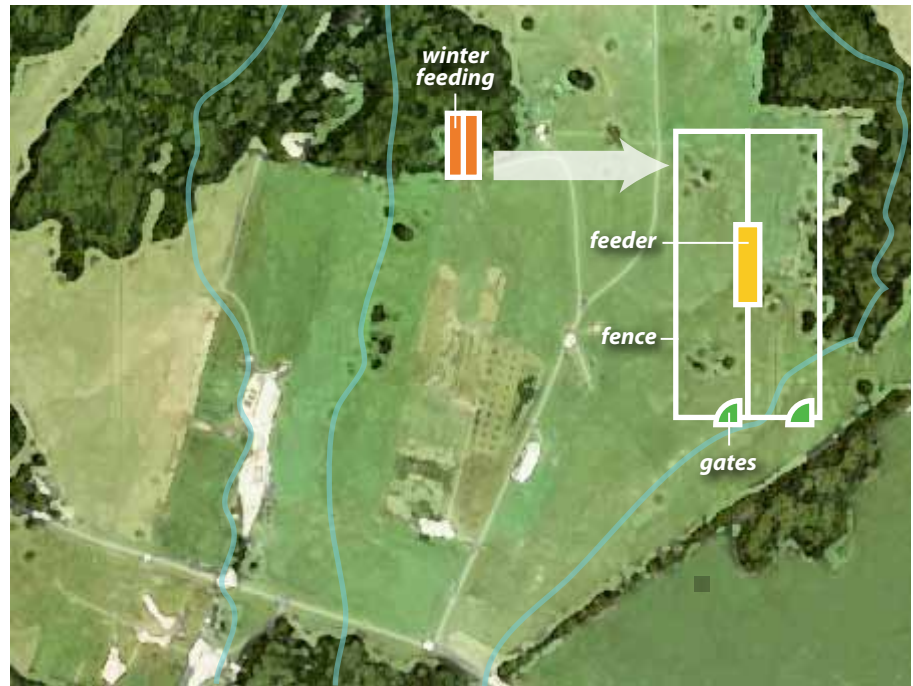


Figure 2. This woodland winter feeding area is near the edge of the woodland and is adjacent to two pastures that provide easy access.

Reseeding

In the spring, when cows return to pasture, reseed the WFA with a small-grain cover crop such as wheat, oats, or rye. These annual grasses grow easily and establish root systems quickly. The cover crop's roots grip the soil, preventing erosion; the crop competes with invasive species introduced in the hay bales; and it uses the nutrients left behind by the cattle manure. Reseed only with native species, never an invasive species, or you will introduce another problem into your woodland.

Conclusion

Providing shelter for cattle with a wooded area makes practical sense because it conserves feed; however, unlimited woodland access to cattle damages trees and other vegetation, compacts soil, and degrades water quality.

Controlled woodland feeding can be a productive and environmentally acceptable practice.

With the help of a local forester and this publication, a suitable location that minimizes environmental impact and maximizes production can be found and developed as a woodland feeding area.

References

Smith, Kathy. 2007 Woodlands Make Poor Pastures (Extension Service Reference F-15-07). The Ohio State University Extension.

This work was funded in part by a grant from the U.S. Environmental Protection Agency under §319(h) of the Clean Water Act through the Kentucky Division of Water to The University of Kentucky (Grant # C9994681-10).