

Alternative Management Tool (AMT)

Retiring Cropland: Land Conservation (Set Aside) Programs

Alternative Management Tools (AMTs) are specific agricultural practices and solutions, other than nitrogen fertilizer best management practices, to address groundwater nitrate problems. AMTs are described in the Groundwater Protection Rule and approved by the Commissioner of Agriculture.

Introduction

In areas with vulnerable groundwater and in highly vulnerable drinking water supply management area (DWSMAs), an effective strategy for reducing nitrate-nitrogen (nitrate) leaching is to adopt vegetative cover practices that extend the time with growing vegetation on the land. The MDA supports practices to increase continuous vegetative cover through use of perennial vegetation, cover crops, and diversified crop rotations.

The following vegetative cover practices, as implemented through the specified government program, meet the definition of AMT in the Groundwater Protection Rule (MR 1573.0010) and have well documented reductions for nitrate leaching. Specifically, they can reduce or eliminate nitrogen input needs and /or increase overall uptake of nitrogen making it less available for leaching. This reduces the inherent risk of nitrogen loss and protects groundwater quality.

Description of Government Programs for Vegetative Cover

Conservation 'Set aside' Programs are federal and state programs that convert cropland and other agricultural land to natural vegetation, wildlife habitat, or wetlands. Some common conservation programs in Minnesota are Conservation Reserve Program (CRP), Reinvest in Minnesota (RIM) and the Conservation Reserve Enhancement Program (CREP). The following programs are included as AMTs.

- **Conservation Reserve Program (CRP):** CRP is administered by the USDA Farm Service Agency (FSA) with technical support by NRCS. Farmers enrolled agree to remove environmentally sensitive land from agricultural production and plant perennial vegetative covers like grasses, prairie species, or trees. Contracts for land enrolled in CRP are for 10-15 years in length.
- **Conservation Reserve Enhancement Program (CREP):** A cooperative program between federal and state government that combines the federal CRP with state easement, the overall goals and objectives are the same as other federal and state set aside programs. Minnesota CREP encompasses four practices, one of which is wellhead protection (CP-2).
- **Reinvest in Minnesota (RIM) Reserve Program:** RIM is a state program managed at the local level by SWCDs. The Board of Water and Soil Resources administers these conservation easements for the state. RIM lands include restoration of wetlands, native grasslands and other practices on privately owned land.
- **There are several other minor** (i.e. limited acres) federal and state set aside programs which have established vegetative cover (Ex. Agricultural Conservation Easement Program (ACEP), Permanent Wetland Preserve (PWP), Water Bank Program (WBP), Wetland Reserve Program (WRP), Wellhead Protection Partnership Program (WPPP)).

Other programs may be added to this list by the MDA and can also be suggested by producers and other individuals.

AMT substitution for a BMP

Land conservation programs substitute for all nitrogen fertilizer best management practices (BMPs) statewide. See BMP/AMT matrix (www.mda.state.mn.us/nitrogenamts) for more information about how this AMT substitutes for nitrogen fertilizer BMPs.

Water Quality Benefits

CRP, CREP and RIM and other set aside programs are land conservation programs that replace agricultural production with perennial vegetative cover. This is done for environmental benefits like reduced soil erosion, improved water quality, and increased wildlife habitat. Guidelines for these programs includes perennial species that require little to no commercial nitrogen fertilizer and program rules limit or prohibit disturbance/alteration of enrolled acres (for exempling tilling, fertilizer, manure applications, cutting, etc.). Lower nitrogen inputs combined with permanent vegetative cover reduce the amount of leachable soil nitrate and the inherent risk of nitrate leaching loss.

In Minnesota and across the upper Midwest, many studies have shown that perennials can reduce nitrate leaching compared with annual crops. Randall et al. (1997) measured nitrate concentrations in subsurface drainage water over a six-year period from row crops, alfalfa fields, and CRP lands and found that total nitrate loss over six years was substantially lower in drainage water under alfalfa (6 lb/acre) and CRP (4 lb/acre) than from a corn-corn (195 lb/acre) or corn- soybean (181 lb/ac) rotation. The flow weighted average nitrate-nitrogen concentrations were corn-corn = 32, corn-soybean = 24, soybean-corn = 26, alfalfa = 3 and CRP = 2 mg/L (Randall et al., 1997). Smith et al. (2013) showed that perennial crops significantly reduced nitrate leaching as well as concentrations and loads from the tile systems following conversion from row crop agricultural production. Similarly, another study showed that nitrate leaching increases when CRP is converted to annual crop production and the beneficial effects of perennials on subsurface drainage characteristics were largely negated after 1 to 2 years of corn production (Higgins et al., 2002).

Requirements to Qualify for the Retiring Cropland AMT

All land currently enrolled in approved Federal or State conservation programs is considered an approved AMT by the Minnesota Department of Agriculture.

If land remains in perennial vegetation after enrollment in a land conservation program expires, it will be considered under the perennial cover AMT. Please visit www.mda.state.mn.us/nitrogenamts to view all AMT documents.

Technical Resources

Producers interested in enrolling in CRP and CREP should contact the FSA office at their local USDA Service Center at: <https://www.farmers.gov/service-center-locator> . Producers interested in state-level programs can contact their local Soil and Water Conservation District (SWCD) Office or visit the Board of Soil and Water Resources (BWSR) at: <http://bwsr.state.mn.us/what-programs-are-available>.

Technical standards are determined by the USDA Natural Resources Conservation Service (NRCS) and available in the NRCS Field Office Technical Guide (FOTG) for MN: <https://efotg.sc.egov.usda.gov/#/state/MN>. USDA and/or SWCD staff will already have determined that technical standard(s) were met at time of enrollment.

Recordkeeping

Confirmation of enrollment in the conservation program is acceptable by the Minnesota Department of Agriculture. Confirmation must include the location and size of the enrolled cropland.

References

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