

# 2005 NUTRIENT MANAGEMENT STANDARD 590 SUMMARY

Updated December 2009

The 590 nutrient management standard contains criteria for surface and groundwater protection that manages the amount and timing of all nutrient sources. These plans are annual and based on soil tests and UW soil fertility recommendations. These plans must credit nitrogen from legumes for the first and second year [A.1.h.], N, P, and K from manure and fertilizer – against the soil test recommendations for the crops to be grown. [A.1.] Available nitrogen from all sources shall not exceed the annual N requirement of non-legume crops consistent with UWEX Publication A2809, or the annual N uptake by legume crops. [A.f.] Annual P and K nutrient recommendations may be combined into a single application that does not exceed the total nutrient recommendation for the rotation except when manure is applied using either the Phosphorus Index, or soil test phosphorus management. [A.d.]

Phrases shown in [brackets] are the location of the requirement in the 590 standard.

## What are some of the nutrient application restrictions or setbacks in the 590 standard?

- ▶ Manures, organic byproducts, and fertilizers **shall not run off** the field during application. [A. 1. k.]
- ▶ **Nutrients shall not be spread on:**
  - ▶ Surface water, established concentrated flow channels or non-harvested vegetative buffers, a non-farmed wetland, sinkhole, nonmetallic mine, or well. [A. 2. a.(1).(2.)]
  - ▶ Areas within 50 feet of a drinking water well shall not receive mechanical applications of manure. [A. 2. a.(3.)]
  - ▶ Areas contributing runoff within 200 feet up slope of direct conduits to groundwater such as a well, sinkhole, fractured bedrock at the surface, tile inlet or nonmetallic mine unless the nutrients are effectively incorporated within 72 hours. [A. 2. a.(4.)]
  - ▶ Land where vegetation is not removed unless necessary in an emergency situation. [A. 2. a.(5.)]
  - ▶ Fields eroding more than tolerable soil loss (T) levels over the crop rotation. [A. 2. a.(6.)]
- ▶ **When frozen or snow-covered soils prevent effective incorporation at the time of application** and the nutrient application is not prohibited, implement the following:
  - ▶ Do not apply nutrients within the 1,000 feet of lakes and ponds or 300 feet of perennial streams (SWQMA) unless manure is deposited through winter gleaning of plant residue. Where winter gleaning occurs, calculate manure nutrients applied and do not exceed the N and P requirements of this standard. [A. 2. b.(1.)]
  - ▶ Do not apply nutrients to locally identified areas delineated in an operator signed and land conservation committee approved conservation plan. These areas contribute runoff to surface water or direct conduits to groundwater as a result of runoff. [A. 2. b.(2.)] [Locally identified areas with winter spreading restrictions must be part of an ordinance to protect public health and safety if used for the Livestock Facility Siting Application under ATCP 51, Wis. Admin. Code.]
  - ▶ Do not exceed the P removal of the following growing season's crop when applying manure. Limit liquid manure applications to 7000 gallons per acre. The balance of the crop nutrient requirement may be applied the following spring or summer. [A. 2. b.(3.)]
  - ▶ Do not apply manure on slopes greater than 9%, unless 9% to 12% slopes are contour farmed. [A. 2. b.(4.)]
  - ▶ Do not apply N and P in the form of commercial fertilizer except for grass pastures and on winter grains that do not fall within prohibition areas. [A. 2. b.(5.)]
- ▶ **Nutrient applications on non-frozen soils in a SWQMA**, use one or more of the following appropriate practices: **1)** Install or maintain permanent vegetative buffers. **2)** Maintain 30% crop residue or vegetative cover on the soil surface. **3)** Incorporate nutrients within 72 hours leaving adequate residue to meet T. **4)** Establish fall cover crops promptly following application. [A. 3. b.(1).(2).(3).(4.)]

In addition to the practices above, unincorporated liquid manure (less than 12% solids) applications on non-frozen soils in a SWQMA will use Table 1 to determine maximum acceptable rates. Sequential applications may be made to meet the desired nutrient additions consistent with this standard. Soils shall be evaluated using Table 1 or waiting a minimum of 7 days prior to subsequent applications. [A. 3. a.]

**Table 1.**

<b>Max. Unincorporated Liquid Manure Application Rate within a SWQMA on Unsaturated soils</b>		<b>Allowable Soil Moisture Description for Applications</b>
<b>Percent crop residue or vegetative cover on surface after manure application</b>	<b>&lt; 30%*      ≥ 30%*</b>	
<b>Fine soil texture</b> <i>clay, silty clay, silty clay loam, clay loam</i>	3,000      5,000	<i>Easily ribbons out between fingers, has a slick feel.</i>
<b>Medium soil texture</b> <i>sandy clay, sandy clay loam, loam, silt loam, silt</i>	5,000      7,500	<i>Forms a ball, is very pliable, slicks readily with clay.</i>
<b>Coarse soil texture</b> <i>loamy sand, sandy loam, sand, peat, muck</i>	7,000      10,000	<i>Forms a weak ball, breaks easily.</i>

More applications may be made to meet the nutrient need as soil conditions become suitable.

- ▶ **To reduce N losses to groundwater**, restricts the majority of crop N applications to the spring on high permeability soils (sands, etc.), soils with less than 20 inches to bedrock, or soils with less than 12 inches to apparent water table or within 1000' of a municipal well, apply criteria in section B., if applicable. [B.]
- ▶ **To reduce P losses to surface water develop a P management strategy.** Where manure, organic byproducts, or fertilizers are applied, avoid building soil test P values when possible beyond the non-responsive soil test range. [C.1.a.] Establish perennial vegetative cover in all areas of concentrated flow resulting in reoccurring gullies. [C.1.b.] Use either the Phosphorus Index, or soil test phosphorus management strategies when manure or organic by-products are applied during the crop rotation. [C.2.]

Using the **Wisconsin phosphorus index (PI) strategy**, the planned average PI values for up to an 8 year rotation in each field shall be 6 or lower. P applications to fields with planned average PI value greater than 6 may be made only if additional P is needed according to UWEX soil fertility recommendations. [C.2.a.]

Using **soil test phosphorus management strategies**, fields testing from 50-100 ppm soil test P with a P application, shall not exceed total crop P removal for crops to be grown over a maximum of 8 years. Greater than 100 ppm soil test P, eliminate P applications if possible. Or limit applications to 25% less than the cumulative annual crop removal over a maximum of 8 years. For land with potatoes in the rotation, total P applications shall not exceed crop removal over a maximum of 8 years if soil tests are in the optimum, high, or excessively high range for potatoes. Operations using this strategy shall have a certified conservation plan addressing all soil erosion consistent with the current crops and management or use the erosion assessment tools included in the Phosphorus Index model. Where ephemeral erosion is an identified problem, a minimum of one of the following runoff-reducing practices shall be implemented: **1)** Install/maintain contour strips and/or contour buffer strips. **2)** Install/maintain Filter Strips along surface waters and concentrated flow channels that empty into surface waters that are within or adjoin the areas where manure will be applied. **3)** Maintain greater than 30% crop residue or vegetative cover on the soil surface after planting. **4)** Establish fall cover crops. [C.2.b.]

### Finding Snap Plus

From this web address <http://www.snapplus.net/> you can download the 590 standard and technical note, SNAP Plus, and the user manual. If you have questions, please call us.

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