

# FILTER STRIP

(Acres)  
Code 393

Natural Resources Conservation Service  
Conservation Practice Standard

## I. Definition

A strip or area of herbaceous vegetation that removes contaminants from overland flow.

## II. Purpose

This practice may be applied as part of a conservation management system to support one or more of the following purposes:

1. Reduce suspended solids and associated contaminants in runoff – Resource concerns (WATER QUALITY DEGRADATION – Excess nutrients in surface and ground waters, pesticides transported to surface and ground waters, excess pathogens and chemicals from manure, bio-solids or compost applications, and excessive sediment in surface waters).
2. Reduce *dissolved contaminant* loading in runoff – Resource concerns (WATER QUALITY DEGRADATION – Excess nutrients in surface and ground waters, pesticides transported to surface and ground waters, and excess pathogens and chemicals from manure, bio-solids or compost applications).

Installation of a properly designed filter strip will reduce water quality degradation resource concerns caused by delivery of excessive nutrients, sediment, pesticides and/or pathogens from manure, bio-solids or compost applications transported by runoff to surface waters, and/or by leaching to ground water resources.

## III. Conditions Where Practice Applies

- A. Filter strips are established where *Environmentally Sensitive Areas (ESA)* need protection from sediment and other suspended solids and dissolved contaminants in surface water runoff from

cropland, pastures, and perennially cropped areas such as orchards and tree nurseries.

- B. This practice **DOES NOT** apply under the following conditions:

1. The treatment of conditions where high levels of pollutants can be anticipated from areas such as: a) animal feed lots, b) feed storage areas, c) milking center waste areas, d) manure stacking areas, e) *direct runoff from manure land application*, f) construction sites, g) urban storm water runoff and h) timber harvest locations.
2. Where soil loss is above *Tolerable “T”* rates within the contributing watershed.
3. Where the predominant source of runoff is *concentrated flow*.
4. Where the creation, restoration, or enhancement of wildlife habitat or movement corridors is the primary purpose.

## IV. Federal, Tribal, State and Local Laws

Users of this standard are responsible for compliance with applicable federal, tribal, state and local laws, rules or regulations. This standard does not contain the text of federal, tribal, state or local laws. Implementation of this standard may not eliminate the discharge of pollutants to the area protected.

## V. Criteria

### A. General Criteria Applicable To All Purposes

NOTE: Detailed filter strip planning and design criteria are located in Wisconsin NRCS Agronomy Technical Note 10, “Design, Planning, Management and Maintenance of Vegetative Filter Strips” (WI NRCS TN-10).

1. Resource Assessment - A resource assessment shall be conducted utilizing the current tools listed in the Wisconsin NRCS Field Office Technical Guide Section III: "Guidelines for Resource Management System Quality Criteria and Human Considerations" or other NRCS recognized assessment tools and methods to identify when potential resource problems exist.

- a. Suspended Solids in Runoff:

- 1) Sediment volume - *Revised Universal Soil Loss Equation (RUSLE2)*.
- 2) Risk of transport of agricultural chemicals attached to sediment - *Windows Pesticide Screening Tool (WIN-PST)*.

- b. Dissolved Contaminants in Runoff:

- 1) Risk of transport of dissolved nutrients in runoff – *Snap Plus Nutrient Management Tool*.
- 2) Risk of transport of agricultural chemicals dissolved in runoff – *Windows Pesticide Screening Tool (WIN-PST)*.

2. Filter Strip Siting

- a. The filter strip shall be located downslope from the contaminant source. The drainage area above, but not necessarily immediately adjacent to the filter strip shall have a slope of 1 percent or greater.
- b. The filter strip may be sited in locations that are not contiguous / immediately adjacent to the ESA.

Noncontiguous filter strips shall be located within 700 feet or less of the ESA needing protection.

For filter strips noncontiguous to the ESA, the following assessment guidance shall be implemented:

- 1) No further assessment is required if:
  - a) The planned noncontiguous filter strip is located within 300 feet of the ESA, and
  - b) The ESA is contiguous to an additional existing vegetative buffer that meets the minimum filter strip widths for the identified resource concern.
- 2) The following additional filter strip design assessment is required when; an existing buffer is not immediately contiguous to the ESA, or the noncontiguous filter strip is located greater than 300 feet and less than 700 feet from the ESA:
  - a) The soil loss and sediment delivery for the area between the lower edge of the planned noncontiguous filter strip and the ESA shall be computed using RUSLE2. The resulting sediment delivery to the ESA shall be equivalent or less than the calculated delivery to the low end of the upslope filter strip.
  - b) The dissolved contaminant delivery for the area between the lower edge of the planned noncontiguous filter strip and ESA shall be computed using the appropriate models cited in Wisconsin NRCS Field Office Technical Guide Section III: "Guidelines for Resource Management System Quality Criteria

and Human Considerations.”

3. The maximum *row gradient* along the leading edge of the filter strip shall not exceed 5 percent.
4. *Overland flow* entering the filter strip shall be uniform *sheet flow*. An assessment of the contributing watershed shall document that an estimated 60 percent or more of the drainage area enters the filter strip as sheet flow. Concentrated flow shall be dispersed before runoff enters the filter strip as necessary to meet this design criteria.
5. A site assessment shall be conducted to select plant species adaptable to the buffer setting and to maximize interception of runoff constituents identified as causing the resource concern(s). The site investigation shall include an evaluation of:
  - Soil characteristics
  - Soil fertility
  - Slope
  - *Aspect*
  - Moisture regime
  - *Flooding frequency*
  - Proximity to natural plant communities
  - Identification and treatment of concentrated flow areas
  - Herbicide application history
  - Site history

Utilize the site investigation results to identify any physical, chemical, or biological condition that could affect the successful establishment or long term survival of the filter strip vegetation.

#### **B. Criteria to Reduce Suspended Solids and Associated Contaminates in Runoff**

1. Use the design procedure in WI NRCS TN-10 to determine the minimum flow length through the filter strip, which shall be no less than 20 feet.
2. The filter strip shall be designed to have a 10-year life span determined using the

procedure outlined in WI NRCS TN-10. The design procedure estimates sediment delivery as a result of the average annual rotational soil loss using RUSLE2.

#### **C. Criteria to Reduce Dissolved Contaminates in Runoff**

1. Use the design procedure in WI NRCS TN-10 to determine the minimum flow length through the filter strip, which shall be no less than 70 feet.
2. The filter strip will be designed to have a 10-year life span determined using the procedure outlined in WI NRCS TN-10 by estimating sediment delivery as a result of the average annual rotational soil loss using RUSLE2.
3. When removal of dissolved contaminants is identified as a primary design consideration, at least 50 percent of the vegetation shall be deep-rooted. Most native grasses are deep rooted. Refer to Wisconsin NRCS Agronomy Technical Note 6, “Establishing and Maintaining Introduced Grasses and Legumes” (Wisconsin NRCS TN-6), Table III, “Plant Morphology and Physiology Characteristics,” for introduced species identified as deep-rooted.
4. When pesticides in solution runoff have been identified as a resource concern, use WIN-PST to evaluate the water solubility characteristics of pesticides applied in the contributing drainage area. A hazard rating of intermediate, high and very high is an indication of conditions that may have negative impacts on water quality. Refer to WI NRCS TN-10 for guidance when using WIN-PST to evaluate, mitigate and minimize pesticide movement in surface runoff and leaching to groundwater.
5. Use the “Identify Resource Concerns” assessment procedure in WI NRCS TN-10 for assessing crop management activities that may increase the probability for dissolved contaminants in surface water runoff.

#### D. Additional Criteria to Design and Establish Vegetative Cover

1. Vegetation Species Selection and Seed Quality
  - a. Species identified as *noxious* or *invasive* by law shall not be planted.
  - b. Species selected for planting shall be compatible to current site conditions, intended use, and be resistant to diseases and insects common to the site location.
  - c. The filter strip shall be established to perennial herbaceous vegetation and species selected shall be:
    - 1) Able to withstand partial burial from sediment deposition,
    - 2) Tolerant of herbicides used within the drainage area that contributes runoff to the filter strips, and
    - 3) Primarily sod forming species with stiff stems and a high stem density near the ground surface.
  - d. *Tested Seed* shall be used. The seed tag or laboratory test results shall be retained and provided to the individual certifying the practice as complete.
  - e. *Actual adjusted seeding rates* will be used to establish the seeding. Calculations used to determine the actual adjusted seeding rate shall be submitted to the individual certifying the practice as complete.
  - f. *Untested* introduced and native grass and forb seed are not approved for planting.
  - g. When tested seed is unavailable or difficult to locate, *non-tested seed* can be used, after testing for pure seed and germination. Actual seeding rates shall be adjusted using the test result information as described in V.D.1.e., above. Lab test results shall be saved and provided to the individual certifying the practice as complete.
  - h. When more than 20 percent legume seed is hard seed, increase the seeding rate for legumes by the percentage of hard seed.
  - i. Introduced and native legume seed shall be inoculated immediately prior to planting. Rhizobia inoculant shall be specific to the legume seeded. When more than one legume specie is used, each species will be inoculated separately.
  - j. Criteria for seed mixture development.
    - 1) Wisconsin NRCS Practice Standard 342, "Critical Area Planting" shall be used when one or more conditions exist:
      - a) The filter strip footprint is located in the floodplain and flooding occurs frequently - determined using the NRCS soil survey map unit interpretations,
      - b) The average up gradient land slopes within 300 feet of the upper edge of the filter strip exceeds 6 percent,
      - c) The design objective is to maximize filter strip performance.
    - 2) Wisconsin NRCS Practice Standard 327, "Conservation Cover" may be used in other settings where high seeding density is not required including areas where the client prefers to establish native plant species.

## 2. Nutrient and Soil Amendment Requirements

When seeding *introduced species*, soil fertility and pH level shall be amended to satisfy the needs of the plant species to be established. Fertilizer and lime recommendations will be determined by a soil test, and all nutrients will be applied following Wisconsin NRCS Practice Standard 590, "Nutrient Management." If no soil test is available, apply a minimum of 150 pounds of 20-10-10 fertilizer and 2 tons of 80-89 lime or equivalent per acre. The required application of soil amendments may be waived with approval by a Wisconsin NRCS certified conservation planner. The basis for waiving the use of soil amendments shall be documented in the client's case file.

For establishment of *native species*, use of soil amendments is not required.

## 3. Seedbed Preparation

- a. Prior to planting into cropland fields, verify that herbicides previously applied to the site will not "carry over" and damage the new seeding.
- b. Site preparation shall be adequate to suppress weed competition and to promote uniform germination and growth of the species planted.
- c. Planting equipment type, use, and timing shall be appropriate for site conditions, soil conditions, physical characteristics of the seeds (size, etc.) and selected to assure uniform seed placement and germination.
- d. For detailed information on seedbed preparation, refer to Wisconsin NRCS Agronomy Technical Note 5, "Establishing and Maintaining Native Grasses, Forbs and Legumes" (WI NRCS TN-5); and Wisconsin NRCS Agronomy Technical Note 6, "Establishing and Maintaining

Introduced Grasses and Legumes" (WI NRCS TN-6).

## 4. Seeding Periods

- a. The specific date that provides the best chance for success will vary from south to north and from year to year with prevailing moisture and temperature conditions. Late summer seeding is generally riskier than spring seeding. Planting at either end of the allowable range is riskier than the middle of the range. Refer to Figure 1 for planting zones and Tables 1 and 2 for seeding dates.
- b. Seeding outside of the recommended dates must be approved by the NRCS Area Resource Conservationist or State Agronomist.
- c. Dormant and *frost seeding* are approved seeding methods for filter strip vegetation establishment using Wisconsin NRCS Practice Standard 327, "Conservation Cover" when site conditions meet the criteria in section (V.A.6.).

## 5. Mulching, Temporary Cover and Companion Crops

- a. Mulching, temporary cover, and companion crops are vital practices utilized to support the establishment of permanent vegetation. These practices may suppress weed growth and limit soil erosion during the establishment period. Use will vary according to site conditions, method of planting, and seed mixture.
- b. For further details on temporary cover and companion crop recommendations, refer to WI NRCS TN-5 and WI NRCS TN-6.

## VI. Considerations

Additional design recommendations which may enhance this practice, but are not required to ensure its basic conservation function are as follows:

### A. General Considerations

1. Consider marking filter strip boundaries with permanent highly visible markers to prevent encroachment.
2. Consider locations of vehicle and/or livestock crossings to minimize disturbance of the filter strip. Refer to Wisconsin NRCS Practice Standard 560, "Access Road" for planning and design criteria.
3. Increase the filter strip width beyond the minimum requirement to increase trapping potential and capture contaminants in runoff before entering sensitive features on the landscape.
4. Consider increasing filter strip width to increase the potential for carbon sequestration.
5. Organic producers may be required to submit plans and specifications to their certifying agent for approval prior to installation, as part of the producer's Organic System Plan.
6. Consider using this practice to protect National Register listed or eligible (significant) archaeological sites and culturally significant sites from potential damaging contaminants.

### B. Additional Considerations for Reducing Suspended Solids and Associated Contaminates in Runoff

1. Filter strips should be strategically located within the upper reaches of the watershed, to reduce runoff and increase infiltration and ground water recharge throughout the watershed.
2. To reduce phosphorus loading to the filter strip, utilize the Snap Plus Nutrient Management Tool to assess, monitor, and lower the Phosphorus Index, when applicable.

3. To maximize nutrient removal and minimize nutrient discharge, harvest the biomass in the filter strip.
4. To minimize the movement of specific contaminants identified during the planning process, consider implementing the management practices listed in WI NRCS TN-10.

### C. Additional Considerations for Reducing Dissolved Contaminants in Runoff

1. To minimize leaching and shallow subsurface flow of dissolved contaminants, harvest the biomass in the filter strip.
2. To reduce phosphorus loading to the filter strip, utilize the Snap Plus Nutrient Management Tool to assess, monitor, and lower the Phosphorus Index, when applicable.

### D. Additional Considerations for Creating, Restoring or Enhancing Herbaceous Habitat for Wildlife and Beneficial Insects and Pollinators

1. Increase the filter strip width beyond minimum required to increase food and cover available for use by wildlife and pollinators.
2. Where site appropriate, use native grass species that fulfill the purposes of the practice while also providing habitat for priority wildlife.
3. Include herbaceous plant species such as native forbs in the filter strip seeding mix that are beneficial to wildlife and pollinators and compatible with one of the listed purposes. Changes to the seeding mix should not detract from the purpose for which the filter strip was established. See Wisconsin NRCS Biology Technical Note 8, "Pollinator Biology and Habitat" (WI NRCS TN-8) for more information.
4. Consider enlarging the filter strip beyond the minimum size to provide

- connectivity with adjoining wildlife habitat and other non-cultivated areas.
5. Consider using this practice to enhance the conservation of declining species of wildlife, including those that are classified as threatened or endangered. Refer to Wisconsin NRCS Practice Standard 645, "Upland Wildlife Habitat Management."
  6. Management activities, such as mowing, burning, or light disking, on the filter strip should be completed outside of primary nesting, fawning, and calving seasons. Activities should be timed to allow for regrowth before the growing seasons ends. This management activity should not occur more often than every other year with frequency dependent on geographical location to maintain the purposes of the practice.

## VII. Plans and Specifications

Plans for the filter strip shall be prepared for each field, where the filter strip will be installed. The plan includes information about the location, construction sequence, vegetation establishment, operation and maintenance requirements. The plan shall include the following information:

1. Site assessment documentation shall include: the identified resource concern (s), Environmentally Sensitive Area to be protected, the average watershed slope draining to the filter strip, an assessment documenting that 60 percent or more of the contributing area is entering the filter strip as sheet flow.
2. Report printouts from resource assessment tools used; Snap Plus, RUSLE2, Windows Pesticide Screening Tool, etc.
3. Documentation of soil loss calculations within the contributing area to the filter strip, the amount of sediment trapped in the filter strip and the amount of sediment leaving the field edge.
4. Minimum filter strip design width to accomplish the planned purpose and maintenance activities.

5. Site preparation requirements.
6. Fertilizer application requirements, if applicable (form, rate, and timing).
7. Documentation of Wisconsin NRCS Vegetative practice standard used to design the seeding mixture.
8. Seed mixture design documenting the selection of vegetative plant species to be established.
9. Seeding method to be used.
10. Documentation of seed quality verified by submission of seed tags or copies of seed test results.
11. Adjusted actual seeding rate. A copy of the actual adjusted seeding rate calculations shall be provided.
12. Temporary cover establishment plan, if applicable.
13. Companion crop establishment plan, if applicable.
14. Identification and treatment of concentrated flow areas, where applicable.
15. Operation and maintenance plan.

Plans shall be recorded using Wisconsin NRCS Job Sheet 393, "How to Design, Establish and Maintain Vegetative Filter Strips" or equivalent level of documentation.

## VIII. Operation and Maintenance

1. Introduced grasses: Mowing shall be done as needed to reduce the competition from woody vegetation and maintain vigorous sod. Introduced plants shall not be mowed shorter than 4 inches and no later than September 15<sup>th</sup> to allow time for adequate regrowth in the fall.
2. Native grasses: Mowing shall be done as needed to reduce the competition from woody vegetation, generally no more than once every three years.

- Native plants shall not be mowed shorter than 7 inches and no later than September 1<sup>st</sup> to allow time for adequate regrowth in the fall.
3. After mowing, the cut vegetation shall be removed if thick enough to impede regrowth.
  4. Removal of cut vegetation is recommended to encourage dense growth, maintain an upright growth habit, and remove nutrients contained in the plant tissue.
  5. If prescribed burning is used to manage and maintain the filter strip, an NRCS approved burn plan must be developed.
  6. If grazing is used to harvest vegetation from the filter strip, the grazing plan must insure that the integrity and function of the filter strip is not adversely affected.
  7. When supplemental nutrients are required to maintain the desired species composition and stand density of the filter strip, refer to Wisconsin Practice Standard 590, "Nutrient Management" and section (V.D.2.) of this standard.
  8. Maintenance measures must be adequate to control the establishment and spread of noxious weeds and other invasive species.
  9. Avoid damage to filter strip vegetation from herbicide application to nearby fields.
  10. Inspect the filter strip after storm events and repair any gullies that have formed, remove unevenly deposited sediment accumulation that will disrupt sheet flow, reseed disturbed or bare areas, and take other measures necessary to prevent concentrated flow conditions through the filter strip.
  11. No-till inter-seeding may be done to improve or maintain stand density and vegetative diversity. Refer to WI NRCS TN-5 and WI NRCS TN-6 for guidance.
  12. To maintain or restore the filter strip's function, periodically re-grade the filter strip area when sediment deposition at the filter strip field interface jeopardizes its function. Re-grading and re-establishment of the filter strip vegetation shall be approved and implemented under the direction of a qualified conservation professional.
  13. Vehicular traffic shall be excluded from the filter strip except as necessary for establishment and maintenance activities. Non-routine crossing of the filter strip by equipment and livestock to reach adjacent areas is acceptable.
  14. Increase the width of the filter strip as necessary to accommodate harvest and maintenance equipment.

## IX. References

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<http://www.ams.usda.gov/AMSV1.0/nop>

USDA-AMS National Organic Program Regulations, 7 CFR Part 205.  
<http://www.ams.usda.gov/AMSV1.0/nop>

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USDA, NRCS Wisconsin Agronomy Technical Note 5, Establishing and Maintaining Native Grasses, Forbs and Legumes.

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## X. Definitions

*Actual Adjusted Seeding Rates (V.D.I.e.)* – An increase in seeds per square foot or pounds per acre, when the Pure Live Seed (PLS) is less than 100 percent. Pure Live Seed is calculated using the following process: Step 1) multiply the % Pure Seed by the % Total Viable Seed (germination + hard seed + dormant seed) listed on the seed tag or seed test

laboratory data. Step 2) divide the planned seeding rate from the seeding design by the Pure Live Seed calculated in step 1 to determine the actual adjusted seeding rate.

*Aspect (V.A.5.)* – The exposure of the site to direct sunlight, prevailing winds, and other factors that influence plant growing conditions. For example, a north slope tends to be cooler and moister while a south-facing slope tends to be drier and warmer.

*Concentrated flow (III.B.3.)* – Where runoff water collects and flows in defined depressional water courses that begin where overland flow converge to channelized flow conditions.

Conservation planning assessments shall document the location of concentrated flow areas and grassed waterways, regardless of the drainage area that discharge agricultural runoff directly to or within 300 feet of the ecological sensitive areas identified in WI NRCS TN-10.

*Direct runoff from manure land application (III.B.1.e.)* - The movement of undiluted liquid manure land applied using tankers, drag hoses or irrigation technology from the application site into areas not intended to receive manure or nutrients.

*Dissolved Contaminant (II.2.)* - For the purpose of implementing this standard, dissolved contaminants are defined as substances carried in solution form within surface runoff. Examples include; phosphorous and nitrogen from natural sources, derivatives of organic/synthetic fertilizer, pesticides, petroleum products, etc. that may negatively impact surface or groundwater quality.

*Environmentally-Sensitive Areas (III.A.)* - A area which needs special protection due to its landscape position, environmental, ecological, or historical value.

For the purpose of implementing this standard, environmentally sensitive areas are primarily sites susceptible to contamination from agricultural runoff including surface water, ground water, wetlands and critical habitat areas.

*Flooding frequency (V.A.5.)* - The probability of the temporary inundation of the soil surface caused by rapid runoff from heavy rainfall events and/or periods of rapid snow melt. The occurrence of flooding is determined based on the soil mapping unit interpretations located in the NRCS Web Soil Survey

(<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>). Refer to WI NRCS TN-10 for more information.

*Frost seeding (V.D.4.c.)* – Broadcast seeding in February to mid-March during the active freezing and thaw cycle onto existing herbaceous stands or onto seedbeds prepared the previous fall.

*Introduced Species (V.D.2.)* – Plant species that historically would not have been found in North America until they were brought here by travelers from other parts of the world. This would include smooth brome grass and alfalfa. Some of these species may have a wide distribution such as Kentucky bluegrass.

*Invasive species (V.D.1.a.)* – Non-native species that have the ability to spread rapidly and overwhelm other plants, causing economic and environmental harm, or harm to human and animal health.

*Native Species (V.D.2.)* – Plants that have been identified as historically present in North America, such as big bluestem or green needle-grass.

*Non-tested Seed (V.D.1.g.)* – Seed that is grown, processed, tested and labeled for species integrity and mechanical quality factors, but is not certified by an official seed certifying agency.

*Noxious weed (V.D.1.a.)* – An aquatic or terrestrial herbaceous or woody plant that is legally designated as being invasive and persistent, and is injurious to human values, such as public health, the environment, livestock, growing crops, natural areas or other lands.

*Overland Flow (V.A.4.)* – See *Sheet flow*

*Revised Universal Soil Loss Equation (RUSLE2) (V.A.1.a.1.)* – The official USDA-NRCS conservation planning software model used to predict long-term, average-annual soil erosion by water.

*Row Gradient (V.A.3.)* – The orientation of ridges and furrows (the areas between ridges) with respect to the land slope, which is perpendicular to the contour lines of equal elevation.

*Sheet flow (overland flow) (V.A.4.)* – Sheet flow is flow over plane surfaces, where runoff water flows in a thin uniform sheet across the land before it collects in a concentrated flow channel. After a maximum of 300 feet, sheet flow usually becomes shallow concentrated flow.

*Snap Plus Nutrient Management Tool (Snap Plus) (V.A.1.b.1.)* – A nutrient management planning software program, designed to help farmers make the best use of their on-farm nutrients, as well as make informed and justified commercial fertilizer purchases, serve as an evaluation tool for farmers and environmentalist to analyze data and adjusting management when necessary to protect soil and water resources.

[http://www.nrcs.usda.gov/wps/portal/nrcs/detail/wi/technical/cp/?cid=nrcs142p2\\_020801](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/wi/technical/cp/?cid=nrcs142p2_020801)

*Tolerable Soil Loss “T” (III. B.2.)* –The average annual erosion rate that can occur with little or no long-term degradation of the soil resource on a field specific to the soil map unit. Soil loss tolerance values are assigned to each soil map unit.

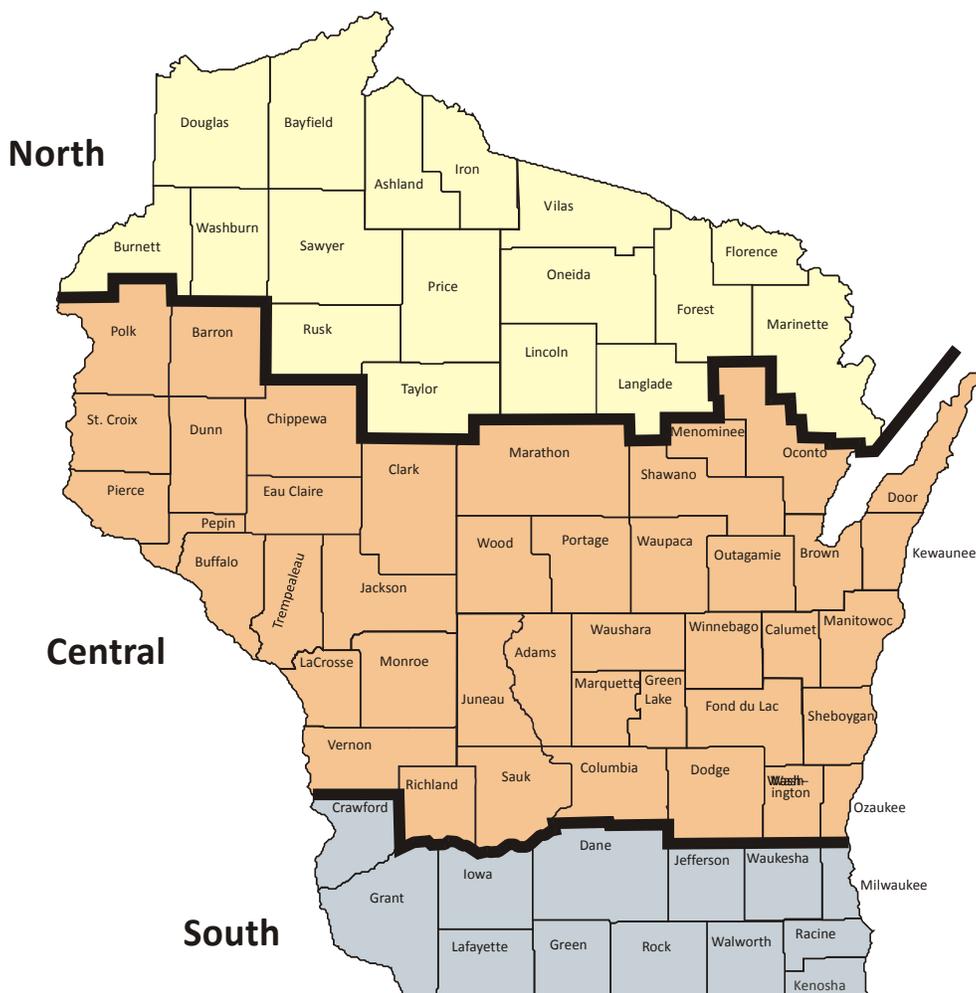
*Tested Seed (V.D.1.d.)* – All seed shall have an analysis test conducted by an accredited seed testing lab to determine; pure seed (purity percent, weed seed percent), other crop seed percent, inert material and germination (germination percent, hard seed percent, and dormant seed percent). The testing procedures shall comply with the protocols established by the applicable state seed certification agency (Wisconsin Crop Production Association or equivalent for seed sourced from other states).

*Untested (V.D.1.f.)* – Seed that has no documented tests for pure seed and germination. Untested seed legally cannot be labeled.

*Windows Pesticide Screen Tool (V.A.1.a.2.)* - An environmental risk screening tool for pesticides. NRCS field office conservationists, extension agents, crop consultants, pesticide dealers and producers can use it to evaluate the potential of pesticides to move with water and eroded soil/organic matter and affect non-targeted organisms.

<http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/landuse/crops/npm/?cid=stelprdb1044769>

**Figure 1 - Planting Zones of Wisconsin**



**Table 1 - Seeding Date/Ranges for Native Mixtures and Companion Crops**

Zone	Spring Seeding	Fall Dormant Seeding
North	Thaw - 7/15	10/8 - Freeze Up
Central	Thaw - 6/30	10/15 - Freeze Up
South	Thaw - 6/30	10/20 - Freeze Up

**Table 2 - Seeding Date/Ranges for Introduced Grasses and Legumes and Companion Crops**

Zone	Spring	Late Summer	Dormant
North	5/1 - 6/15	7/15 - 8/10	11/1 - Freeze up
Central	4/15 - 6/1	8/1 - 8/21	11/1 - Freeze up
South	4/1 - 5/15	8/7 - 8/29	11/1 - Freeze up