Healthy Land – Healthy Water

Plant Nutrient Regulations in Massachusetts

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MDAR
MASSACHUSETTS DEPARTMENT OF AGRICULTURAL RESOURCES

Healthy Land – Healthy Water

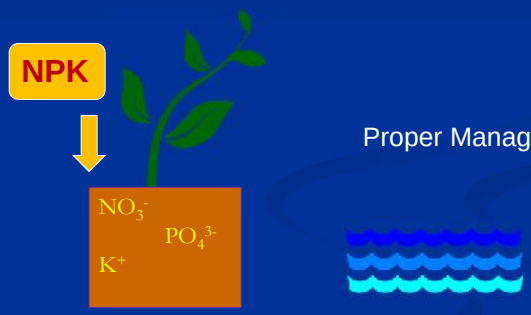
Poor Land Management – Water Quality Issues

Plant Nutrients

- Non-Mineral Nutrients are:
  - Hydrogen (H), oxygen (O), & carbon (C) (obtained through air/water)
- Macro elements:
  - Primary nutrients are nitrogen (N), phosphorus (P), and potassium (K).
  - Secondary nutrients are calcium (Ca), magnesium (Mg), and sulfur (S).
- Micronutrients are:
  - Boron (B), copper (Cu), iron (Fe), chloride (Cl), manganese (Mn), molybdenum (Mo) and zinc (Zn).

Application of Plant Nutrients

- Maintain Landscapes
- Achieve Crop Production Goals



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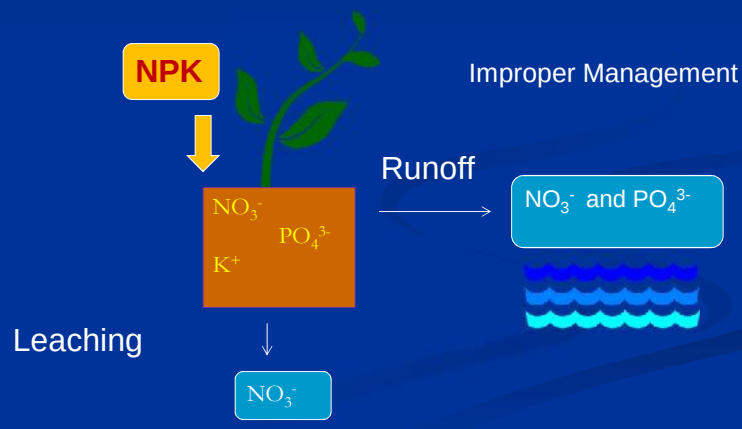
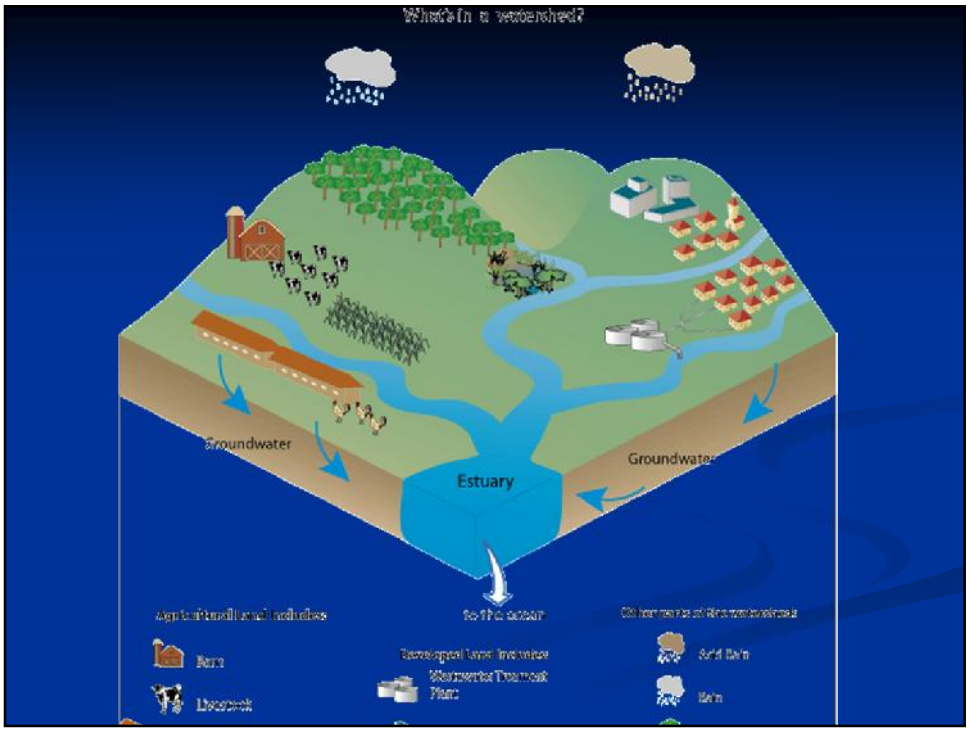
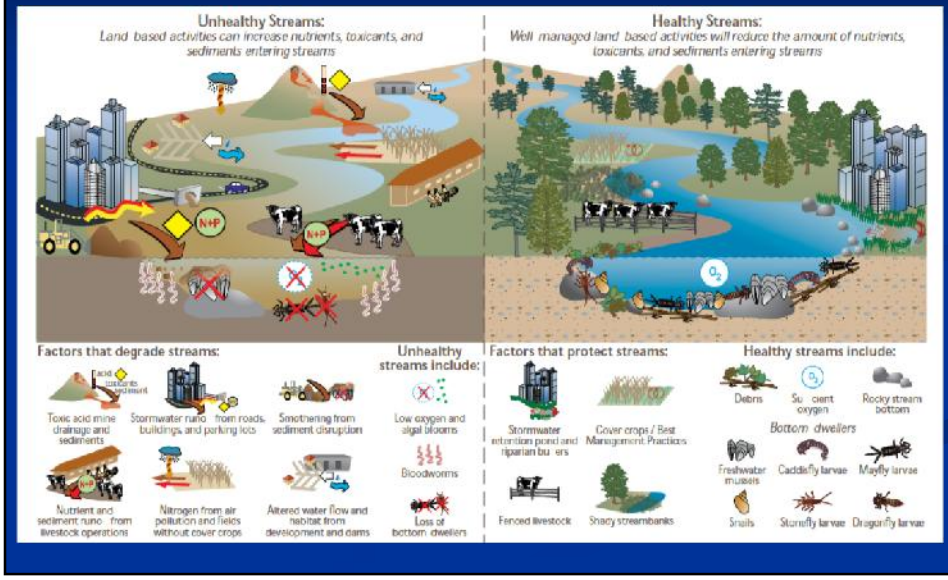
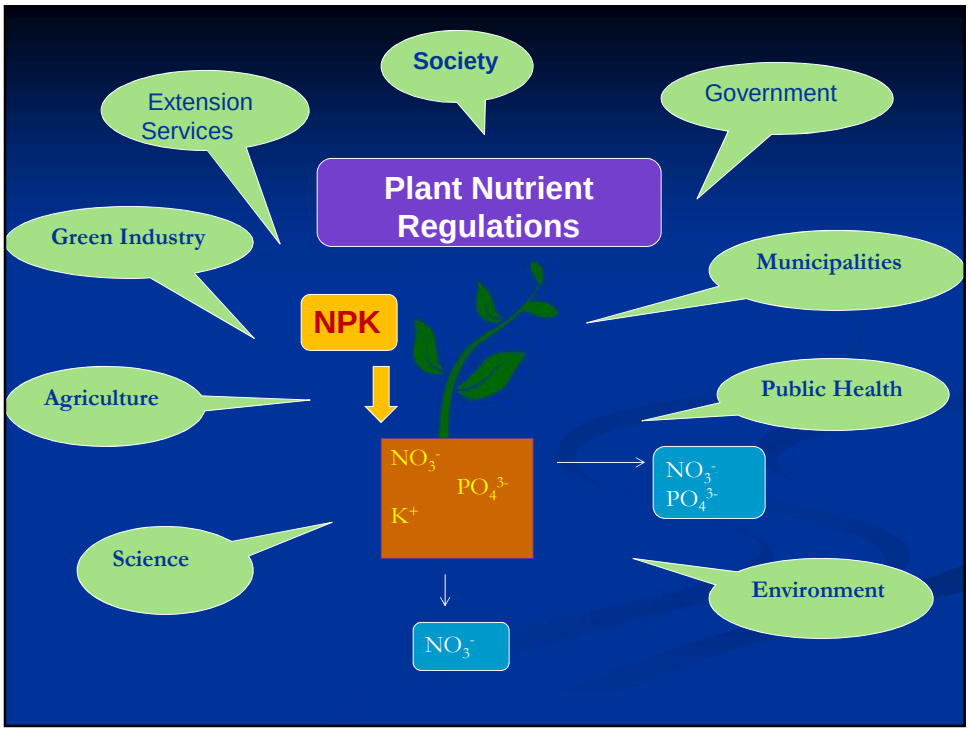




Land use and Development Impacts to Water Quality





Background

- Act on Regulation of Plant Nutrients (2012)

- Result of two efforts:
  - Address fertilizer runoff from lawns and turf, and limiting the use of phosphorus-containing fertilizer
  - Address the regulation of plant nutrient applications on agricultural land (state-wide regulations)

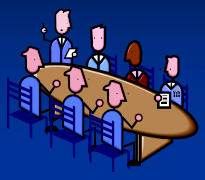
- The Act authorizes MDAR to develop, implement and enforce the regulations

Directions from the Act

- Specify WHEN plant nutrients may be applied and LOCATIONS in which plant nutrients shall not be applied
- Develop regulations regarding the use of plant nutrients designed to mitigate significant risks to human health and environment
- Work in conjunction with UMass Extension to ensure consistency with educational and outreach programs

The Center for Agriculture, Food and the Environment

Directions from the Act



- Consult with MassDEP
- Regulations enhance the ability of municipalities to maximize the credits relative to storm water discharge or similar permits issued by the EPA.

Development of Regulations

- 2013: Draft regulations were developed
  - Act required implementation by January, 2014
- 2014: Spring: Public hearing/comment
  - Received comments/feedback from stakeholders
- 2014, Summer/Fall:
  - Consulted with MassDEP, UMass and EPA
  - Finalized Regulations
- 2015: Promulgation and Implementation

Promulgation of Regulations

Spring 2015:

- Executive order for review of all regulations
- Nutrient Regulations scheduled to be promulgated

- June 5, 2015: Regulations were promulgated and became effective for turf
- December 5, 2015: effective date for those sections applying to Agricultural Land

Implementation of Regulations

- MDAR's goal:
  - Provide education and outreach to help plant nutrient applicators understand the requirements
  - Identify problematic issues and seek the best solutions to them
- Summer/Fall 2015:
  - Development of an implementation plan
  - Focus on outreach and education
  - Meetings and workshops with stakeholders

Purpose of the Regulations

- Ensure that plant nutrients are applied in an effective manner to provide sufficient nutrients for maintaining healthy agricultural land and turf & lawn.
- Minimize impacts of plant nutrients on surface and ground water resources to protect human health and the environment.

Note on Regulatory Review and Amendments

- As a result of the Executive Order for Regulatory Review, the current version of the regulations is in the process of being amended.
- The requirements described here reflect the version that was published on June 5, 2015
  - Potential changes will be pointed out in this presentation

Some Definitions

- Organic Compost - the biologically stable humus-like material derived from composting or the aerobic, thermophilic decomposition of organic matter.
- Phosphorus Containing Fertilizer - fertilizer labeled for use on lawn or non-agricultural turf in which the available phosphate content is greater than 0.67% by weight, excluding Organic Compost and Natural Organic Fertilizer.

Some Definitions

To Be Amended or Removed

- Plant Nutrient - a substance that contains one or more of the Primary Nutrients of nitrogen, phosphorus, or potassium, {or any recognized Plant Nutrient}, including but not limited to: animal manures, fertilizer, organic compost, natural organic fertilizer, agricultural byproducts, digestate, biosolids or combinations thereof;

  and

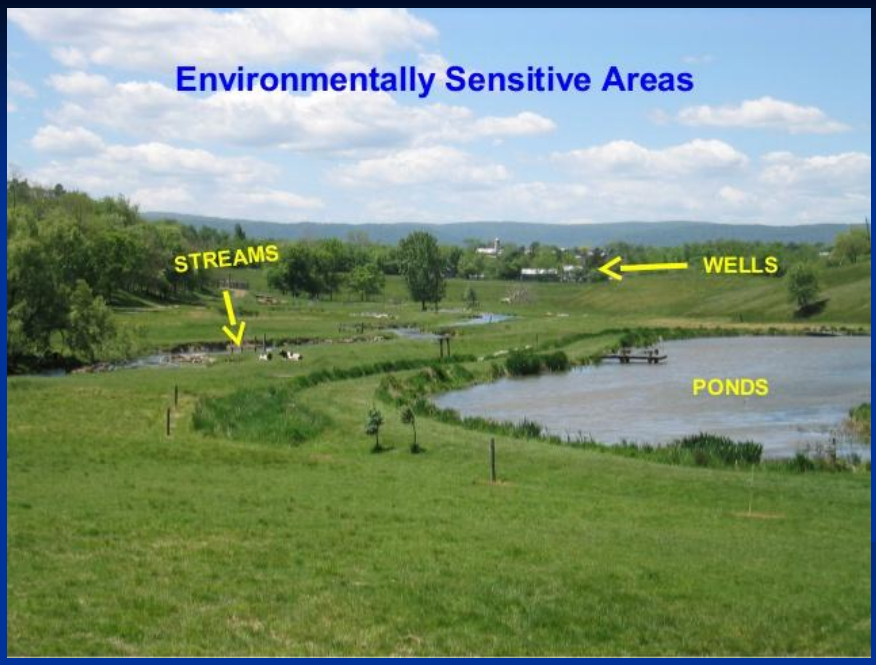
  which is intended to be used as a source of nutrients for agricultural land and non-agricultural turf, and lawns.

What do the Regulations Require?

- Many requirements are based on UMass Guidelines for Nutrient Management Practices

UMass Extension Nutrient Management

- General requirements include:
  - Follow UMass guidelines for nutrient management
  - Not to apply plant nutrients to surface water
  - Not to apply to saturated soils or soils that are frequently flooded
  - Not to apply to frozen or snow-covered soils
  - Application setbacks from sensitive areas
  - Seasonal application restrictions



Setbacks from Sensitive Areas

- No application of plant nutrients within:
  - 100 feet from surface waters used for public water supplies,
  - in a Zone I area of a public water supply well,
  - 50 feet from surface water (25 feet if a vegetated buffer is present),
  - 10 feet from surface waters for applications by directed spray or injection, and
  - on pastures and hayfields within 10 feet from surface waters.
- Setbacks shall not apply to crop growing systems that operationally require proximity to surface water (definition updated)

Seasonal Application Restrictions for Manure and Ag Byproducts

- { Fall (September 15 – December 15): applications to fields with an adequate vegetation cover (greater than 30%) unless: }
  - the application is made by to pasture or hayfield
  - the application is of compost, or
  - the application is of agricultural process water to a growing crop.

To Be Amended or Removed

- Proposed amendments include restrictions based on conditions, not dates.
  - Conditions focus on restrictions to frozen and snow-covered soils (definitions provided/modified)

Seasonal Application Restrictions for Manure and Ag Byproducts

To Be Amended or Removed

- { Winter (December 16 – March 1): }
- Proposed revision: Applications to Frozen/Snow-covered soils…..

Applications may be made only if:

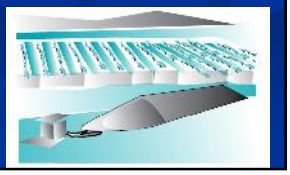
- Inadequate storage and available storage capacity limit has been reached (proposed: exceedance is anticipated)
- Manure/byproduct is non-stackable
- There is no other reasonable option to manage it; and
- Applications are made according to additional restrictions specified in the regulations.

Seasonal Application Restrictions for Manure and Ag Byproducts

- Winter restrictions do not apply to:
  - Livestock manure deposited directly by animals
  - Small livestock operations (criteria are specified in the regulations)

Field Stacking of Ag Byproducts

- Temporary stacking of stackable ag byproducts as part of a land application plan is permissible
  - Stacked material shall be applied in first growing season following the placement of the stack
  - Stacks shall be constructed following UMass guidelines or criteria specified in the regulations



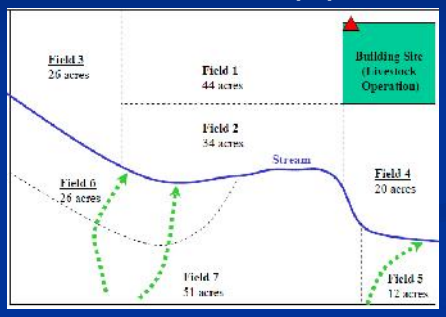
Nutrient Management Plan Requirements

- NMP is required for operations involving applications to agricultultural land
- UMass guidelines for specific types of agricultural operations can be followed
  - Commodity-specific guidelines and templates are being developed
- Regulations specify general requirements for a basic nutrient management plan
- Can be developed by farmer/grower or nutrient management professional

Elements of a basic NMP

- Maps, identifiers, and crop plan for fields

Farm Map Example



- Inventory of on-farm agricultural byproducts and assessment of available plant nutrients from these sources, if applicable

Elements of a basic NMP

Field based assessments:

N P K

- Nutrient budget for planned crop based on:
  - Planned crop and yield goal
  - Soil test or Plant Tissue test information
  - Crop needs for primary nutrients N,P and K based on recommended application rates (Tables, Manuals)
  - Nutrient credits from manure, previous crops, or cover crops, if applicable
  - Evaluation of limiting factors, such as excessive soil phosphorus levels

NMP elements

Field Based Assessments:

- Planned applications for fertilizers, manure and other plant nutrient materials (such as compost and biosolids)
- Records of actual applications, including rates, dates, estimated crop yield, application methods
- Annual review, evaluation, and update

Soil, Manure and Plant Tissue Testing

- Soil tests are valid for three years
- Testing of manure, compost and byproducts is recommended, but use of book values for nutrient content is allowed
- Plant tissue testing as recommended in UMass Guidelines
- Testing shall be done according to methods and procedures recommended in UMass Guidelines

Regulations for Turf & Lawns

Note: The regulations do NOT cover plant nutrient applications to vegetable gardens, trees, and ornamentals!

- Specific restrictions for Phosphorus-containing fertilizer: may only be applied when:
  - a soil test indicates that it is needed; or
  - when a lawn is being established, patched or renovated.

Regulations for Turf & Lawns

- No Applications of plant nutrients shall be made:
  - { between December 1 and March 1 }
  - to frozen and/or snow covered soil;
  - to saturated soil, or soils that are frequently flooded;
  - to sidewalks or other impervious surfaces; remove any applied material from these areas
  - Setbacks from surface water and drinking water supplies

Regulations for Turf and Lawns

- Requirements for organic plant nutrient materials:
  - Account for P and N applied with organic sources
  - Proposed: Exempt from this requirement is a single annual application of organic material (up to 0.25 lbs of Phosphate per 1000 square feet)
- Applies also to applications by homeowners
- Record keeping requirements for professionals

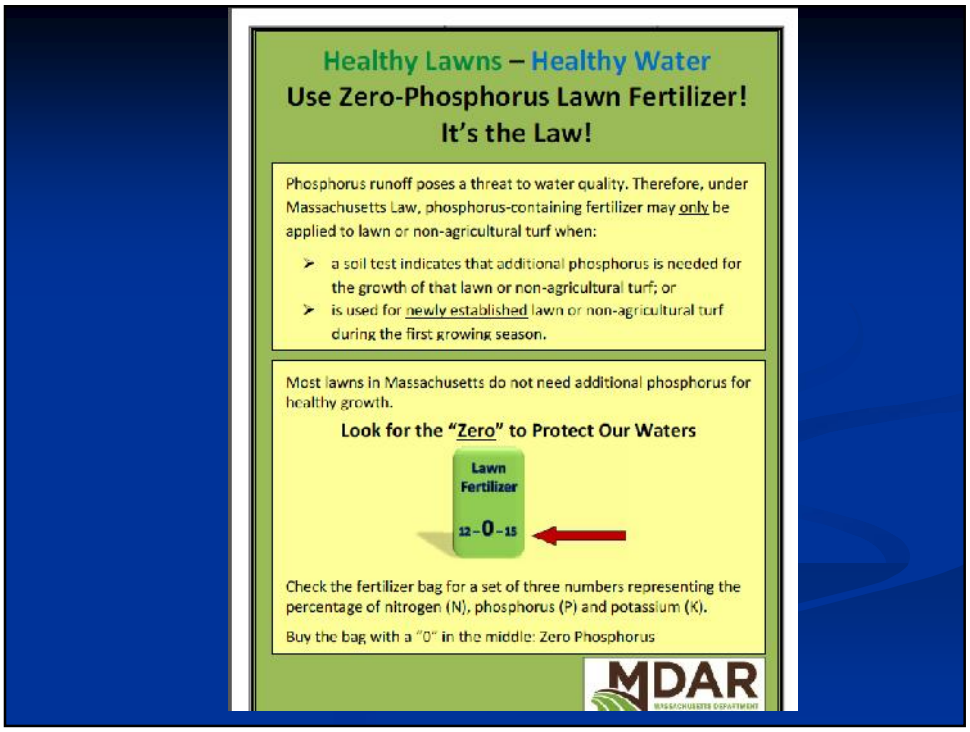
Healthy Turf – Healthy Water

Test your Soil

Apply Plant Nutrients based on test results

Retailer Requirements

- Retailers of phosphorus-containing lawn fertilizers:
  - Segregate phosphorus-containing fertilizer from phosphorus-free fertilizer lawn fertilizers
  - Post sign to inform the consumer about phosphorus-containing fertilizer restrictions (see next slide)



Compost

- Subject to Plant Nutrient Regulations
- Considered a Plant Nutrient
- Nutrients (NPK) applied with compost should be accounted for with nutrient budgets
  - Agricultural Land
  - Turf & Lawns
- Regulations reflect consistency with UMass Guidelines

Some Issues

Compost:

- New law to divert food waste from landfills
- More compost will be generated
- More land needed for application of compost

Biosolids:

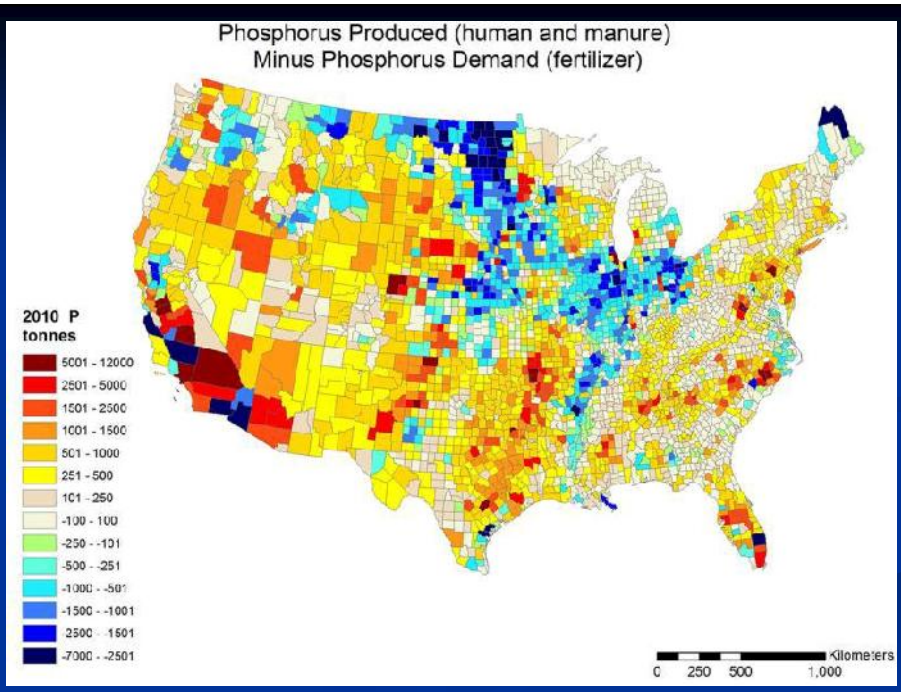
- Biosolid: byproduct from waste water treatment
- MA-biosolid producer are looking to increase market and use of biosolids

Some Issues

The Phosphorus Paradox: Scarcity and Overabundance of a Key Nutrient [1)]

- First, scarcity of P as a key limiting resource; mining of geological deposits
- Second, overabundance of P entering aquatic systems from agricultural production and food consumption; inefficient use of P sources and inefficient recycling of P
- Video: The Phosphorus Paradox - YouTube

[1)] See also: Jarvie et al., 2015. Accessed at: https://dl.sciencesocieties.org/publications/jeq/articles/44/4/1049



Ideas for Projects

- Efforts in community on education and outreach
- Local governments, conservation commissions
- Local garden centers (fertilizer retail; soil testing; outreach to homeowners)
- Local turf & lawn managers: nutrient management; efforts to protect water resources
- National Resources and Conservation Services: (NRCS) efforts in your area
- Agricultural operation(s) in your area: nutrient management planning

Ideas for Projects

- Local Lakes & Ponds Associations: nutrients and water quality
- Compost and biosolid producers/users
- P – Paradox: local efforts to recycle food waste, use of compost
- Local efforts to reduce impacts from stormwater runoff (e.g., rain gardens
- Soil testing: how much use of this service in your area

Ideas for Projects

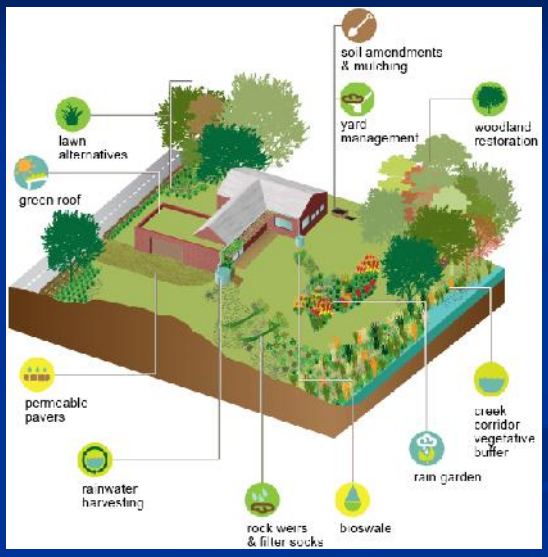
Related other topics presented today:

- Water movement in soils
- Soils & Water
- UMass Soil and Plant Nutrient Testing Lab
- Cover crops
- Farm Tour

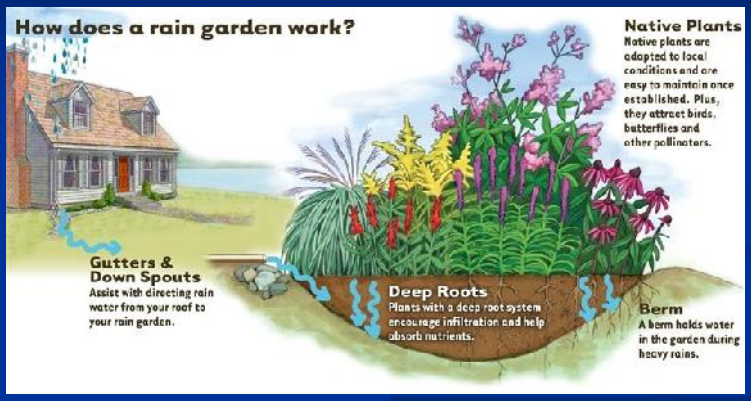
Information on Plant Nutrient Regulations

- MDAR website: www.mass.gov/eea/agencies/agr
- Under “For Your Information”, click on “Plant Nutrient Management”
- Information includes:
  - Statute and Regulations
  - Factsheets
  - Resources, including UMass Extension resources
  - Updates

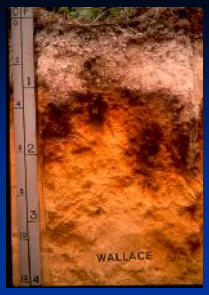
Examples of Management Options:



Rain Garden



- https://www.epa.gov/soakuptherain/soak-rain-rain-gardens#ma



1. Soil

Compost

3. Organic Fertilizer

2. Inorganic Fertilizer

Manure

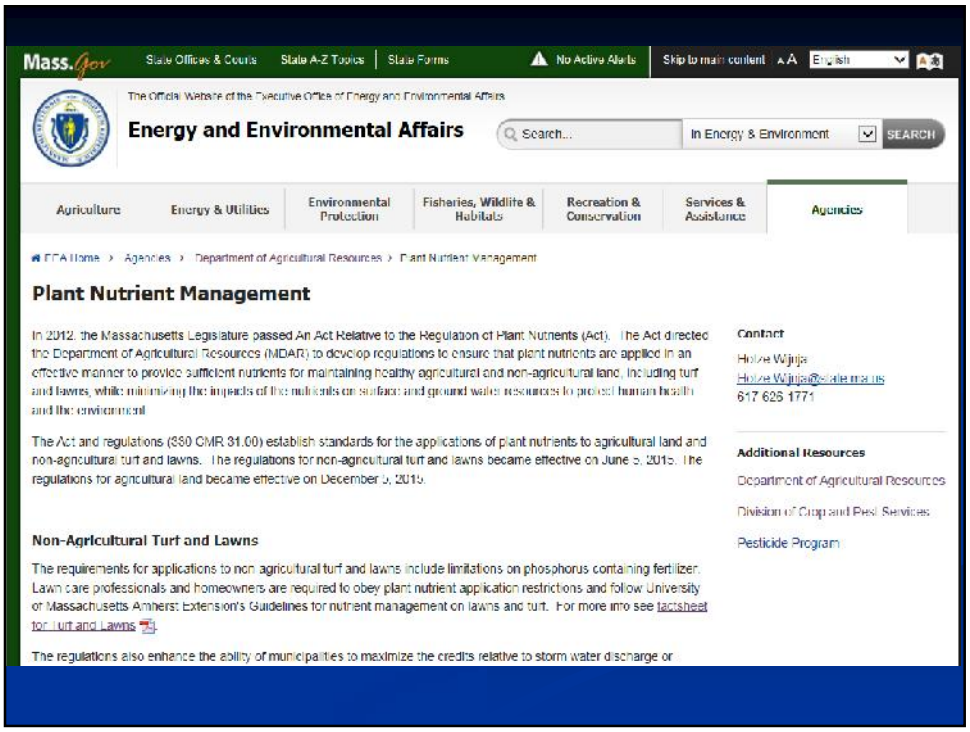
Biosolids

Process of Regulatory Review and Amendments

- A draft with proposed amendments was submitted to the Secretary's Office (April, 2016)
- Public comment period and public hearing was in October, 2016
- Amended regulations to be promulgated

Interactions with Stakeholders

- Meetings with various stakeholder groups
- Provide updates of regulatory requirements
- Work with Partners, including UMass, to implement the regulations
- Focus will be on Outreach & Education


Mass.gov
State Offices & Courts
State A-Z Topics
State Forms
No Active Alerts
Skip to main content
English
The Official Website of the Executive Office of Energy and Environmental Affairs
Energy and Environmental Affairs
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Recreation & Conservation
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Agencies
EEA Home › Agencies › Department of Agricultural Resources › Plant Nutrient Management
Plant Nutrient Management
In 2012, the Massachusetts Legislature passed An Act Relative to the Regulation of Plant Nutrients (Act). The Act directed the Department of Agricultural Resources (MDAR) to develop regulations to ensure that plant nutrients are applied in an effective manner to provide sufficient nutrients for maintaining healthy agricultural and non-agricultural land, including turf and lawns, while minimizing the impacts of the nutrients on surface and ground water resources to protect human health and the environment.
The Act and regulations (330 CMR 31.00) establish standards for the applications of plant nutrients to agricultural land and non-agricultural turf and lawns. The regulations for non-agricultural turf and lawns became effective on June 5, 2015. The regulations for agricultural land became effective on December 5, 2015.
Non-Agricultural Turf and Lawns
The requirements for applications to non-agricultural turf and lawns include limitations on phosphorus containing fertilizer. Lawn care professionals and homeowners are required to obey plant nutrient application restrictions and follow University of Massachusetts Amherst Extension's Guidelines for nutrient management on lawns and turf. For more info see factsheet for Turf and Lawns.
The regulations also enhance the ability of municipalities to maximize the credits relative to storm water discharge or
Contact
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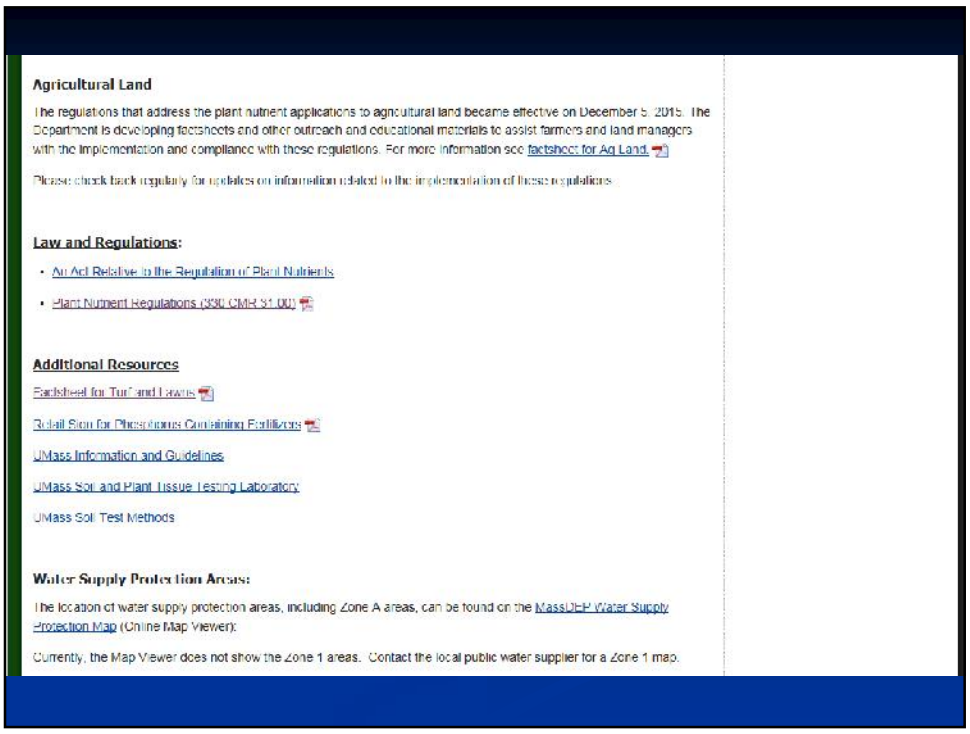
Holze.Wijnja@state.ma.us
617 626 1771
Additional Resources
Department of Agricultural Resources
Division of Crop and Pest Services
Pesticide Program


Agricultural Land
The regulations that address the plant nutrient applications to agricultural land became effective on December 5, 2015. The Department is developing factsheets and other outreach and educational materials to assist farmers and land managers with the implementation and compliance with these regulations. For more information see factsheet for Ag Land.
Please check back regularly for updates on information related to the implementation of these regulations.
Law and Regulations:
An Act Relative to the Regulation of Plant Nutrients
Plant Nutrient Regulations (330 CMR 31.00)
Additional Resources
Factsheet for Turf and Lawns
Retail Sign for Phosphorus Containing Fertilizers
UMass Information and Guidelines
UMass Soil and Plant Tissue Testing Laboratory
UMass Soil Test Methods
Water Supply Protection Areas:
The location of water supply protection areas, including Zone A areas, can be found on the MassDEP Water Supply Protection Map (Online Map Viewer).
Currently, the Map Viewer does not show the Zone 1 areas. Contact the local public water supplier for a Zone 1 map.

Healthy Land – Healthy Water

Can be achieved by:

- Knowledge of the Issues
- Good Management Practices
- Sustainable use of Available Resources

- Education & Outreach is key!

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