MICHIGAN RIGHT-TO-FARM

GENERALLY ACCEPTED AGRICULTURAL AND MANAGEMENT PRACTICES FOR NUTRIENT UTILIZATION

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The following is a summary of Michigan's Right-To-Farm nutrient management practices. These practices were adopted by the Michigan Agricultural Commission in January of 1993. Crop producers who voluntarily follow these practices are provided protection from public nuisance disputes under Michigan Public Act 93 of 1981 as amended, The Right-To-Farm Act, Michigan Department of Agriculture. A complete copy of the Right-To-Farm document may be obtained by writing to Robert Craig, Michigan Department of Agriculture, Box 30017, Lansing, MI 48909.

I. INTRODUCTION

Fertilizer use in Michigan has increased steadily since fertilizers first became available. This has increased crop production on fewer acres, making Michigan's agricultural system one of the most productive in the world. The increased use of fertilizer, however has caused soil test phosphorus (P) levels to increase dramatically in recent years. In addition, there is increasing evidence that fertilizer nutrients are finding their way into both surface and ground waters. To prevent further degradation of the environment, Michigan agricultural producers are encouraged to adopt good nutrient management practices that will reduce nitrate contamination of ground water and phosphorus- loading of surface water.

Adoption of these management practices will not totally eliminate nutrient movement into surface or ground water, because nutrients are an integral part of the natural hydrological cycle. However, agricultural producers who voluntarily follow these practices are provided protection from public or private nuisance disputes under Public Act 93 of 1981, as amended by Act 240, 1987, The Right-to-Farm Act, Michigan Department of Agriculture.

II. ON-FARM FERTILIZER STORAGE AND CONTAINMENT PRACTICES

Fertilizer should be stored in a manner that protects the environment, ensures human and animal safety and preserves the product and container integrity. Well-water surveys have indicated that improper or faulty fertilizer storage and containment facilities can be a source of surface and ground water contamination. Before fertilizers are stored on the farm, several concerns should be reviewed and precautions observed.

LOCATION OF BULK FERTILIZER STORAGE AREAS

Existing bulk fertilizer storage areas should be located a minimum 50 feet from any single-family residential water well, 200 feet from any public water supply and a minimum of 200 feet from surface water.

New fertilizer storage areas should be located a minimum of 150 feet from any single-family residential water well and a minimum of 200 feet from surface water

SECURITY FOR FERTILIZER STORAGE AREAS

Fertilizer storage areas, valves and containers should be secured when not in use to prevent access by unauthorized personnel, children or animals.

FERTILIZER STORAGE FACILITIES

Dry fertilizer should be stored inside a structure or device capable of preventing contact with precipitation and/or surface water.

Liquid fertilizer should be stored in containers approved for and compatible with the fertilizer being stored.

The fertilizer area should be inspected at least annually by the owner or the person responsible for the fertilizer to ensure safe storage of fertilizers and to minimize mishaps.

III. FERTILIZATION PRACTICES FOR LAND APPLICATION

The following management practices are suggested for farmers to help achieve efficient and effective use of fertilizers and to reduce the potential for nutrient contamination of surface and ground water.

SOIL FERTILITY TESTING AND TISSUE ANALYSIS

All fields used for the production of agricultural crops should be sampled and tested on a regular basis before fertilizer nutrients are applied.

For field crops, perennials such as asparagus, and cover crops in orchards, soils should be tested at least once every three years. For high value crops such as vegetables, flowers and ornamental trees and shrubs, where large additions of fertilizer are made, it is suggested that fields be tested annually. Sod production fields should be tested before the crop is re-established.

The nutrient requirements of small fruit and tree crops are best monitored by tissue analysis. Tissue samples should be taken every three to five years. The nitrogen status of fruit plantings can also be monitored effectively by observing leaf color, shoot growth and production levels.

FERTILIZER RECOMMENDATIONS

Fertilizer recommendations should be consistent with those of Michigan State University and should consider all available sources of nutrients.

Michigan State University fertilizer recommendations for field crops and vegetables are found in Extension Bulletins E-550A and E-550B. They are based on a soil fertility test, soil texture, crop to be grown and for many field crops, yield goal. Selecting a realistic yield goal for field crops is one of the most important steps in obtaining economic and environmentally sound recommendations. Most vegetable and fruit crops are not fertilized according to yield goal.

Most commercial soil testing laboratories use the same soil test procedures as MSU. Occasionally, fertilizer recommendations vary between MSU and agribusiness. When large differences exist, farmers should follow the MSU recommendations.

MSU Fertilizer recommendations for fruit crops are found in MSU-CES Bulletins E-852. Soil test information is seldom used in determining the nutrient requirements of these crops. Fertilizer recommendations for these crops are often adjusted for each specific planting by tissue testing and observing crop performance.

When Michigan State University recommendations are not available for a specific crop or soil type, other land grant university recommendations developed for the region may be used.

NUTRIENT CREDITS

Credit should be taken for nutrients supplied by organic matter, legumes and manure or other biological materials.

NITROGEN MANAGEMENT PRACTICES

To enhance N uptake, N fertilizer applications should be matched to the demand of the crop and the conditions of the soil.

Special N management practices may be needed on sandy soils in groundwater-sensitive areas.

PHOSPHORUS MANAGEMENT PRACTICES

Phosphorus fertilizer should be based on soil tests or plant tissue analyses using Michigan State University recommended rates and methods of application so that P recovery and uptake is enhanced.

Broadcast applications of phosphorus fertilizers should be avoided on frozen or snow-covered ground.

NUTRIENT MANAGEMENT PRACTICES FOR ORGANIC SOILS

Water table, irrigation, and nutrients should be managed to minimize runoff and soil loss.

RECORD-KEEPING

Records of soil test reports and quantities of nutrients applied to individual fields should be maintained.

FERTILIZER APPLICATION EQUIPMENT ADJUSTMENT

All fertilizer application equipment should be checked for proper adjustment so the desired rate of application is achieved.

IV. SOIL CONSERVATION PRACTICES

Runoff and erosion leads to loss of soil and nutrients from cropland, which reduces the land's productivity and results in an increased need for nutrient inputs. Sediment and sediment-borne nutrients can be carried from fields by runoff causing degradation of surface waters.

Soil erosion control practices should be used to minimize nutrient runoff and soil loss.

V. IRRIGATION MANAGEMENT PRACTICES

Nitrogen management for irrigated crop production involves careful management of irrigation water. Proper irrigation management can assure plant growth and yields sufficient to remove nutrients applied for a realistic yield goal, minimizing nitrate remaining in the soil and available for leaching. Excess water from irrigation and/or precipitation can cause nitrates to move below the root zone and eventually to groundwater.

Irrigators should use modern irrigation scheduling techniques to avoid applying excess water.

Irrigators should use multiple applications of N fertilizer to improve N efficiency and minimize loss of nitrate to groundwater.

VI. FERTILIZATION AND IRRIGATION PRACTICES FOR CONTAINER-GROWN PLANTS

Plant production in greenhouses or outdoor container nurseries requires rapid growth to maintain production schedules and quality. Frequent fertilization and irrigation are needed since common root media usually lack satisfactory nutrient and water-holding capacity. However, effective management practices can be adopted to minimize water and fertilizer leaching and/or runoff.

RUNOFF PREVENTION

Good management practices should be used to prevent or minimize water and fertilizer runoff such as selecting good quality root media, using slow-release fertilizer, improving irrigation systems, reducing leaching and scheduling irrigations.

RUNOFF COLLECTION

When runoff or leaching of fertilizer cannot be controlled, water containing fertilizer should be collected and reused.

RECORD-KEEPING

Records of fertilizer purchases and irrigation water used should be maintained.

VII. LAND APPLICATION OF ORGANIC (BIOLOGICAL) MATERIALS FOR CROP PRODUCTION

This section briefly discusses the use of organic materials, primarily of biological origin which can be used to supply nutrients for crop production. The application of these materials to land in Michigan, with the **exception** of animal manures, crop residues and green manure crops, are regulated by the Michigan Department of Natural Resources (MDNR). A "**residuals management plan**" is required for approval of a land application program, unless the material is declared inert.

APPENDIX I -- References on State and Federal Laws and Regulations

A person applying, distributing and storing fertilizer or organic matter in Michigan must comply with the relevant state and federal laws and regulations promulgated under these statutes. Twelve state and federal laws and regulations are referenced.

APPENDIX II -- References Cited

This appendix contains a list of publications cited in the text of the Right-To-Farm document on "**Generally Accepted Agricultural and Management Practices for Nutrient Utilization**". Many of these publications are Michigan State University Extension bulletins which include more detailed information on recommended nutrient management practices.

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