



Soil Management Groups

New York agricultural land comprises more than 500 different soil types divided into six soil management groups: five mineral and one organic. The five mineral groups differ from each other in texture of the surface and subsoil, and parent material (lake sediments, calcareous glacial till, glacial outwash and recent alluvium). Table 1 gives a brief general description of each of the groups.

Table 1: Soil management groups (SMG) for New York State agricultural soils.

SMG	General Description
1	Fine-textured soils developed from clayey lake sediments and medium- to fine-textured soils developed from lake sediments.
2	Medium- to fine-textured soils developed from calcareous glacial till, medium-textured to moderately fine-textured soils developed from slightly calcareous glacial till mixed with shale, and medium-textured soils developed in recent alluvium.
3	Moderately coarse-textured soils developed from glacial outwash and recent alluvium and medium-textured acid soils with fragipans developed on glacial till.
4	Coarse- to medium-textured soils formed from glacial till or outwash.
5	Coarse-textured to very coarse-textured soils formed from gravelly or sandy glacial outwash or glacial lake beach ridges or deltas.
6	Organic or muck soils with more than 80% organic matter.

Modified from: Cornell Field Crops and Soils Handbook, Cornell Cooperative Extension (1987).

From a fertility management standpoint, the soil management groups define the potassium guidelines for field crops because potassium supplying power of the soil is greatly determined by clay type and content. The heavier soils in soil management group 1 have more clay and will have a greater capacity to supply potassium to crops than the sandy soils in soil management group 5. Field crops are grown on most of the mineral soils whereas the organic soils are more commonly used (but not exclusively) for vegetable production. This

factsheet contains general characteristics and examples of soil types in each of the groups.

Soil Management Group 1

There are two subgroups within this soil management group: (1) fine-textured soils developed from clayey lake sediment and (2) medium fine-textured soils developed from lake sediments. The first group consists of heavy, generally wet soils formed from lake or marine sediments with silty clay loam to clay surfaces over heavier silty clay to clay subsoils. They contain little or no sand or gravel. Examples are Vergennes (moderately well-drained), Kingsbury (somewhat poorly-drained), and Livingston soils (poorly-drained). Examples of the second subgroup are Hudson, Odessa, and Schoharie soils (well-drained and moderately well-drained soils), Caneadea, Canadice, and Rhinebeck soils (somewhat poorly and poorly-drained) and the very poorly-drained Lakemont soils.

Soil Management Group 2

The soils of this group are medium-textured to moderately fine-textured soils divided into three subgroups based on parent material: (1) calcareous glacial till, (2) calcareous glacial till mixed with shale, or (3) recent alluvium.

The first subgroup has medium- to fine-textured soils. These soils are found in the central plains of New York. Some examples are well-drained Cazenovia, Hilton, Honeoye, Lima and Ontario soils, somewhat poorly-drained Appleton, Kendaia, and Ovid soils, and poorly drained Lyons and Romulus soils.

The second subgroup has medium-textured to moderately fine-textured soils. These soils generally have a very fine sandy loam or silt loam surface over a heavy silt loam or silty clay loam subsurface. Some examples are well-drained to moderately well-drained Conesus, Lansing, Mohawk, and Nunda soils, and somewhat poorly to poorly-drained Burdett, Darien, Kendaia, and Manheim soils.

The third subgroup has medium-textured soils that are among the most fertile soils in

New York such as the well-drained Hamlin or Genesee, moderately well-drained Teel, and somewhat poorly-drained Wayland soils.

Soil Management Group 3

The soils in this management group are medium-textured silt loams in both the surface and the subsoil. There are two subgroups in this category: (1) moderately coarse textured soil developed from recent alluvium, and (2) medium-textured acid soils with fragipans developed on glacial till. The soils developed from recent alluvium tend to have a sandy loam, gravelly loam, or gravelly silt loam surface and gravelly loam, loam, sand or gravel sub surfaces. Examples are well-drained to moderately well drained Barbour, Braceville, Chenango, Howard, Kars, Palmyra, Phelps, and Tioga and somewhat poorly drained Fredon, Holly, and Red Hook.

The glacial till soils contain shale, sandstone, slate, or schist-type rocks with little or no lime. They have a silt loam surface and a more dense or compacted silt loam subsoil with fragipan or hardpan at various depths below the surface. Mardin, Valois, Langford, Lordstown, and Oquaga soils are examples of well-drained and moderately well-drained soils. Camroden, Ellery, Erie, Marcy, Morris, and Volusia are examples of somewhat poorly and poorly-drained soils.

Soil Management Group 4

These soils are coarse- to moderately coarse-textured soils formed from glacial till or glacial outwash. There are no subdivisions in this soil management group. The soil texture is sandy loam or silt loam in the surface, with or without gravel. The subsurface ranges from gravelly loam to clay textured. The slopes vary from level to strongly undulating. The somewhat poorly to poorly-drained soils of this group (e.g. Brayton, Fredon, Massena, Scriba, and Westbury) can usually be drained effectively with widely spaced tile lines. Examples of the well-drained to moderately well-drained soils of this group are Bombay, Broadalbin, Copake, Empeyville, Gloucester, Grenville, Hogansburg, Hoosic, Ira, Madrid, Moira, Parishville, Sodus, and Worth.

Soil Management Group 5

These are coarse- to very coarse-textured soils formed from gravelly or sandy glacial outwash or glacial lake beach ridges or deltas. The

parent material for these soils has been reworked by water either as glacial outwash or by wave action from the glacial lakes, removing almost all the fine materials (silt and clay) and leaving usually deep deposits of sand and/or gravel. The soils that form have similar textures, usually with little organic matter. Examples of the excessively drained to well-drained soils in this soil management group include Alton, Colosse, Colton, Hinckley, and Windsor. Claverack, Colonie, Junius, Elmwood, Granby, and Swanton are examples of the somewhat poorly and poorly drained soils in this group.

Soil Management Group 6

Muck is formed by deposits of decaying organic matter in swamps. Muck lands must be drained before they can be used for agriculture. Water management is extremely important not only for drainage for crop production but also for irrigation and control of the rate of decay of the organic matter. The deep mucks may have marl mixed with, or very close to, the surface. As mentioned earlier, muck soils are commonly used to grow vegetable crops (mostly onions) and not often for field crop production.


Acknowledgment

This fact sheet is derived from soil descriptions in the 1987 Cornell Field Crops and Soils Handbook. To look up the soil management group of New York soil series see: "Potassium Guidelines for Field Crops in New York" (<http://nmsp.css.cornell.edu/publications/articles/extension/Kdoc2003.pdf>, Appendix C).

Additional Resources:

- o Cornell Guide for Integrated Field Crop Management: www.fieldcrops.org.

For more information



Cornell University
Cooperative Extension

Nutrient Management Spear Program
<http://nmsp.css.cornell.edu>

Source: Cornell Field Crops and Soils Handbook (1987)
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