

Massachusetts State Soil:

Paxton fine sandy loam

The [Paxton](#) soil series was established in Worcester County Massachusetts in 1922. It is named for the town of Paxton where it was first described and mapped. In 1991, the Massachusetts State Legislature designated the Paxton series as the [Official State Soil of the Commonwealth](#).

Paxton soils are mapped throughout Southern New England and include portions of Maine, New Hampshire and Vermont. Paxton soils occur on about 400,000 acres of the 5.3 million acres in the state. The Paxton series consists of well drained loamy soils formed in sandy loam eolian mantled material underlain by lodgement (dense) till derived mostly from schist, gneiss, and granite. The soils are very deep to bedrock and moderately deep to a densic contact.

Massachusetts Uses of Paxton Soils

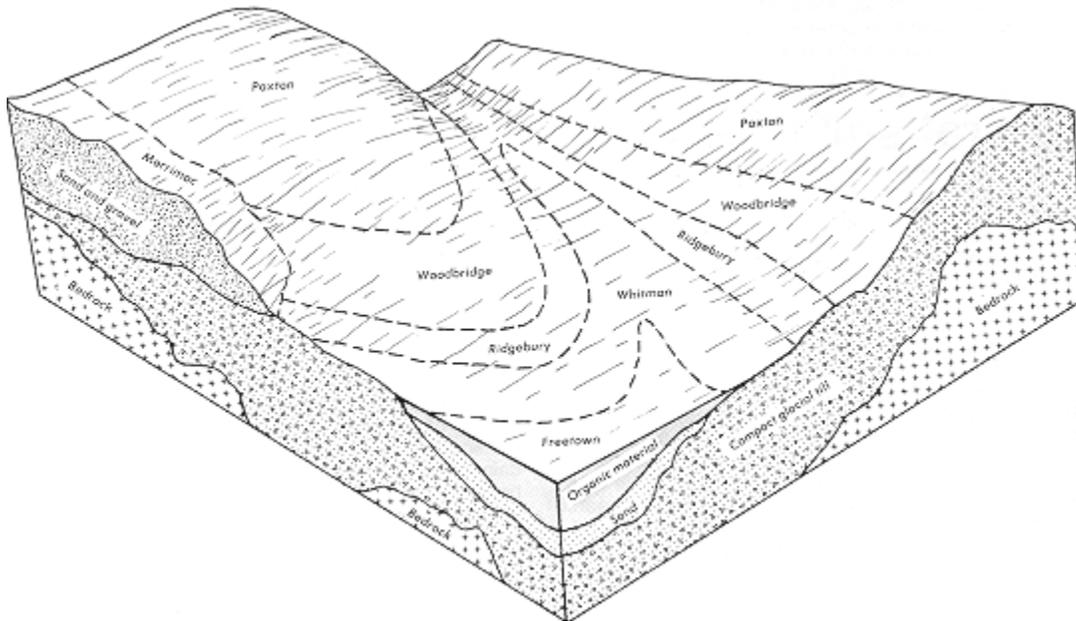
Paxton soils in Massachusetts occur predominantly throughout the state but exclude the Cape Cod area as well as Martha's Vineyard and Nantucket islands (MLRA 149B). Where stones have been cleared and slopes are gentle, Paxton soils are well suited to cultivate crops, hay, and improved pasture. Additional land uses include suburban housing and woodland production. The main agricultural uses for Paxton soils are apples, corn, and silage. Paxton soils have a high water holding capacity and are well suited for intensive agricultural and woodland production. Trees commonly growing on Paxton soils include red, white, and black oak, hickory, sugar maple, red maple, gray and black birch, white pine, and hemlock. Paxton soils have slowly permeable dense till layers that perch seasonal water tables. These limitations often interfere with septic systems for commercial and residential development.



Distribution of Paxton Soils in New England

Paxton Geographic Setting

Paxton soils occur on gently sloping to steep convex slopes. Landforms include till plains, ground moraines, and [drumlins](#). Paxton soils formed in dense acid glacial till derived predominantly from schist, gneiss, and granite. Slopes range from 3 to 35 percent. Mean annual temperature ranges from 45 to 52 degrees F. Mean annual precipitation ranges from 37 to 49 inches. The growing season ranges from 115 to 180 days.



Relationship of the soil, geology and landscape position of a Paxton, Woodbridge, Ridgebury, and Whitman catena. Paxton soils are on convex slopes of drumlins, Woodbridge soils are on sideslopes and gently sloping areas, Ridgebury and Whitman soils are on concave slopes and along drainageways.



Paxton landscape, the oval shaped hill is called a [drumlin](#) which is a smooth, elongated oval hill, mound, or ridge of compact glacial till. The longer axis is parallel to the path of the glacier and commonly has a blunt nose pointing in the direction from which the ice approached.

Paxton Soil Properties:

Taxonomic Classification: Coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts. Paxton soils are in the Inceptisol soil order of soil taxonomy. The term "coarse-loamy" indicates that the soil has less than 18% clay and at least 15% or more particles that are fine sand or coarser. The term "mixed" indicates no single mineral is over 40 percent. The term "active" represents a ratio of the cation-exchange capacity to clay of the pedon. The term "mesic" indicates the soil developed in a temperature between 8 and 15 degrees C. The "Typic Dystrudepts" are typical profiles [typic] with low pH [dystr] with a udic soil moisture regime and are within the Inceptisol order [epts].

Drainage Class: Well drained.

Parent Material: Dense acid glacial till derived mostly from schist, gneiss and granite.

Permeability: Moderate in the solum and slow or very slow in the substratum.

Available Water Holding Capacity: Moderate.

Soil Reaction (pH): Very strongly acid to moderately acid throughout.

Depth to Bedrock: Greater than 60 inches.

Seasonal High Water Table: **Depth** = 2.5 to 4 feet, **Type** = perched, **Months** = Jan to May.

Some Chemical Properties of the Paxton Soil

Horizon	Depth (inches)	pH *	Organic C % **	Extractable			Cations		Base Sat. %
				C.E.C. *	Ca	Mg	Na	K	
Ap	0-5	4.4	3.35	20.0	0.83	0.25	0.03	0.41	8
Bw1	5-12	4.4	0.75	11.7	0.22	0.04	0.02	0.25	5
Bw2	12-23	4.4	0.55	10.5	0.29	0.07	0.03	0.12	5
Bw3	23-31	4.6	0.44	10.0	0.34	0.08	0.03	0.10	6
2Cd	31-60	4.6	0.27	9.4	0.73	0.27	0.04	0.14	13

* Analysis by University of Massachusetts Soil Lab - Log Number 8072-8077. pH 1:1 water method. CEC - NH4OAC pH 7.0 method

** Organic carbon - Walkey - Black method

Some Physical Properties of the Paxton Soil

Horizon	Depth (inches)	% Sand	% Silt	% Clay	Textural Class	Coarse Fragments %	Bulk Density
Ap	0-5	49.9	34.7	15.4	Loam	13.4	---
Bw1	5-12	52.8	30.8	15.4	Fine Sandy Loam	17.0	1.55
Bw2	12-23	49.3	34.7	16.0	Loam	16.0	1.60
Bw3	23-31	52.5	32.9	14.6	Fine Sandy Loam	16.1	1.56
2Cd	31-60	54.8	30.6	14.5	Fine Sandy Loam	22.0	1.78