

RURAL NATURE OF NYS

19 - Agriculture

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Nature of NYS Farmland

Agriculture Exercise

Required Exercise 13 looks at agriculture within the regions and compares county production and trends to NYS averages.

➤ It is due by May 1.

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Sources of Agriculture Info

- https://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1_Chapter_2_County_Level/New_York/2012_Census_of_Agric_NY_County_data
- https://www.nass.usda.gov/Quick_Stats/Aq_Overview/stateOverview.php?state=NEW%20YORK: 2017 Summary for NYS
- https://www.nass.usda.gov/Statistics_by_State/New_York/Publications/Annual_Statistical_Bulletin/2017/2016-2017%20Annual%20Bulletin.pdf : 2016-17 NY Agric Statistics Bulletin
- https://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/New_York/ : County agric profiles compares 2012 with 2007 (2017 is being conducted now)
- https://www.agcensus.usda.gov/Publications/2012/Online_Resources/Aq_Atlas_Maps/ :Commodity production in all US counties.
- <https://nassgeodata.gmu.edu/CropScape/> : US Cropland Mapper
- <https://pad.human.cornell.edu/profiles/index.cfm> : County profiles from Cornell Univ.

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New York is an Agricultural State

2012 NATIONAL RANK	COMMODITY	2016 rank	2012 NATIONAL RANK	COMMODITY	2016
• 26	Tot. Value, Agric Products	26	• 5	Tart cherries	5
• 27	Number of farms	25	• 5	All fresh vegetables	9
• 1	Pumpkins	12	• 5	Onions	8
• 1	Cabbage	3	• 5	Horses (value)	5
• 2	Apples	2	• 5	Ducks	n/a
• 2	Maple syrup	2	• 6	Christmas trees	6
• 2	Squash	6	• 8	Strawberries	6
• 3	Corn silage	4	• 8	Sweet cherries	n/a
• 3	Cauliflower	n/a	• 8	Oats	6
• 3	Grapes	3	• 9	all Floriculture	n/a
• 3	Milk cows (headcount)	3	• 10	Blueberries	10
• 3	Cucumbers	n/a	• 14	Potatoes	12
• 4	Dairy products	3	• 15	Aquaculture	20
• 4	Pears	4	• 21	Grain corn	22
• 4	Snap beans	2	• 22	Soybeans	24
• 4	Sweet corn	5	• 22	all Hay	26
• 5	Tomatoes	n/a	• 22	Eggs	17
			• 32	Wheat	25

https://www.nass.usda.gov/Statistics_by_State/New_York/index.php : link to USDA stats
http://www.nass.usda.gov/Statistics_by_State/New_York/Publications/Annual_Statistical_Bulletin/2013/2013%20Annual%20Bulletin_Whole%20Book.pdf : 2013 Annual Report

Early Agriculture

- ❖ **The Native Americans were skilled in agriculture but limited by their lack of iron tools and beasts of burden.**
 - The “**slash and burn**” method of agriculture was employed; ash residue fertilized the soil.
 - **Fields were planted annually** until crop yield lowered (usually after 7-10 yrs).
- **Chief crops were corn, beans and squash, called the Three Sisters.**
- **No orchards** but a variety of fruits, nuts and berries were **gathered** from the forest.
- Animals and fowl were **hunted** for meat; eggs were gathered.
- **Fish were an important dietary supplement.**

Review the Iroquois Village web site www.nysm.nysed.gov/IroquoisVillage/

Early Agriculture

- ✓ **The Dutch** appreciated the **fertile land, good climate, ample water** (without the drainage problem) and the ample forest resources; **limited their farms** to areas close to the shore and along the Hudson.
- ✓ The **English** learned **techniques** from the Iroquois and **introduced European plants and domesticated animals** to the New York Colony. **They cleared the land and built fences.**
- ✓ **The Americans** replaced corn as the main field crop with **grains** (wheat/oats/barley/flax/hemp) in **early 1800s**. (This was a result of the influence of European immigrants.)

Early Agriculture

NY become the granary of the new USA (early 1800s).

However on the farm:

- **Quality of cattle was poor** – no selective breeding; little food in winter for them; minimal grazing in summer – they were lean and provided little milk.
- **Pigs were widespread**, self-sufficient and an important food source.
- **Sheep** were kept in small numbers mainly for **wool**.
- **Chickens** were kept for their **eggs** not meat.
- **Apples** were the chief fruit used as both a **food and beverage**.

19th Century Agriculture

- After 1825, the **Erie Canal** shifted population inland; **enabled speedier movement of harvests to market and supplies back to the farm.**
 - Scientific farming methods used; horses in cities provided manure for farms, increasing production.
 - **The ample NYS harvests and the reduced price of food fed the cities of the mid-1800s.**
 - By the **late 1800s**, the US agricultural heartland had moved to the Midwest.
 - NYS farms were now at an economic **disadvantage**.
- ❖ **Quality of location changes with time!!**

20th Century Agriculture

- ❖ **Throughout the 20th century, NYS agriculture continued to decline.**
- ❖ **Farms were abandoned, taken over by agricultural corporations or sold to non-farm developers.**
 - **Suburbanization invaded the farmland that surrounded the cities** (especially around NYC after WWII).
 - Remaining farms **grew in size and specialized**.
 - **Focus changed:** provide the cities with fresh fruits, vegetables, dairy, and most recently, with sod and horticultural plants.
- ✓ **In spite of this, NYS today is a high ranking agricultural state in certain products.**

Trends in Agriculture

- **Today** (2017 data) farmland and pastureland occupy about **23%** of the state (down from 49% in 1954).
- Number of farms has decreased: 35,500 from 104,000 in 1954
Average size of a farm has increased to c.200 acres/farm (up from 150 acres /farm in 1954).

Trends in Agriculture


- **During the 20th century, farmland in less fertile areas near the cities tended to be overpriced.**
 - Farm owners face **property value hardships**, esp. with tax rates (actual use vs. potential use).
 - Farms near populated areas **tend to be regulated** for noise, smell, dust and water pollution issues.
- **Larger farms are less expensive to run and profit margin increases.**
 - Mechanization cuts the cost of labor.
 - Scientific farming increases yields (crops are tailored to the existing climate, water and soil conditions.)
- **Farmers supplement their income by offering touristy activities:** lodging, agri-vacations, mazes, hay/horse rides, pick-your-own, party venues, roadside stands, educational tours, retail stores.

Farmland Preservation

NYS is a leader in preserving farmland.

- **1974 Suffolk County** becomes the first county in NYS to regulate resale of farm land.
- **1992 NYS Farmland Protection Program** created to preserve farmland and reduce economic pressure on owners by providing funding to struggling farms.

NEW YORK STATE AGRICULTURE AND MARKETS DEPARTMENT OF AGRICULTURE AND MARKETS
2015-2016 ANNUAL REPORT





NEW YORK STATE DEPARTMENT OF AGRICULTURE AND MARKETS
ROBERTA L. BELL, COMMISSIONER

NYS Dept of Agriculture and Markets Agriculture and Farmland Protection 2015-2016 Annual Report
https://www.agriculture.ny.gov/ap/agservices/NYS_ACA_FarmlandProtection_Rpt_2016.pdf

Farmland Protection

- ❖ **The NYS Constitution** directs the Legislature to provide for the protection of agricultural lands.
- **Agricultural Districts Law** meets, in part, that mandate by providing a locally initiated mechanism for the protection and enhancement of farmlands as a viable segment of the local and State economies and as an economic and environmental resource of major importance.

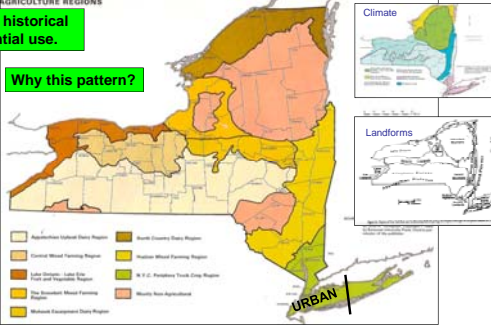



Agricultural Regions

AGRICULTURE REGIONS

Based on historical and potential use.

Why this pattern?



https://www.acrevalue.com/map/NY/ aerial land use survey

Economic Geography of Agricultural Regions

- ❖ **What determines the quality and its use for farming?**
 - What constitutes an agricultural region?
 - What geographic factors would a person look for if seeking farmland?

PHYSICAL	MARKET
<ul style="list-style-type: none"> ▪ Topography (slope) ▪ Climate (esp. length of growing season) ▪ Water supply ▪ Soil 	<ul style="list-style-type: none"> ▪ Price of commodity ▪ Market demand ▪ Distance to market ▪ Overhead costs (as labor, taxes, power, regulations)

WHAT IS SOIL?

The top layer of the earth composed of organic and inorganic material created over time in reaction to temperature and moisture working on parent material (bedrock).
Varies locally with conditions.

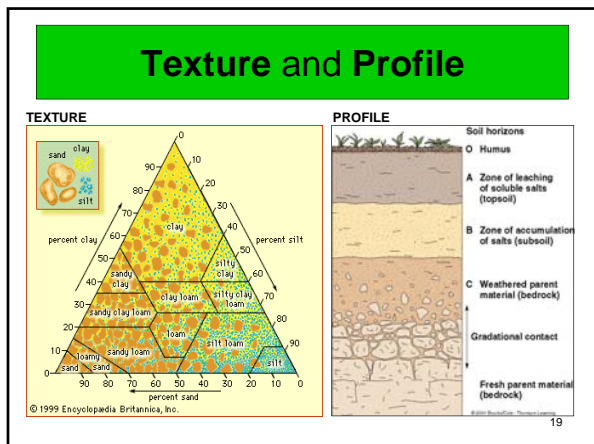
Read the SOILS of NYS handout from the home page.

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Factors in Soil Analysis

- **Texture** – grain size of soil (sand-silt-clay ratio)
- **Structure** – the way soil particles hold together
- **Drainage** – the way water is retained
- **pH** - soil acidity and the ability of roots to absorb nutrients
- **Soil profile** – the layers (horizons) of a soil

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Nature of New York's Soils

- ✓ Relatively **young** soils: post-glacial.
- ✓ Formed from **transported material**: soil, glacial till and **scoured bedrock**; variety of nutrients.
- ✓ Scoured **bedrock near the surface**: source of soluble minerals.
- ✓ Soils **vary locally**: slope angle, sun orientation, ground water.

NYS Soil Pattern

- ❖ **Best soils** are found on **lime-rich glacial till** that is **fine-textured** and on **level to rolling land**.
- **Good drainage** is important.
- Highly organic **muck soils** are found at the sites of glacial lakes.
- **Poorest soils** are thin, acidic and steep-sloped.
- In some areas there is a **boulder problem**.

County Soil Surveys

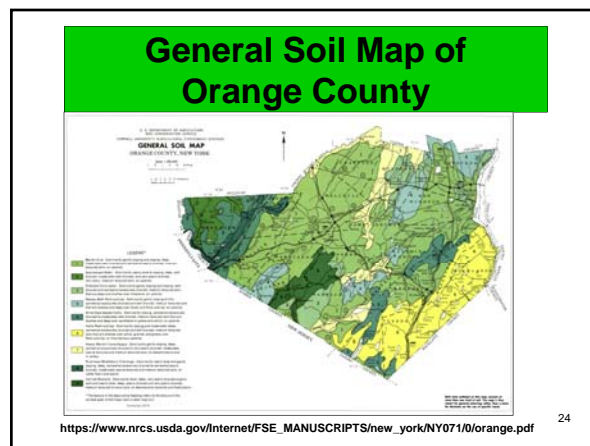
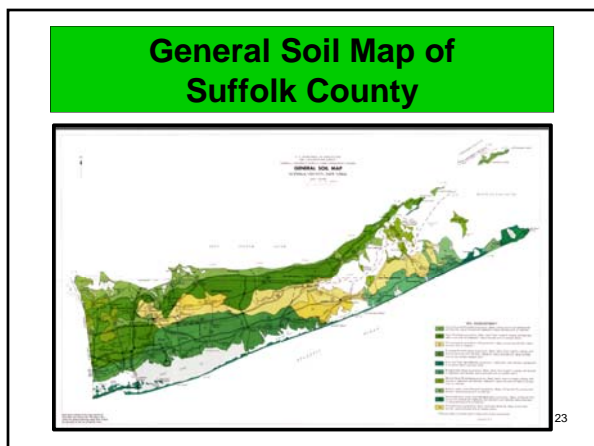
Soil surveys provide a detailed analysis and mapping of local soils.

https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/new_york/

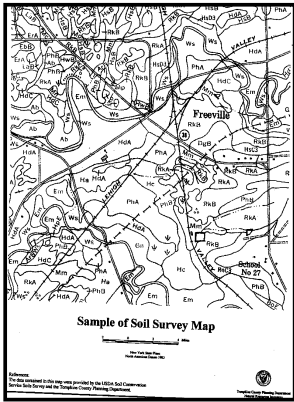
They are important for programs in agriculture, road and building construction, flood control, land preservation (esp. wetlands), and soil conservation.

<https://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?state=NY> : USDA Soil Survey of NYS

- https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/new_york/NY025/0/Delaware.pdf Delaware county report (631 pages long)
- https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/new_york/NY065/0/oneida.pdf Oneida County Survey pdf (1200 pages long)



Detail of Soil Survey Map: Tompkins Co.

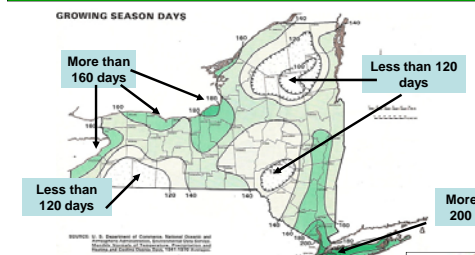


Soils vary in composition and fertility within short distances.
Factors include:

- drainage
- source material
- slope angle
- vegetation cover
- sun orientation

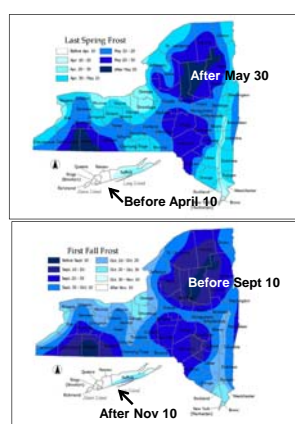
Sample of Soil Survey Map

Growing Season



GROWING SEASON: the period between the last killing frost of the spring and the first killing frost of the autumn.

Average Dates of Killing Frosts



Growing Degree Days

❖ **Growing Degree Days (GDD)** is a tool used to predict the date that a plant or insect will reach a particular stage in its growth cycle.

- Relates crop growth and insect development to temperature.
 - Computed by subtracting a base temperature (50°F) from the average temperature for the day (simplest description).
- Used by some farmers to schedule their use of pest controls.
 - Example: Apply the treatment at the point that the pest is most vulnerable.

Growing Degree-Day Tracker

❖ **Growing Degree-day (GDD) Tracker** is a measure of **heat accumulation** during a growing season and compare it to the norm for the same period.

Many events associated with plant and insect life cycles depend on heat accumulation. These events can be predicted based on temperature readings from the start of a season.

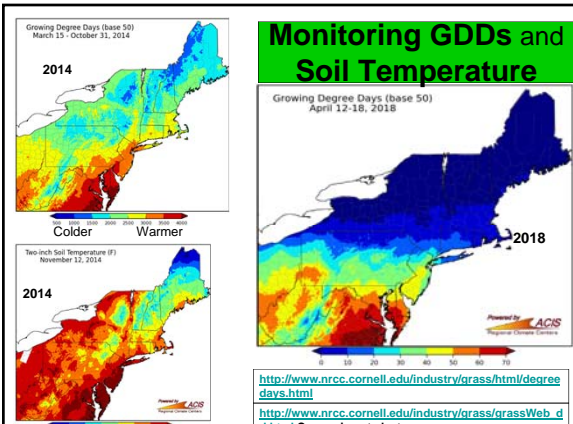
➤ **Events cannot be reversed, only slowed, by a lack of heat.**

Examples:

- Sprouting of seeds
- Blossoming of flowers
- Ripening of fruit
- Hatching of insect eggs
- Appearance of pests
- Appearance and spread of plant disease

<http://climatesmartfarming.org/tools/csf-growing-degree-day-calculator/> (Cornell Univ. calculator)
<http://www.nrc.cornell.edu/industry/grass/html/> - Cornell Univ. site

Monitoring GDDs and Soil Temperature




<http://www.nrc.cornell.edu/industry/grass/html/degree-days.html>
http://www.nrc.cornell.edu/industry/grass/grassWeb_d.html Comparison to last year

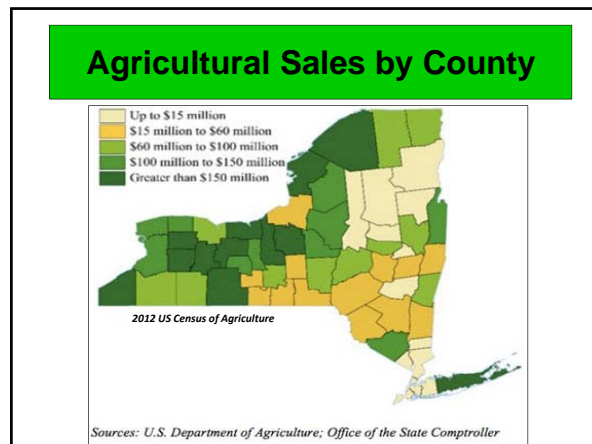
Weather and Crops

- ❖ The National Agricultural Statistics Service (NASS) of the US Dept of Agriculture (USDA) issues weekly *Crop Progress and Conditions Reports* for every state during the growing season.
- Weather conditions (too wet; too dry; too cold; too warm) affect all stages of the agricultural process (crop planting, growing, harvesting; raising of poultry and livestock).
- Weather conditions will influence quality, yield and price of the commodity.

https://www.nass.usda.gov/Publications/Statistics_by_State/New_York/Publications/Crop_Progress_&_Conditions/index.php Weather and Crop Conditions




County	Temp		Precip	Snow	Wind		Sun	Moon	Humidity	Clouds	Pressure	Soil Moisture	
	Max	Min			Dir	Spd						Top 10cm	10-20cm
Albany	50	35	0.0	0	W	10	7:00	7:00	65	100	1012.5	70%	75%
Albany	50	35	0.0	0	W	10	7:00	7:00	65	100	1012.5	70%	75%
Albany	50	35	0.0	0	W	10	7:00	7:00	65	100	1012.5	70%	75%
Albany	50	35	0.0	0	W	10	7:00	7:00	65	100	1012.5	70%	75%
Albany	50	35	0.0	0	W	10	7:00	7:00	65	100	1012.5	70%	75%
Albany	50	35	0.0	0	W	10	7:00	7:00	65	100	1012.5	70%	75%
Albany	50	35	0.0	0	W	10	7:00	7:00	65	100	1012.5	70%	75%
Albany	50	35	0.0	0	W	10	7:00	7:00	65	100	1012.5	70%	75%
Albany	50	35	0.0	0	W	10	7:00	7:00	65	100	1012.5	70%	75%
Albany	50	35	0.0	0	W	10	7:00	7:00	65	100	1012.5	70%	75%



Top AgCounties (receipts)

1. Suffolk
2. Wyoming
3. Cayuga
4. Genesee
5. Wayne



<http://www.agcensus.usda.gov/Publications/index.php>

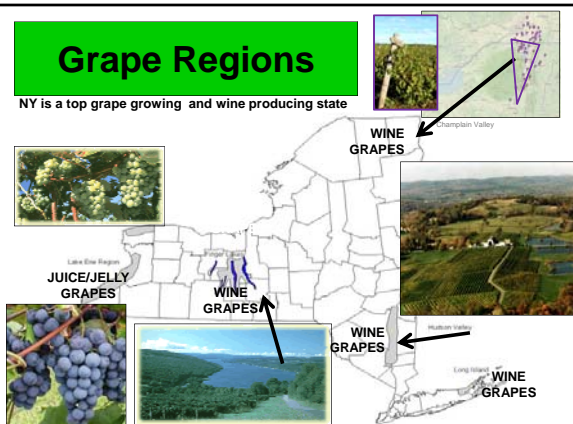
Pumpkins

NYS is a top (ranking 1st or 2nd annually) pumpkin growing state in the nation.




Grape Regions

NY is a top grape growing and wine producing state



Wine Regions

The Finger Lake wine region was the first to rival California and European wine production. Now Long Island wines are being acclaimed.



Long Island Vineyards





Finger Lake Vineyards





Concentration of Dairy Cows

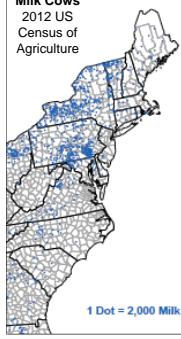
2012 census

Greatest concentration of dairy cows is in Western NYS and the Mohawk Valley.

I'm worth \$13,737 a year to Jefferson County's Economy!


That's a lot of Moo!

Inventory of Milk Cows 2012 US Census of Agriculture



1 Dot = 2,000 Milk Cows

NY is a major national producer of dairy products.



Dairy Farming Landscape

Northern NYS
Clinton County






Central NYS




Apple Orchards

New York Orchards

NY is a top 5 national supplier of fruits and berries.

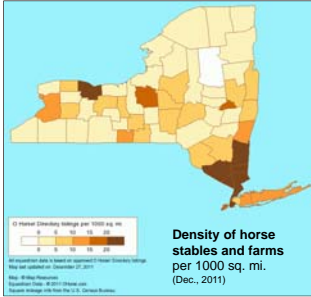
EQUINE INVENTORY

HORSE FARMING
One of the fastest growing industries in NYS until 2008.
1960 – 12 farms
1980 – 450 farms
2000 – 11,000 farms
2006 – 13,900 farms
2012 – 11,400 farms
2017 – ???

In 2017, NYS horse inventory ranked 5th in value among the 50 states

Good natural conditions:
Grass to the end of November
Local hay and oats
Rolling terrain for muscles and stamina

Benefits:
Preserves rural landscape with the negative aspects of dirt farming.
Caters to both the racing industry and leisure time recreation.
Over half the horses are kept for leisure activities.



Density of horse stables and farms per 1000 sq. mi. (Dec., 2011)

