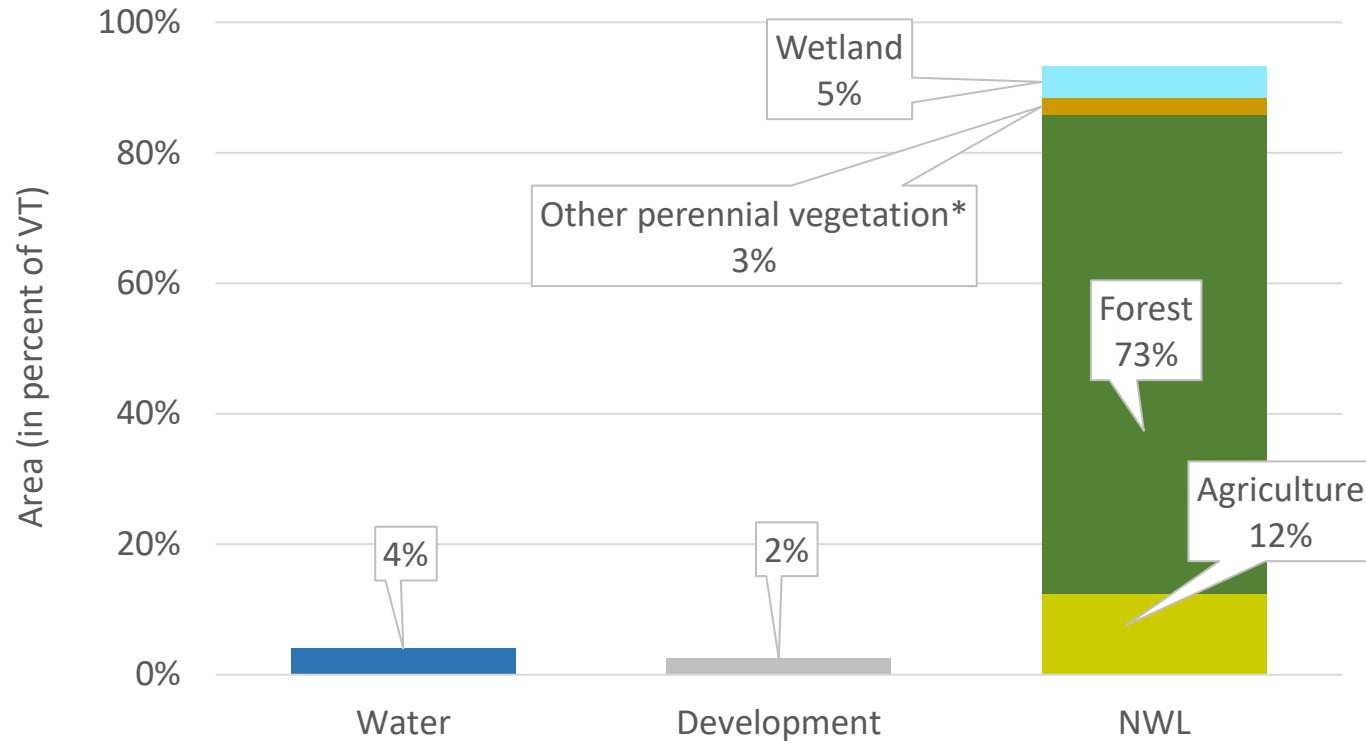


Agricultural Context for Vermont's Use Value Appraisal Program

Ryan Patch
Agriculture Climate and Land Use Policy Manager
Vermont Agency of Agriculture, Food and Markets
Presentation to: House Committee on Agriculture, Food Resiliency, and Forestry
January 31, 2024

Natural & Working Lands (NWL) cover 94% of Vermont



*Other perennial vegetation includes grasslands, shrub/scrublands, and turf

The Vermont Statehouse: 1870 – 1880s



From: State Curator's Office, BGS. Circa 1870 – 1880s Retrieved from:

https://curator.vermont.gov/sites/curator/files/styles/slideshow_image_only/public/images/image_only_slides/historic-state-house-780x450.jpg?itok=IXOLbhmj

Graph 1

VERMONT FARM TRENDS 1920 - 1975

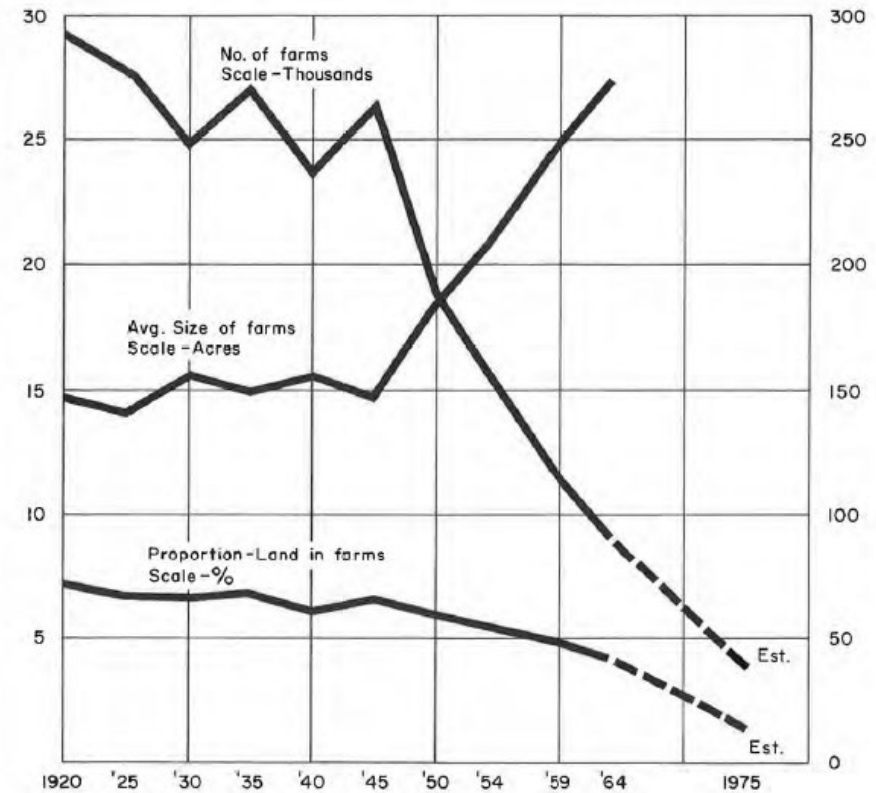


TABLE I TRENDS IN VERMONT FARMING

YEAR	NUMBER	AVERAGE SIZE OF FARMS PER ACRE	PROPORTION OF LAND IN FARMS
1850	29,763	139	71%
1860	31,556	136	73%
1870	33,827	134	78%
1880	35,522	138	84%
1890	32,573	135	75%
1900	33,104	143	81%
1910	32,709	143	80%
1920	29,075	146	72%
1925	27,786	141	67%
1930	24,898	156	67%
1935	27,061	149	69%
1940	23,582	156	62%
1945	26,490	148	66%
1950	19,043	185	59%
1954	15,981	208	56%
1959	12,099	243	50%
1964	9,247	273	43%

Source: Central Planning Office, Montpelier, Vermont

1880: 35,000 Farms; 84% of Vermont's Land Area in Farms

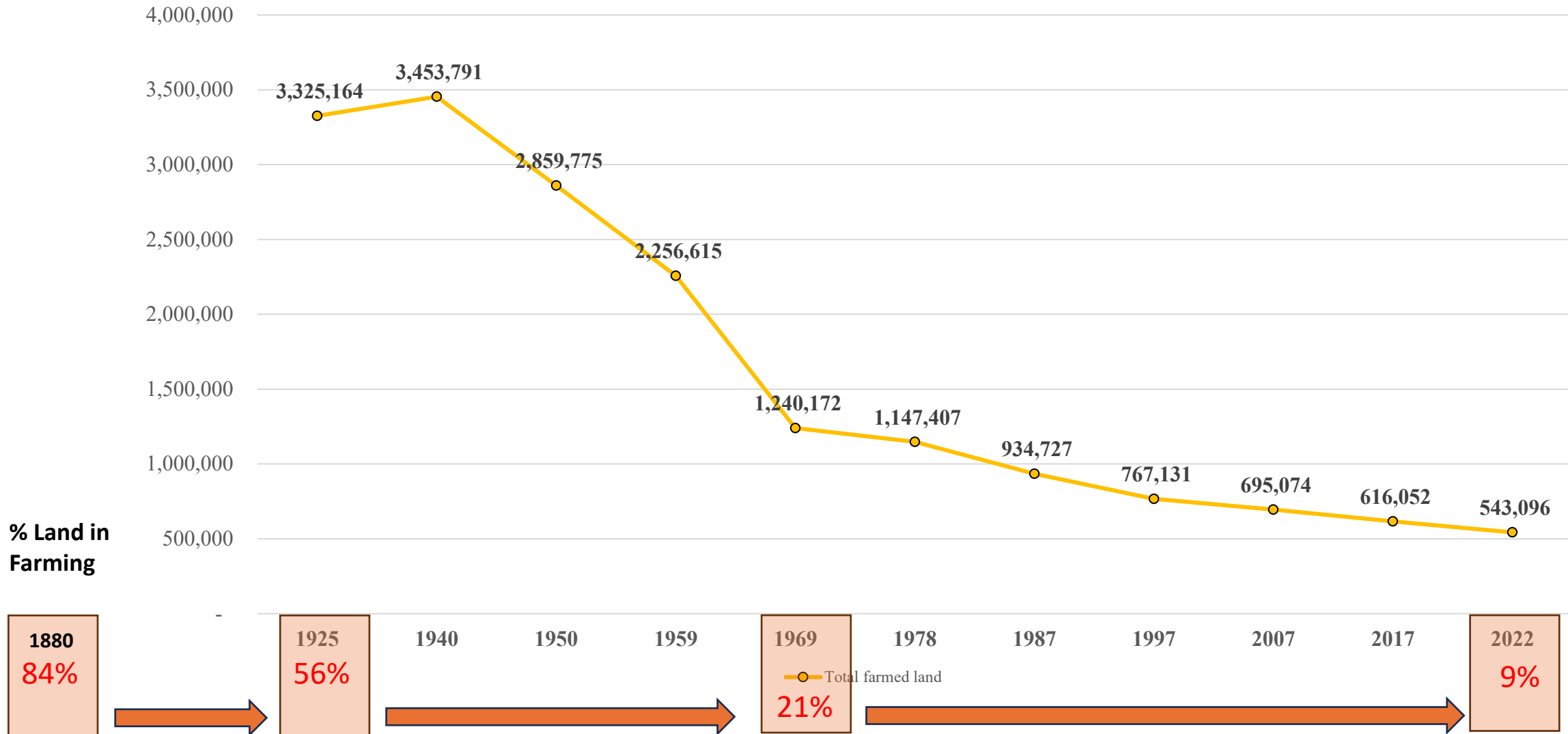


% Land in Farms
of Farms



Size of farms

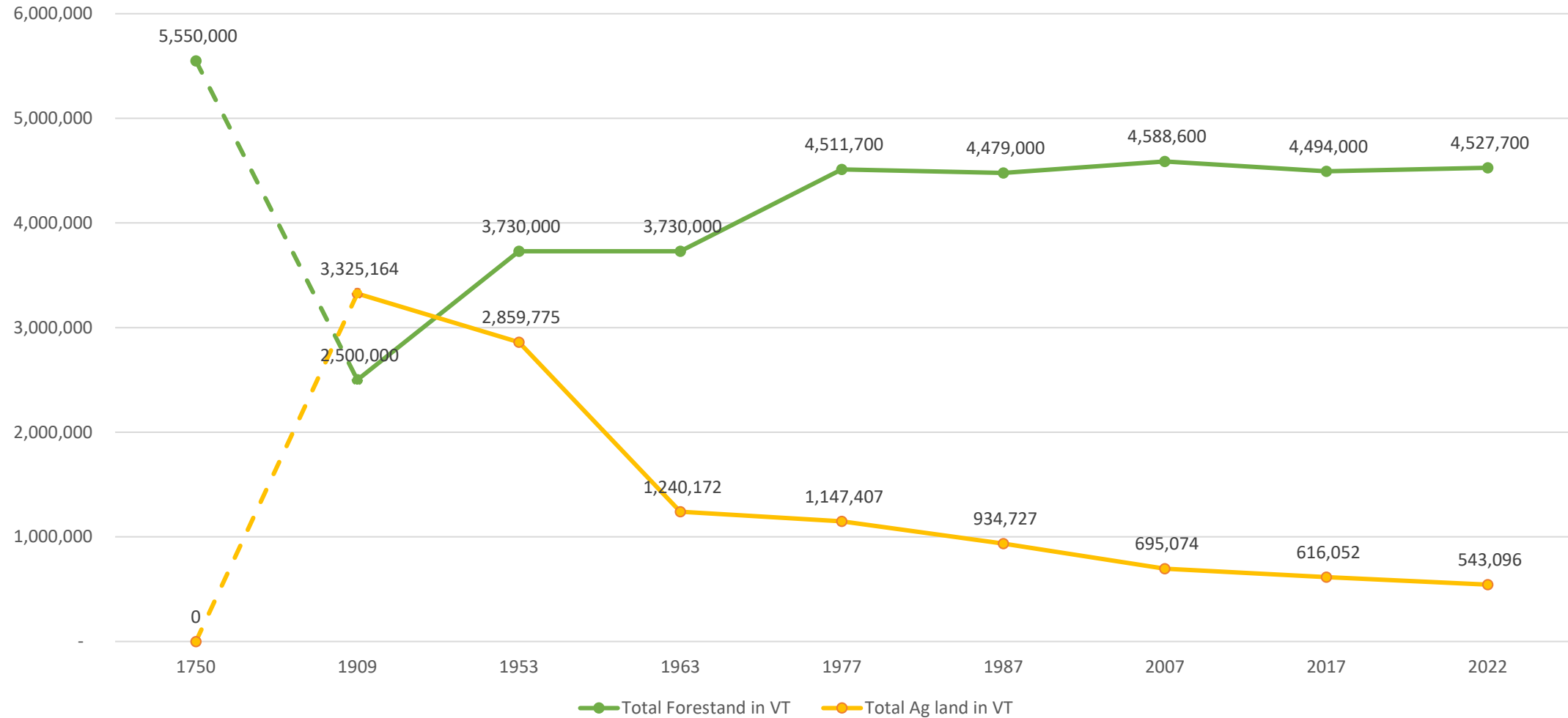
Agricultural Land Use In Vermont



Data source: 1925 - 2022 USDA NASS Ag Census, Vermont

Data source: <https://vcgi.vermont.gov/resources/how-and-education-resources/how-reference-vermonts-land-and-water-area> (5,899,041 acres of Land in VT)

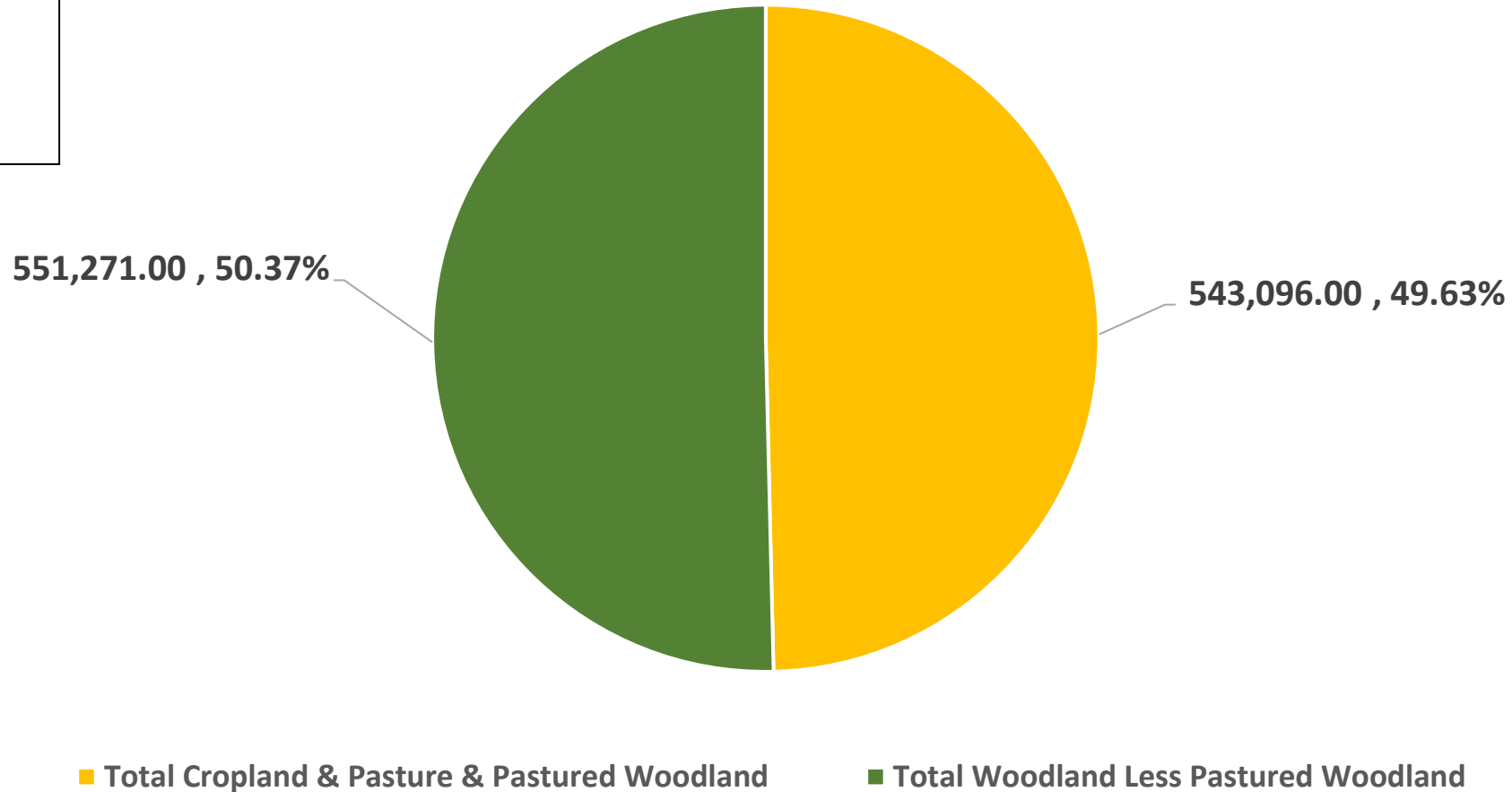
Forest & Agriculture Land Use - Vermont



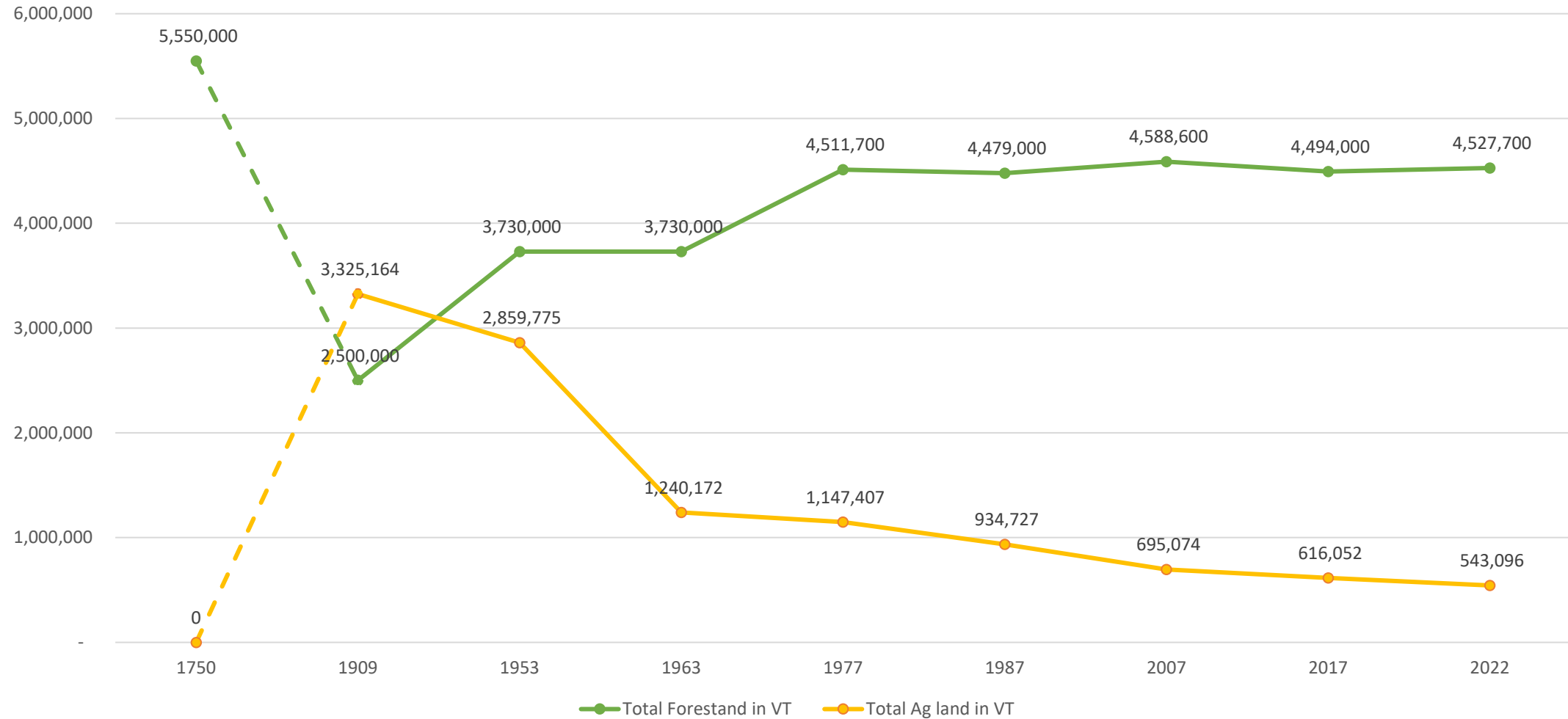
From: USDA NASS Ag Census; USDA Forest Service

For the first time in the modern census, farms in Vermont manage more forest than agricultural land.

Vermont Farmed Land vs. Farm Managed Woodland (acres)



Forest & Agriculture Land Use - Vermont

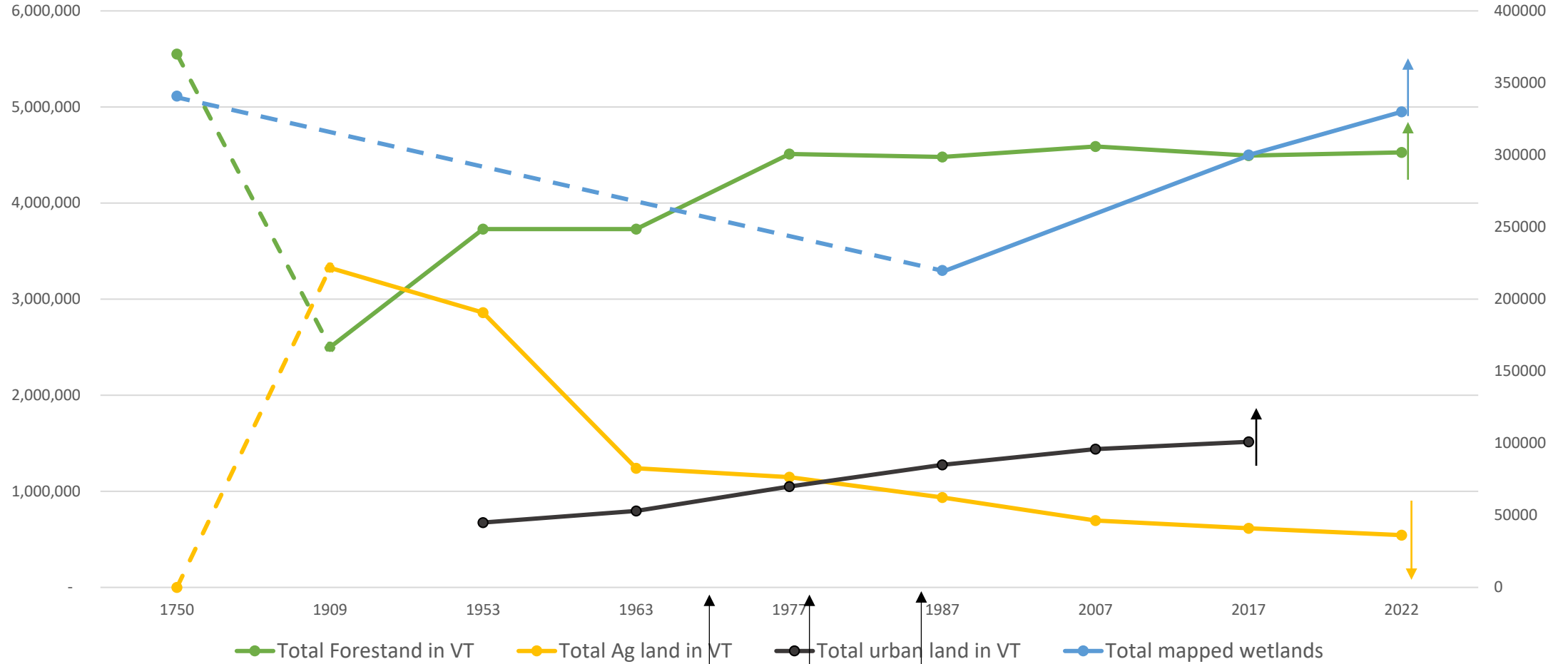


From: USDA NASS Ag Census; USDA Forest Service

Vermont Land Use Change over Time

(Ag & Forestry Scale)

(Wetlands & Urban Scale)



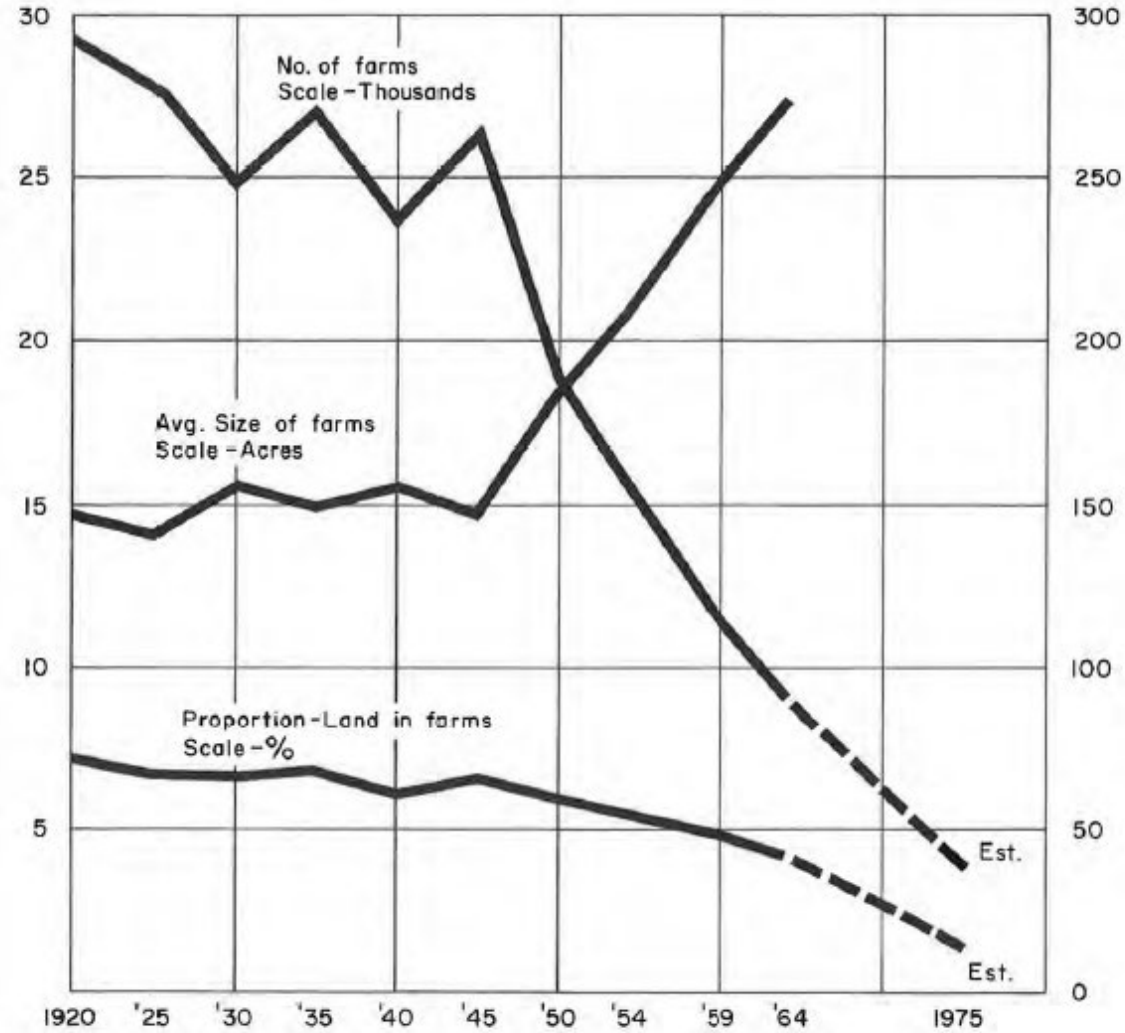
From: USDA NASS Ag Census; USDA Forest Service; USDA HUD; VT ANR DEC

1978 UVA

1972 Act 250

1987 VHCB

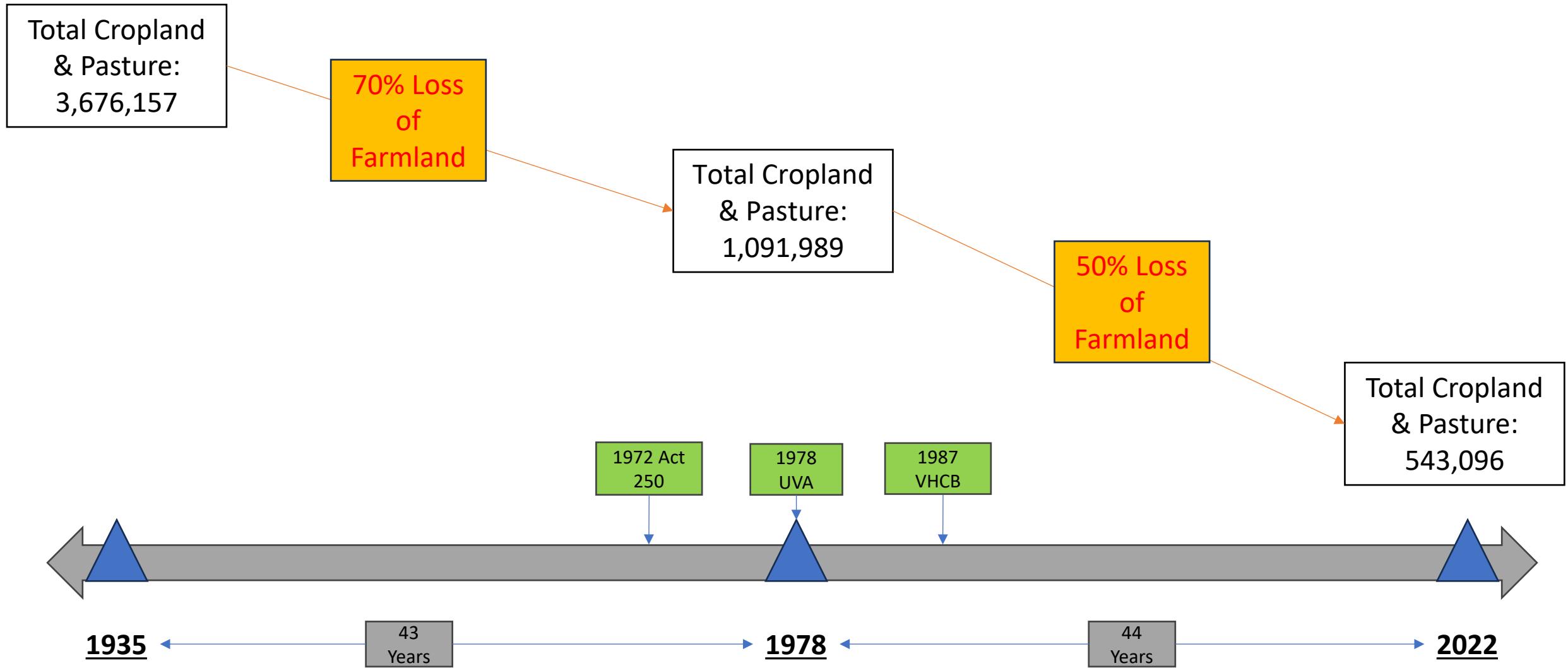
VERMONT FARM TRENDS 1920 - 1975



Data source: <https://tax.vermont.gov/sites/tax/files/documents/RP-1295-2024.pdf>

Data source: https://outside.vermont.gov/agency/ACCD/ACCD_Web_Docs/CD/CPR/Resources-and-Rules/DHCD-Planning-VisionChoice-FutureStateFramework-1968.pdf

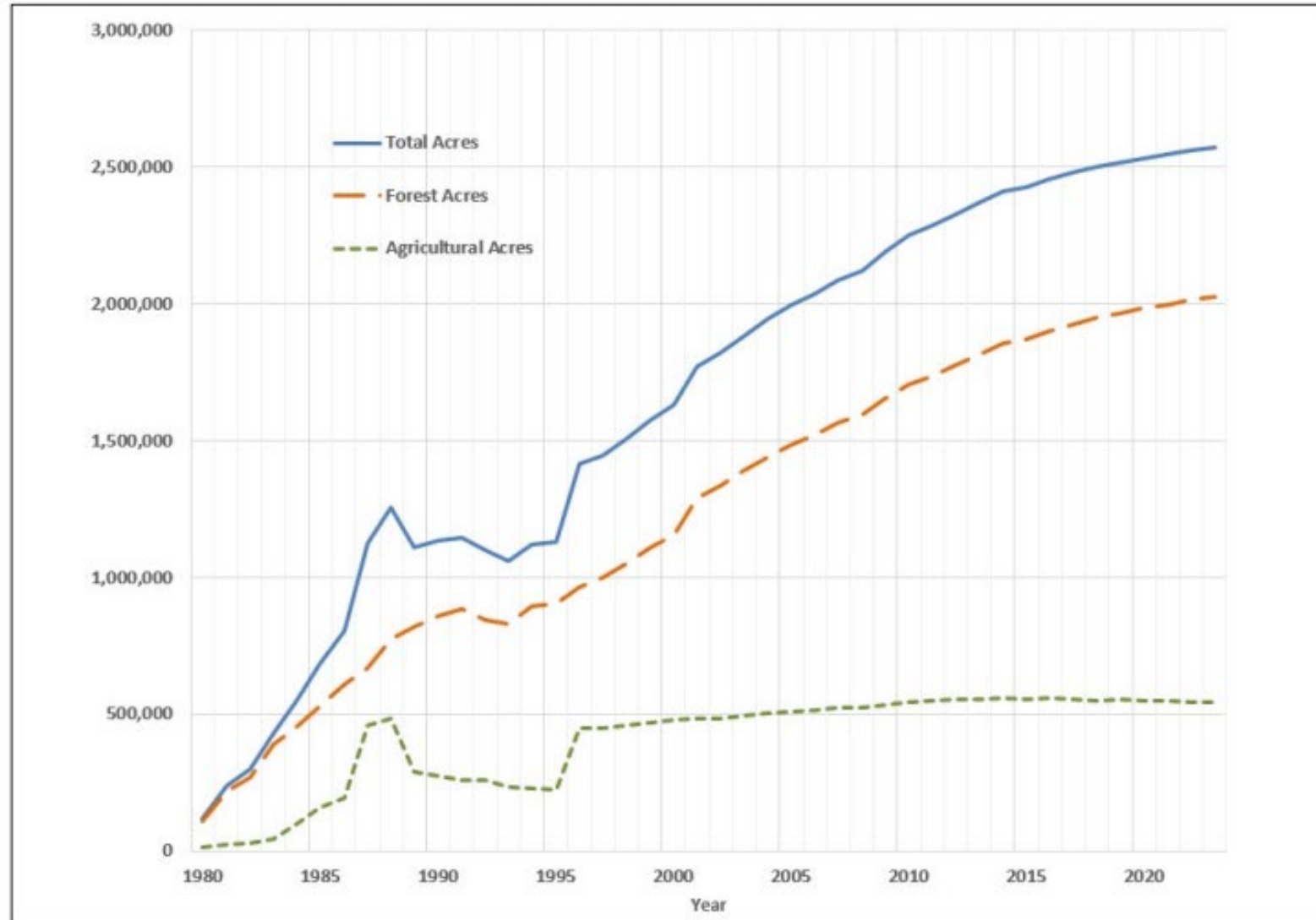
Vermont Ag Land Use Over Time



Data source: <https://tax.vermont.gov/sites/tax/files/documents/RP-1295-2024.pdf>

Data source: https://outside.vermont.gov/agency/ACCD/ACCD_Web_Docs/CD/CPR/Resources-and-Rules/DHCD-Planning-VisionChoice-FutureStateFramework-1968.pdf

Figure 1: Acreage Enrolled in Current Use Program by Year



Data source: <https://tax.vermont.gov/sites/tax/files/documents/RP-1295-2024.pdf>

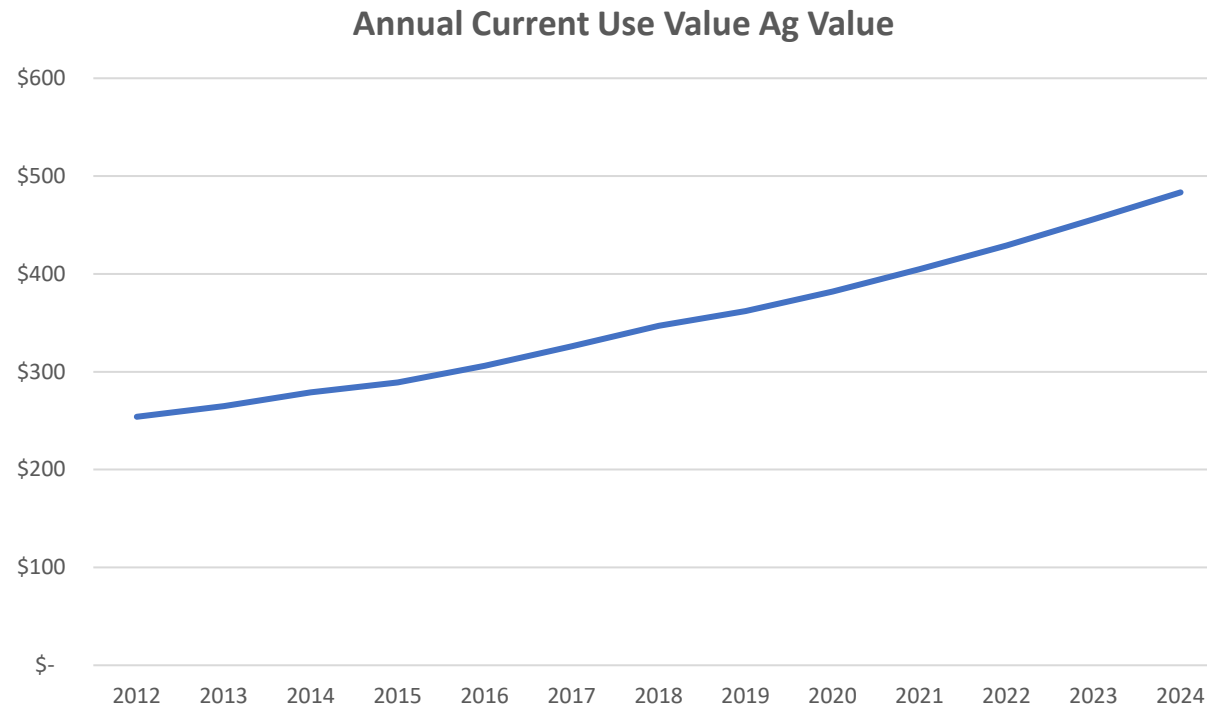
Data source: https://outside.vermont.gov/agency/ACCD/ACCD_Web_Docs/CD/CPR/Resources-and-Rules/DHCD-Planning-VisionChoice-FutureStateFramework-1968.pdf

In 2022, 57% of all Vermont farms were unprofitable and lost a combined \$85 million

Application of the Agricultural Current Use Value

Gloude-mans (1974, 1) defines use-value assessment as the assessment of property upon the basis of its value in a particular (current) use, rather than upon the basis of its market value.

Annual VT Ag Use Value	
2012	\$ 254
2013	\$ 265
2014	\$ 279
2015	\$ 289
2016	\$ 306
2017	\$ 326
2018	\$ 347
2019	\$ 362
2020	\$ 382
2021	\$ 405
2022	\$ 429
2023	\$ 456
2024	\$ 483



From: Anderson, John. (2012). Agricultural Use-Value Property Tax Assessment: Estimation and Policy Issues. Public Budgeting and Finance. 32. 10.1111/j.1540-5850.2012.01025.x.

From: Gloude-mans, R. J. (1974). Use-Value Farmland Assessments: Theory, Practice, and Impact. Chicago, IL: International Association of Assessing Officers.

UVA Tax Reduction & Ag Use Value Hypothetical

1.086	2019 Common Level of Appraisal (CLA)
A	Real Value
B	Enrolled Land Value (\$220,000)
C	Use Value
D	Land Use Reduction
E	Total Taxable Value
F	Grand List Value (1% of the Total Taxable Value)
0.4	Municipal Tax Rate
1.4386	Education Tax Rate

Acreage	Type	Use Value per Acre	Acreage x Use Value	(Acreage x Use Value) x CLA
100	Agricultural land	\$ 362.00	\$ 36,200.00	\$ 39,313.20

Without Current Use			
A		220,000	
	/100		
E	\$	2,200.00	
	Municipal		Education
	x 0.4		x 1.4386
	\$	880.00	\$ 3,164.92
Tax Due	\$	4,044.92	

Land Use Reduction Calculation	
B	\$ 220,000.00
C	\$ 39,313.20
D	\$ 180,686.80

With Current Use 2019			
A	\$	220,000.00	
D	\$	180,686.80	
E	\$	39,313.20	
	/100		
F	\$	393.13	
	Municipal		Education
	x 0.4		x 1.4386
	\$	157.25	\$ 565.56
Total	\$	722.81	
Reduction	\$	3,322.11	

UVA Tax Reduction & Ag Use Value Hypothetical

Year	Acreage	Type	Use Value per Acre	Acreage x Use Value	(Acreage x Use Value) x CLA
2012	100	Agricultural land	\$ 254.00	\$ 25,400.00	\$ 27,584.40
2019	100	Agricultural land	\$ 362.00	\$ 36,200.00	\$ 39,313.20
2024	100	Agricultural land	\$ 483.00	\$ 48,300.00	\$ 52,453.80

Land Use Reduction Calculation	
B	\$ 220,000.00
C	\$ 27,584.00
D	\$ 192,416.00

With Current Use 2012		
A	\$	220,000.00
D	\$	192,416.00
E	\$	27,584.00
	/100	
F	\$	275.84
	Municipal	Education
	x 0.4	x 1.4386
	\$	110.34 \$ 396.82
Total	\$	507.16

2012: **\$254** Ag Use Value
2012 Tax: **\$507.16**

Land Use Reduction Calculation	
B	\$ 220,000.00
C	\$ 52,492.00
D	\$ 167,508.00

With Current Use 2024		
A	\$	220,000.00
D	\$	167,508.00
E	\$	52,492.00
	/100	
F	\$	524.92
	Municipal	Education
	x 0.4	x 1.4386
	\$	209.97 \$ 755.15
Total	\$	965.12

2024: **\$483** Ag Use Value
2024 Tax: **\$965.12**

Agricultural Use Value Calculation

Agricultural use value can be written as the following general equation:

$$\tilde{v} = \frac{\tilde{A}}{r+\tau}$$

\tilde{v} = Agricultural use value
 \tilde{A} = Net agricultural revenue
 $(r+\tau)$ = Capitalization rate

Vermont's UVA program for agriculture can be written as the following formula:

$$\tilde{v} = \left(\frac{\left(\frac{((2024 \text{ Weighted Avg. Rental Rate}) + (4 \text{ Previous Years Avg. Rental Rate}))}{5 \text{ Years}} \right)}{\text{Capitalization Rate}} \right) + 4 \text{ Previous approved Agr. Current Use values}$$

$$\tilde{A} = \left(((\text{Total VT Cropland})(\text{Statewide Crop Rental Average})) \left(\frac{\text{Total VT Cropland}}{\text{Total VT Crop \& Pasture Land}} \right) \right) + \left(((\text{Total VT Pastureland})(\text{Statewide Pasture Rental Avg})) \left(\frac{\text{Total VT Pastureland}}{\text{Total VT Crop \& Pastureland}} \right) \right)$$

$$(r+\tau) = (\text{Debt to Cost of Capital Ratio}) + (\text{Risk}) + (\text{Statewide Effective Tax Rate})$$

$$\begin{aligned}
 & \boxed{\text{1. 2023 Weighted avg. Rental Rate}} \left(\left((Total\ VT\ Cropland)(Statewide\ Crop\ Rental\ Average) \right) \left(\frac{Total\ VT\ Cropland}{Total\ VT\ Crop\ \&\ Pasture\ Land} \right) \right) + \\
 & \left(\left((Total\ VT\ Pastureland)(Statewide\ Pasture\ Rental\ Avg) \right) \left(\frac{Total\ VT\ Pastureland}{Total\ VT\ Crop\ \&\ Pastureland} \right) \right)
 \end{aligned}$$

$$\boxed{\text{2. 2023 Capitalization Rate}} \quad (Debt\ to\ Cost\ of\ Capital\ Ratio) + (Risk) + (Statewide\ Effective\ Tax\ Rate)$$

3. Ag UVA Calculation

$$\left(\frac{\left(\frac{\left((2023\ Weighted\ Avg.\ Rental\ Rate) + (4\ Previous\ Years\ Avg.\ Rental\ Rate) \right)}{5\ Years} \right)}{2023\ Capitalization\ Rate} \right) + 4\ Previous\ approved\ Agr.\ Current\ Use\ values$$

2024 Ag UVA Value

$$\left(\frac{\left(\frac{\left((\$53.53) + (\$190.87) \right)}{5\ Years} \right)}{6.56\%} \right) + \$1,672 = \$483\ \text{for}\ 2024\ Ag\ Land\ Use\ Values$$

1. 2023 Weighted avg. Rental Rate

$$\left(((Total\ VT\ Cropland)(Statewide\ Crop\ Rental\ Average)) \left(\frac{Total\ VT\ Cropland}{Total\ VT\ Crop\ \&\ Pasture\ Land} \right) \right) + \left(((Total\ VT\ Pastureland)(Statewide\ Pasture\ Rental\ Avg)) \left(\frac{Total\ VT\ Pastureland}{Total\ VT\ Crop\ \&\ Pastureland} \right) \right)$$

USDA United States Department of Agriculture
National Agricultural Statistics Service

Quick Stats

Home Recent Statistics Developers Help

Navigation History: Data

Double click any cell below to filter the data by that item. Right click on column heading to pivot or hide columns.

Save :: Spreadsheet :: Printable :: Map :: (1347 rows)

Program	Year	Period	Geo Level	State	State ANSI	watershed_code	Commod	Domain	Domain Category	RENT, CASH, CROPLAND - EXPENSE, MEASURED IN \$ / ACRE - VALUE	RENT, CASH, CROPLAND - EXPENSE, MEASURED IN \$ / ACRE - CV (%)	RENT, CASH, CROPLAND, IRRIGATED - EXPENSE, MEASURED IN \$ / ACRE - VALUE	RENT, CASH, CROPLAND, IRRIGATED - EXPENSE, MEASURED IN \$ / ACRE - CV (%)	RENT, CASH, CROPLAND, NON-IRRIGATED - EXPENSE, MEASURED IN \$ / ACRE - VALUE	RENT, CASH, CROPLAND, NON-IRRIGATED - EXPENSE, MEASURED IN \$ / ACRE - CV (%)	RENT, CASH, PASTURELAND - EXPENSE, MEASURED IN \$ / ACRE - VALUE	RENT, CASH, PASTURELAND - EXPENSE, MEASURED IN \$ / ACRE - CV (%)
SURVEY	2023	YEAR	STATE	PENNSYLVAN	42	00000000	RENT	TOTAL	NOT SPECIFIED	107	...	172	...	106	...	41.5	...
SURVEY	2023	YEAR	STATE	SOUTH CAROLINA	45	00000000	RENT	TOTAL	NOT SPECIFIED	56	...	122	...	49	...	19.5	...
SURVEY	2023	YEAR	STATE	SOUTH DAKOTA	46	00000000	RENT	TOTAL	NOT SPECIFIED	128	...	219	...	126	...	30	...
SURVEY	2023	YEAR	STATE	TENNESSEE	47	00000000	RENT	TOTAL	NOT SPECIFIED	117	...	197	...	113	...	23	...
SURVEY	2023	YEAR	STATE	TEXAS	48	00000000	RENT	TOTAL	NOT SPECIFIED	44	...	113	...	31	...	8.5	...
SURVEY	2023	YEAR	STATE	UTAH	49	00000000	RENT	TOTAL	NOT SPECIFIED	86.5	...	114	...	33	...	4.1	...
SURVEY	2023	YEAR	STATE	VERMONT	50	00000000	RENT	TOTAL	NOT SPECIFIED	60.5	...	...	...	59.5	...	29	...
SURVEY	2023	YEAR	STATE	VIRGINIA	51	00000000	RENT	TOTAL	NOT SPECIFIED	68.5	...	122	...	66.5	...	24.5	...
SURVEY	2023	YEAR	STATE	WASHINGTON	53	00000000	RENT	TOTAL	NOT SPECIFIED	238	...	440	...	76	...	9	...
SURVEY	2023	YEAR	STATE	WEST VIRGINIA	54	00000000	RENT	TOTAL	NOT SPECIFIED	45	...	...	...	45	...	14	...
SURVEY	2023	YEAR	STATE	WISCONSIN	55	00000000	RENT	TOTAL	NOT SPECIFIED	156	...	268	...	151	...	37.5	...
SURVEY	2023	YEAR	STATE	WYOMING	56	00000000	RENT	TOTAL	NOT SPECIFIED	60	...	86.5	...	20	...	5.9	...
SURVEY	2022	YEAR	NATIONAL	US TOTAL	...	00000000	RENT	TOTAL	NOT SPECIFIED	148	...	227	...	135	...	14	...
SURVEY	2022	YEAR	STATE	ALABAMA	01	00000000	RENT	TOTAL	NOT SPECIFIED	69	...	129	...	66.5	...	23.5	...

Source:

[https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume 1, Chapter 1 State Level/Vermont/st50_1_0007_0008.pdf](https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Vermont/st50_1_0007_0008.pdf)

Source: USDA NASS, 2023 Cash Rents and Leases Survey – State Data: Vermont; <https://quickstats.nass.usda.gov/results/58B27A06-F574-315B-A854-9BF568F17652#7878272B-A9F3-3BC2-960D-5F03B7DF4826>

1. 2023 Weighted avg. Rental Rate

$$\left(((Total\ VT\ Cropland)(Statewide\ Crop\ Rental\ Average)) \left(\frac{Total\ VT\ Cropland}{Total\ VT\ Crop\ \&\ Pasture\ Land} \right) \right) + \left(((Total\ VT\ Pastureland)(Statewide\ Pasture\ Rental\ Avg)) \left(\frac{Total\ VT\ Pastureland}{Total\ VT\ Crop\ \&\ Pastureland} \right) \right)$$

Total VT Cropland (USDA Census):		479,680 acres
	<u>2023</u>	
Statewide Rental Average/ acre:	\$ 60.50	
Wgt. Average:	78%	
Total VT Pastureland (USDA Census):		136,372 acres
	<u>2023</u>	
Statewide Rental Average/ acre:	\$ 29.00	
Wgt. Average:	22%	
5 yr. wgt. avg. (2014-2018)		2023
		\$53.53

**Total VT
Cropland and
Pasture Acres:
616,052 acres**

Source: 2017 USDA NASS Pasture and Cropland Acreage:

[https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1, Chapter_1_State_Level/Vermont/st50_1_0007_0008.pdf](https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/Vermont/st50_1_0007_0008.pdf)

Source: USDA NASS, 2023 Cash Rents and Leases Survey – State Data: Vermont; <https://quickstats.nass.usda.gov/results/58B27A06-F574-315B-A854-9BF568F17652#7878272B-A9F3-3BC2-960D-5F03B7DF4826>

2. 2023 Capitalization Rate

$$(Debt\ to\ Cost\ of\ Capital\ Ratio) + (Risk) + (Statewide\ Effective\ Tax\ Rate)$$

<u>Capitalization Rate:</u>	
debt/cost of capital	2.813% (10 yr. avg. of 30-yr. Treasury Bonds)
risk	2%
property tax	<u>1.75%</u> (statewide effective tax rate)
Capitalization rate:	6.56%

Source: Katharine Servidio; FPR: Current use discount rate 2.813% email: 1/29/2024

Source: Elizabeth Hunt: Department of Tax: Current Use Program Property Valuation and Review email 1/25/2023. The statewide effective tax rate is 1.75, a significant drop from previous years. For comparison, 2022 rate was 2.08.

3A

$$\left(\frac{\left(\frac{\left((2023 \text{ Weighted Avg. Rental Rate}) + (4 \text{ Previous Years Avg. Rental Rate}) \right)}{5 \text{ Years}} \right)}{\text{Capitalization Rate}} \right) + 4 \text{ Previous approved Agr. Current Use values}$$

5 Years

5 Year Weighted Average

<u>Total VT Cropland (USDA Census):</u>					
	479,680 acres				
	<u>2023</u>	<u>2022</u>	<u>2021</u>	<u>2020</u>	<u>2019</u>
Statewide Rental Average/ acre:	\$ 60.50	\$ 58.50	\$ 52.00	\$ 53.00	\$ 50.00
Wgt. Average:	78%	78%	78%	78%	78%

<u>Total VT Pastureland (USDA Census):</u>					
	136,372 acres				
	<u>2023</u>	<u>2022</u>	<u>2021</u>	<u>2020</u>	<u>2019</u>
Statewide Rental Average/ acre:	\$ 29.00	\$ 26.50	\$ 26.50	\$ 29.00	\$ 29.00
Wgt. Average:	22%	22%	22%	22%	22%

<u>5 yr. wgt. avg. (2014-2018)</u>						
	<u>2023</u>	<u>2022</u>	<u>2021</u>	<u>2020</u>	<u>2019</u>	<u>5 yr.</u>
	\$ 53.53	\$ 51.42	\$ 46.36	\$ 47.72	\$ 45.38	Average
						\$ 48.88

3B
$$\left(\frac{\left(\frac{((2023 \text{ Weighted Avg. Rental Rate}) + (4 \text{ Previous Years Avg. Rental Rate}))}{5 \text{ Years}} \right)}{2023 \text{ Capitalization Rate}} \right) + 4 \text{ Previous approved Agr. Current Use values}$$

Apply Capitalization Rate

<u>Apply Capitalization Rate:</u>		2023 AGR Value
\$ 48.88	divided by 6.56%	equals: \$ 745

3C

$$\left(\frac{\left(\frac{((2023 \text{ Weighted Avg. Rental Rate}) + (4 \text{ Previous Years Avg. Rental Rate}))}{5 \text{ Years}} \right)}{2023 \text{ Capitalization Rate}} \right) + 4 \text{ Previous approved Agr. Current Use values}$$

Average the Value calculated for 2024 with Prior 4 years approved Ag. C.U. Values

Average the 2024 value with prior 4 years' C.U. values:

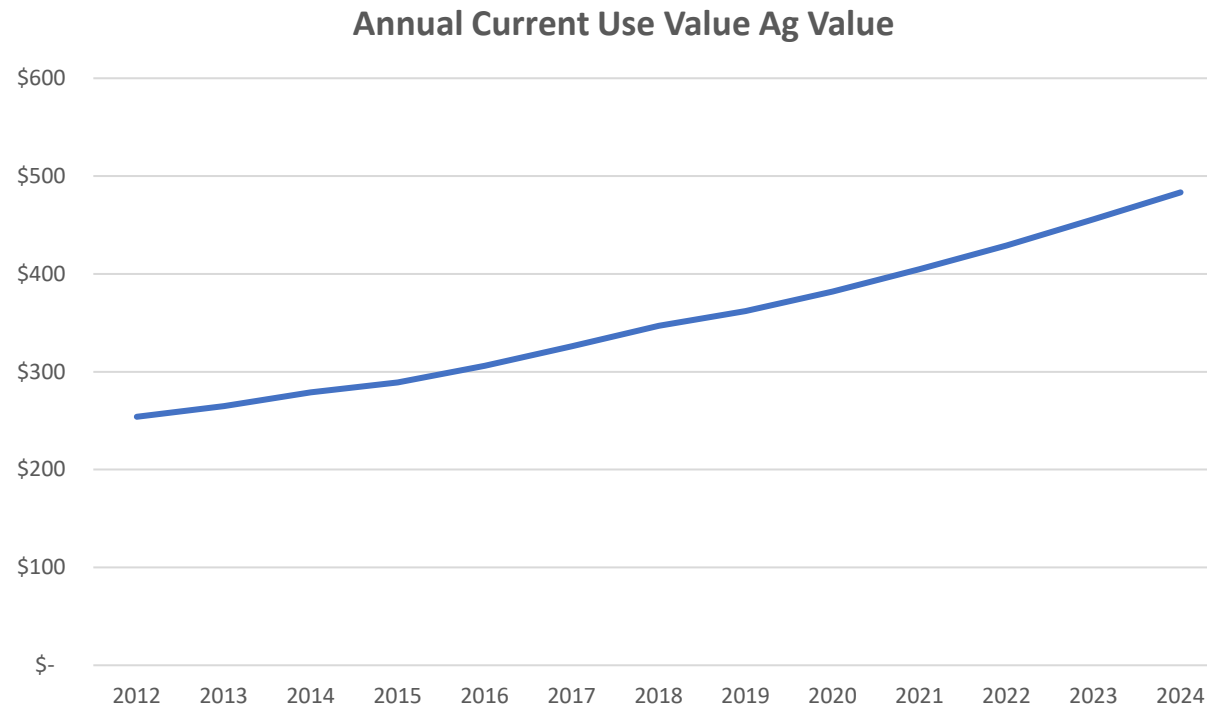
2020	\$	382
2021	\$	405
2022	\$	429
2023	\$	456
2024	\$	745
<u>Current Use</u>		
<u>Value:</u>	\$	483

2024 Ag UVA
Value

$$\left(\frac{\left(\frac{(\$53.53) + (\$190.87)}{5 \text{ Years}} \right)}{6.56\%} + \$1,672 \right) = \$483 \text{ for 2023 Ag Land Use Values}$$

Gloude-mans (1974, 1) defines use-value assessment as the assessment of property upon the basis of its value in a particular (current) use, rather than upon the basis of its market value.

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From: Anderson, John. (2012). Agricultural Use-Value Property Tax Assessment: Estimation and Policy Issues. Public Budgeting and Finance. 32. 10.1111/j.1540-5850.2012.01025.x.

From: Gloude-mans, R. J. (1974). Use-Value Farmland Assessments: Theory, Practice, and Impact. Chicago, IL: International Association of Assessing Officers.

UVA Definitions

(Cite as: 32 V.S.A. § 3752)

§ 3752. Definitions

As used in this subchapter:

(1) “Agricultural land” means any land, exclusive of any housesite, in active use to grow hay or cultivated crops, pasture livestock, cultivate trees bearing edible fruit, or produce an annual maple product, and that is 25 acres or more in size, except as provided in this subdivision (1). Agricultural land shall include buffer zones as defined and required in the Agency of Agriculture, Food and Markets’ Required Agricultural Practices rule adopted under 6 V.S.A. chapter 215. There shall be a presumption that the land is used for agricultural purposes if:

(A) it is owned by a farmer and is part of the overall farm unit;

(B) it is used by a farmer as part of the farmer’s operation under written lease for at least three years; or

(C) it has produced an annual gross income from the sale of farm crops in one of two, or three of the five, calendar years preceding of at least:

(i) \$2,000.00 for parcels of up to 25 acres; and

(ii) \$75.00 per acre for each acre over 25, with the total income required not to exceed \$5,000.00.

(iii) Exceptions to these income requirements may be made in cases of orchard lands planted to fruit-producing trees, bushes, or vines that are not yet of bearing age. As used in this section, the term “farm crops” also includes animal fiber, cider, wine, and cheese, produced on the enrolled land or on a housesite adjoining the enrolled land, from agricultural products grown on the enrolled land.

Current Use: Enrolling Leased Land or Farm Buildings

This fact sheet explains the Current Use Program requirements when a lease is used to enroll farm buildings or fewer than 25 acres of agricultural land. The following requirements are in addition to the regular application requirements.

- 1** The lessee must be a “farmer.” For current use purposes, a “farmer” is defined as a person who earns at least one-half of the person’s income from the “business of farming,” as that term is defined in federal regulations. See 32 V.S.A. § 3752(7) and 26 C.F.R. § 1.175-3.

(7) “Farmer” means a person:

(A) who earns at least one-half of the farmer’s annual gross income from the business of farming as that term is defined in Regulation 1.175-3 issued under the Internal Revenue Code of 1986; or

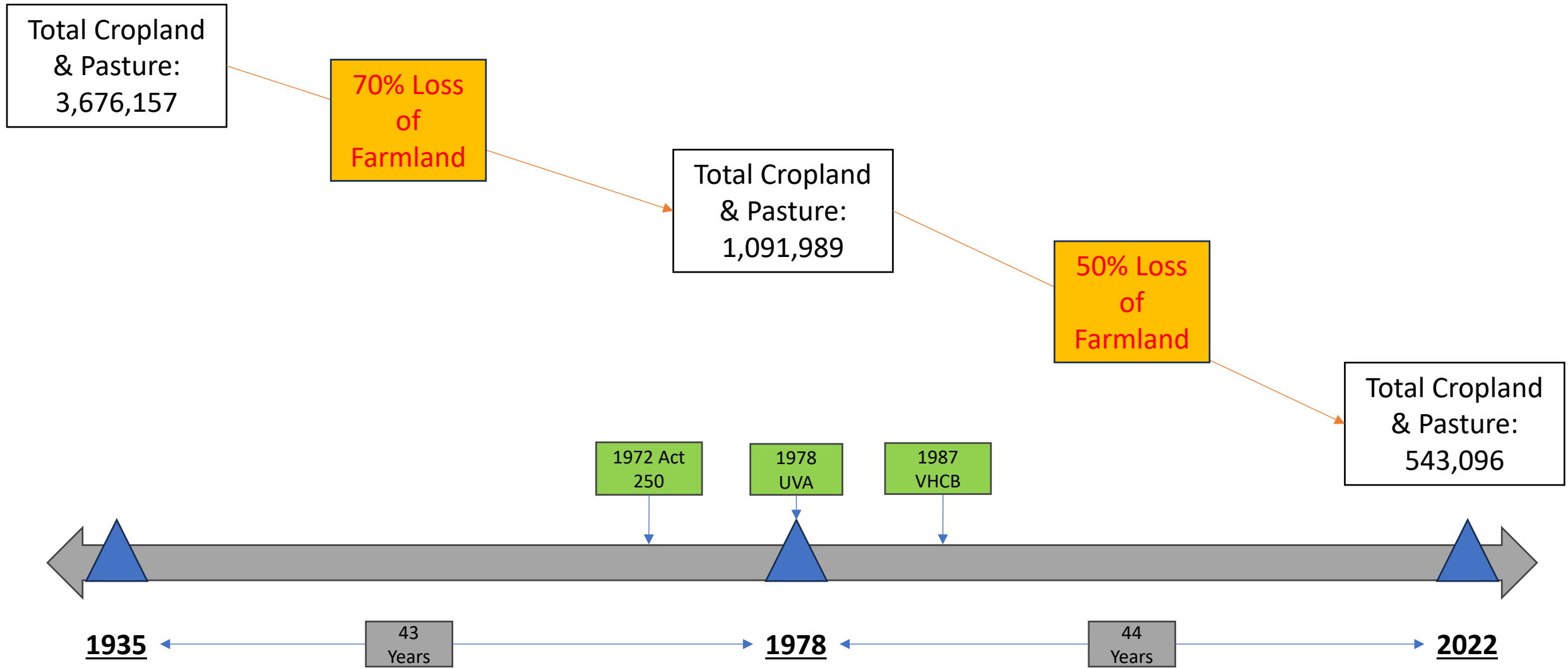
(B)(i) who produces farm crops that are processed in a farm facility situated on land enrolled by the farmer in a use value appraisal program or on a housesite adjoining the enrolled land;

(ii) whose gross income from the sale of the processed farm products pursuant to subdivision (i) of this subdivision (B), when added to other gross income from the business of farming as used in subdivision (A) of this subdivision (7), equals at least one-half of the farmer’s annual gross income; and

(iii) who produces on the farm a minimum of 75 percent of the farm crops processed in the farm facility.

(C) The Agency of Agriculture, Food and Markets shall assist the Director in making determinations of eligibility pursuant to subdivision (B) of this subdivision (7).

Vermont Ag Land Use Over Time



Data source: <https://tax.vermont.gov/sites/tax/files/documents/RP-1295-2024.pdf>

Data source: https://outside.vermont.gov/agency/ACCD/ACCD_Web_Docs/CD/CPR/Resources-and-Rules/DHCD-Planning-VisionChoice-FutureStateFramework-1968.pdf

Summary by (Market) Value of Agricultural Products Sold: 1978 (2022)



1978

2022

Median Income USA 1978: \$15,060

Median Income USA 2023: \$80,610

Number of VT Farms: 7,273

Number of VT Farms: 6,537

Farms with sales of \$20,000 or more: 3,162

*\$20,000 in 1978 is worth
\$96,407.95 in 2024*

Farms with sales of \$100,000 or more: 1,065

Percentage of farms with sales of
\$20,000 or more: 43%

Percentage of farms with sales of \$100,000
or more: 16%

Percent land in farms with sales of
\$20,000 or more: 67%

Percent land in farms with sales of
\$100,000 or more: 53%

Data source: <https://tax.vermont.gov/sites/tax/files/documents/RP-1295-2024.pdf>

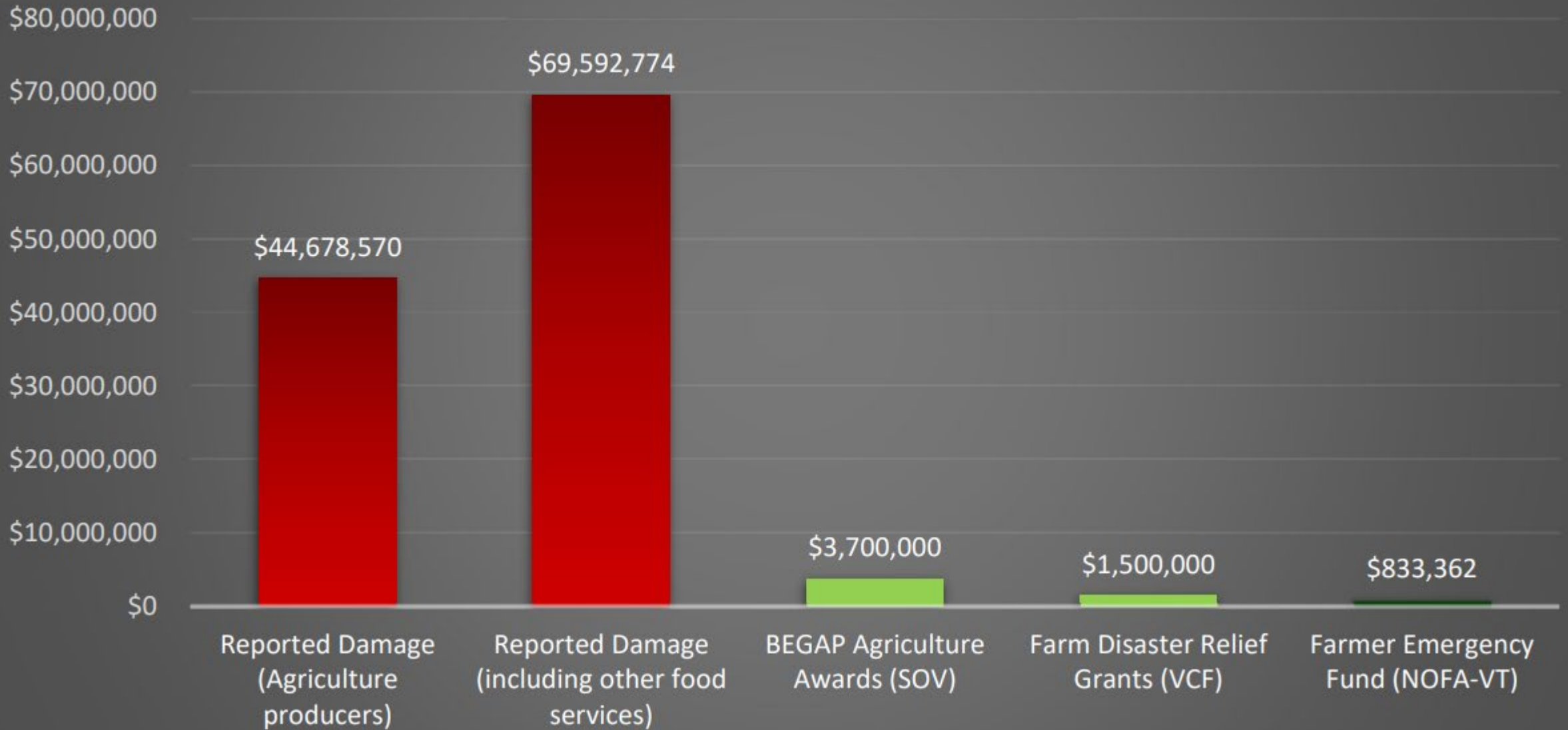
Data source: <https://www.minneapolisfed.org/about-us/monetary-policy/inflation-calculator>

Data Source: <https://www.census.gov/library/publications/1980/demo/p60-121.html>

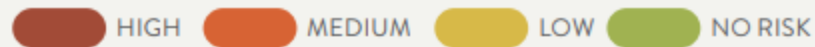
Data Source: https://agcensus.library.cornell.edu/wp-content/uploads/1978-Vermont-CHAPTER_1_State_Data-181-Table-34.pdf

Data Source: https://www.nass.usda.gov/Publications/AgCensus/2022/Full_Report/Volume_1,_Chapter_1_State_Level/Vermont/st50_1_007_008.pdf

Damage vs. Funding



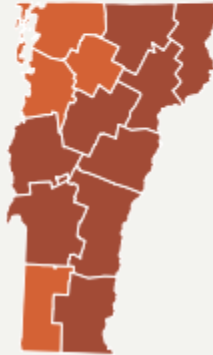
» Projected Climate Risks



EXTREME RAIN



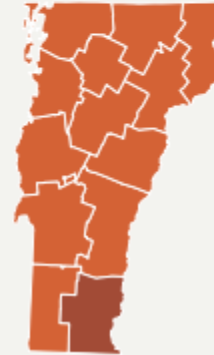
Annual precipitation and extreme precipitation events in Vermont have been above average in recent years.



HURRICANES



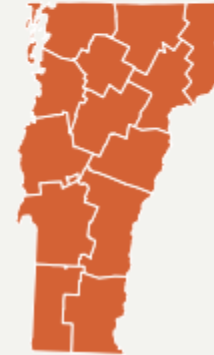
Hurricanes Irene (2011), Floyd (1999), and Gloria (1985), were all billion-dollar disasters that impacted Vermont.



WATER STRESS



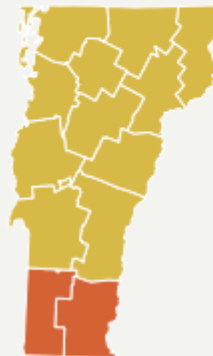
Vermont has experienced more abnormally dry days during the past 10 years than it did in the early 2000s.



WILDFIRE



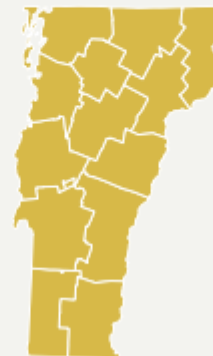
Large wildfires are not very common in Vermont, but 200-400 small fires (1.5-2 acres) occur per year.



HEAT STRESS



Temperatures have risen about 3.0°F since the beginning of the 20th century, resulting in warmer nights, shorter freeze-free seasons, and longer growing seasons.



SEA LEVEL RISE



With no ocean coastline, Vermont is spared the direct impacts of sea level rise.

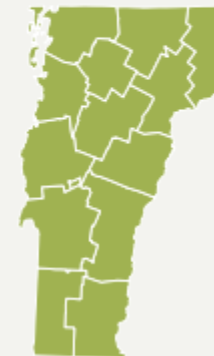
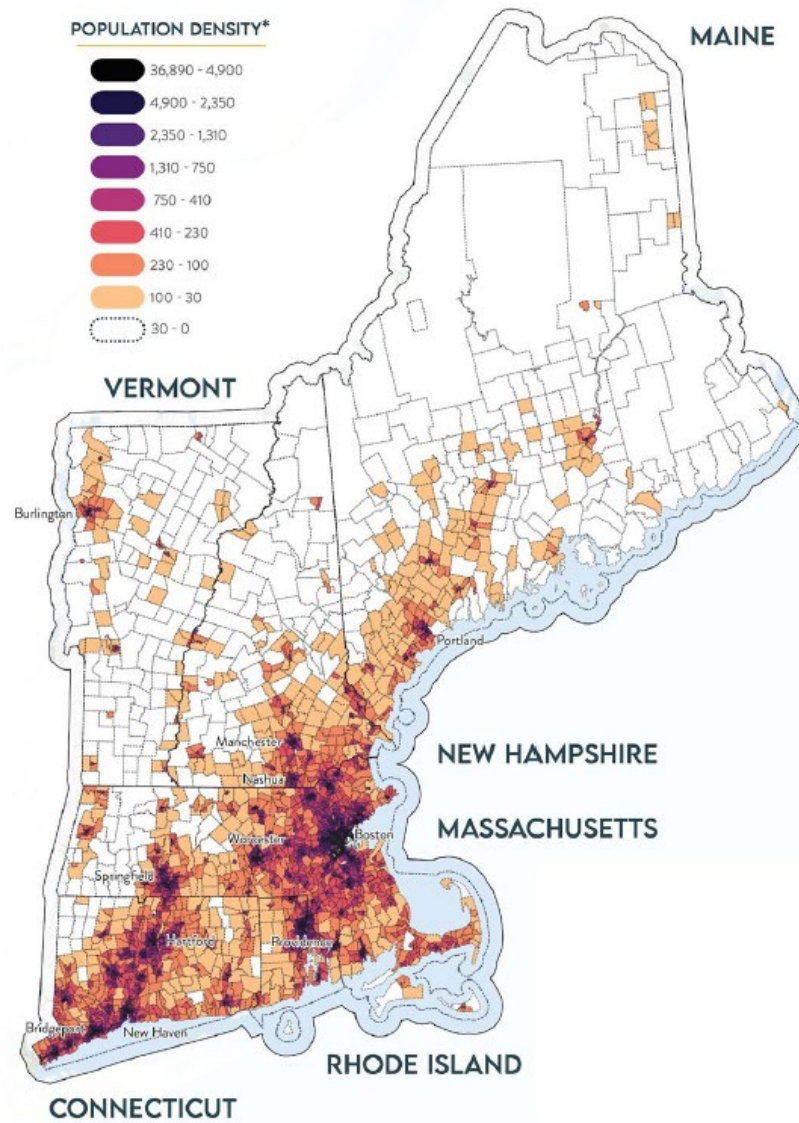
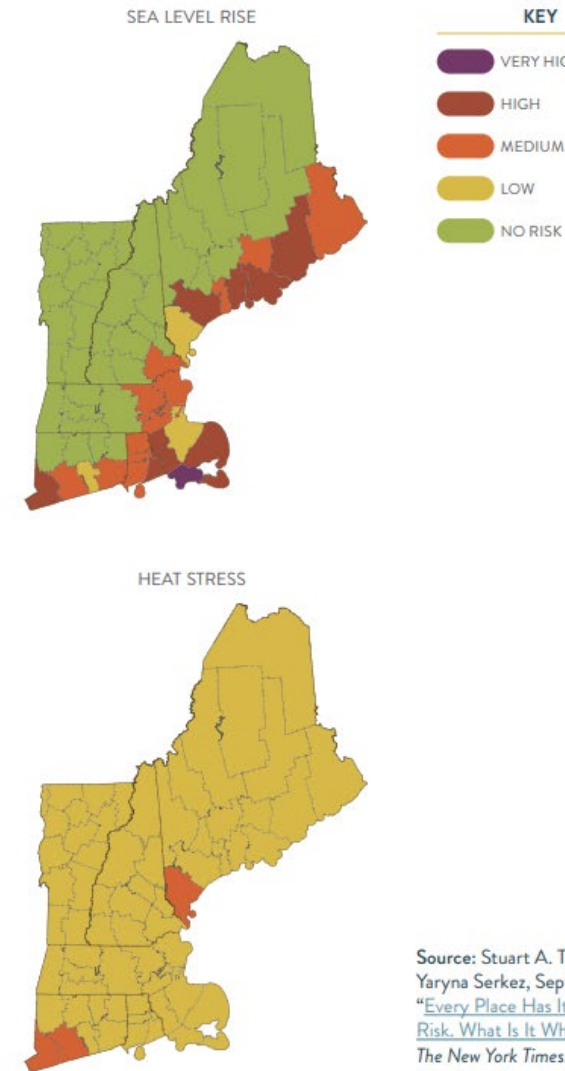


FIGURE 3: New England Population Density by Town/City



* Number of people per square kilometer



Source: Stuart A. Thompson and Yaryna Serkez, September 18, 2020, "Every Place Has Its Own Climate Risk. What Is It Where You Live?," *The New York Times*. Based on data from Four Twenty Seven.

» Projected Changes in Land in Agriculture, Business as Usual Scenario

TOTAL
1,193,437 ACRES EXISTING ACREAGE
-41,200 ACRES BUSINESS AS USUAL SCENARIO

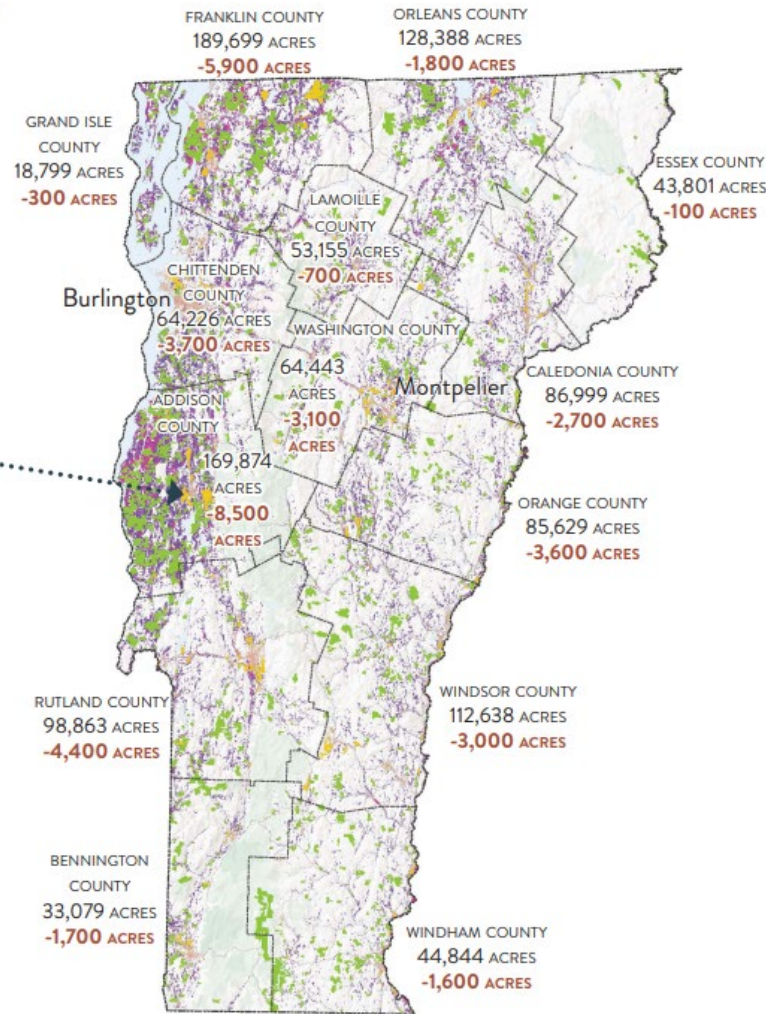
- LAND USES**
- CULTIVATED CROPS
 - PASTURE/HAY
 - EASEMENT
 - DEVELOPED LAND
 - PROJECTED URBAN AND HIGHLY DEVELOPED AND LOW-DENSITY RESIDENTIAL

An analysis from the American Farmland Trust (AFT) estimates that Vermont could lose an additional **41,200 acres** by 2040 under a “Business as Usual” development scenario and **61,800 acres** under a “Runaway Sprawl” scenario.

AFT projects that **Addison, Franklin, and Rutland** counties will experience the biggest decreases in land in agriculture.

Source: American Farmland Trust, *Farms Under Threat 2040: Choosing an Abundant Future*

20.5% Vermont has the highest percentage of agricultural land as a percentage of total land area, 20.5%, of any state in New England, but only a small percentage of agricultural land is used for crops to directly feed people.



On recent trends, from 2016 to 2040:

Vermonters will pave over, fragment, or compromise

41,200 acres of farmland.

That's the equivalent of losing

200 farms,
\$24 million
 in farm output, and
700 jobs

based on county averages.¹

60% of the conversion will occur on Vermont's best land.²

Hardest-hit counties:

- ▶ **Addison**
- ▶ **Franklin**
- ▶ **Rutland**

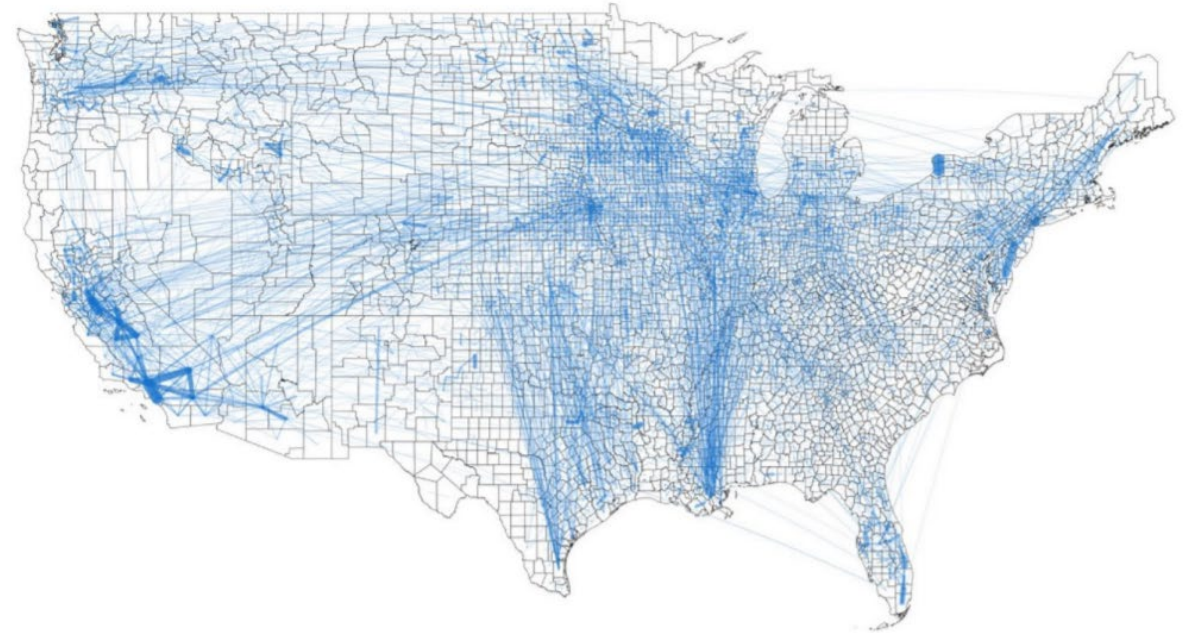
¹ Census of Agriculture 2017
² Freedgood et al. 2020

What to call climate change where you live

Intensity shows risk level from low (lighter) to very high (darker)



Food Flows: Downscaled to All Counties



Source: Ellen Kahler, VSJF Presentation to House Agriculture:

<https://legislature.vermont.gov/Documents/2022/WorkGroups/House%20Agriculture/Food%20Security/W~Ellen%20Kahler~New%20England%20Feeding%20New%20England-%20Cultivating%20a%20Reliable%20Food%20Supply~1-26-2021.pdf>

To achieve 30% regional production available for consumption (in servings), **400,000** in existing underutilized cropland and **590,000** in new cropland would need to be brought into production.

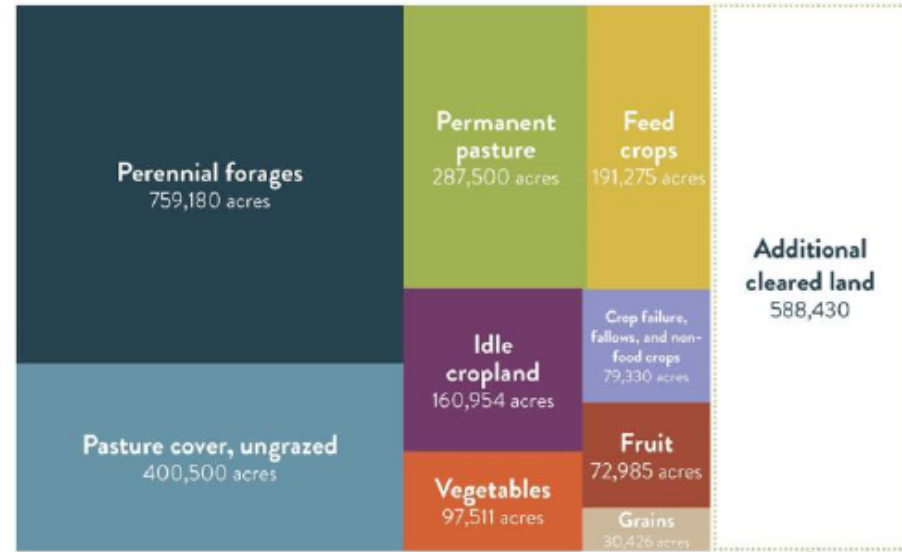
2022 USDA Ag Census Vermont:
543,096 acres of land used for farming



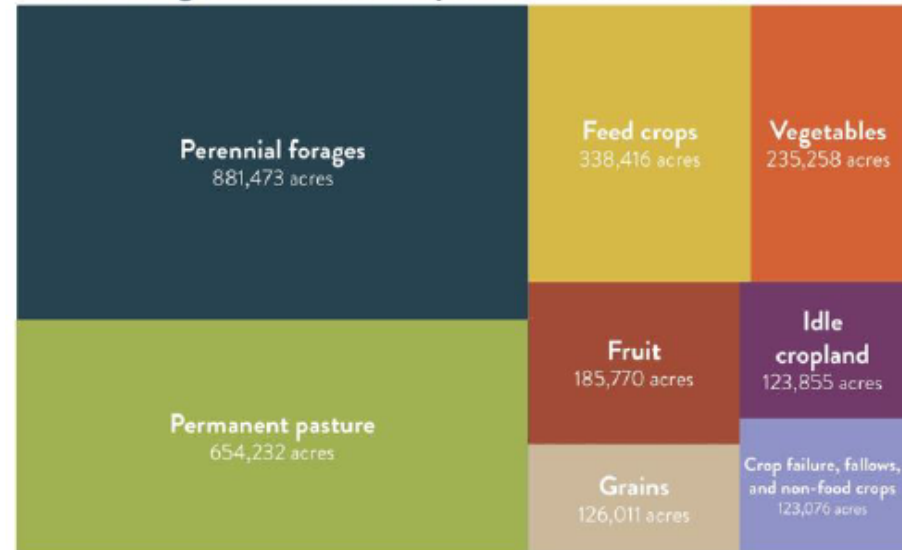
Source: https://nefoodsystemplanners.org/wp-content/uploads/NEFNE_Executive-Summary.pdf

Source: <https://nefoodsystemplanners.org/wp-content/uploads/NEFNE-VERMONT-State-Brief.pdf>

Land in Agriculture (2017): 2,079,661 acres



Estimated Agricultural Land Required for 30% RSR: 2,668,092 acres



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