

Vineyard Site Selection

Beginner Grape School

11 March 2022

Dean S. Volenberg

Site Selection – More than growing grapes

Long Term Goals

- Do you want to open a winery?
- Do you want to open a distillery?
- Do you enjoy working with the public?

Short Term Goals

- Do you want to grow grapes?
- Do you have a market for the grapes?
- Do you have a winery or other vineyards nearby?
- Are wine trails established nearby?





Site Selection

- Macroclimate – region
- Mesoclimate – vineyard site
- Microclimate – area around vine
- Macroclimate
 - Winter temperatures
 - $\leq -20^{\circ}\text{F}$ (-40°F Warsaw)
 - Growing season length
 - Minimum 150 frost free days
 - Growing season heat accumulation
 - Minimum 2,000 GDD (base 50)

Site Selection

- Frost Free Days
- GDD

The screenshot shows a web browser window displaying the MRCC Climate of the Midwest website. The page is titled "Climate of the Midwest" and features a navigation menu with options like "Climate Watch", "Climate Summaries", "Climate Change", "Climate Calendars", and "Living With Wx". The "Climate Summaries" section is active, and the user has selected "AFTON, ROCKCO" in Wisconsin. The page also includes a map of the Midwest and a section for choosing data parameters: Temperature, Precipitation, Snow, and Growing Season. A disclaimer at the bottom states: "The source of the data in these products comes from the U.S. Cooperative Network, augmented by observations from the relatively small number of NWS sites. These cooperative sites are operated by volunteer observers using approved instruments and observing techniques. It is only through their efforts that we have long-term data for such a large number of sites."

There are a number of ways to calculate degree days, but the simplest method is called averaging

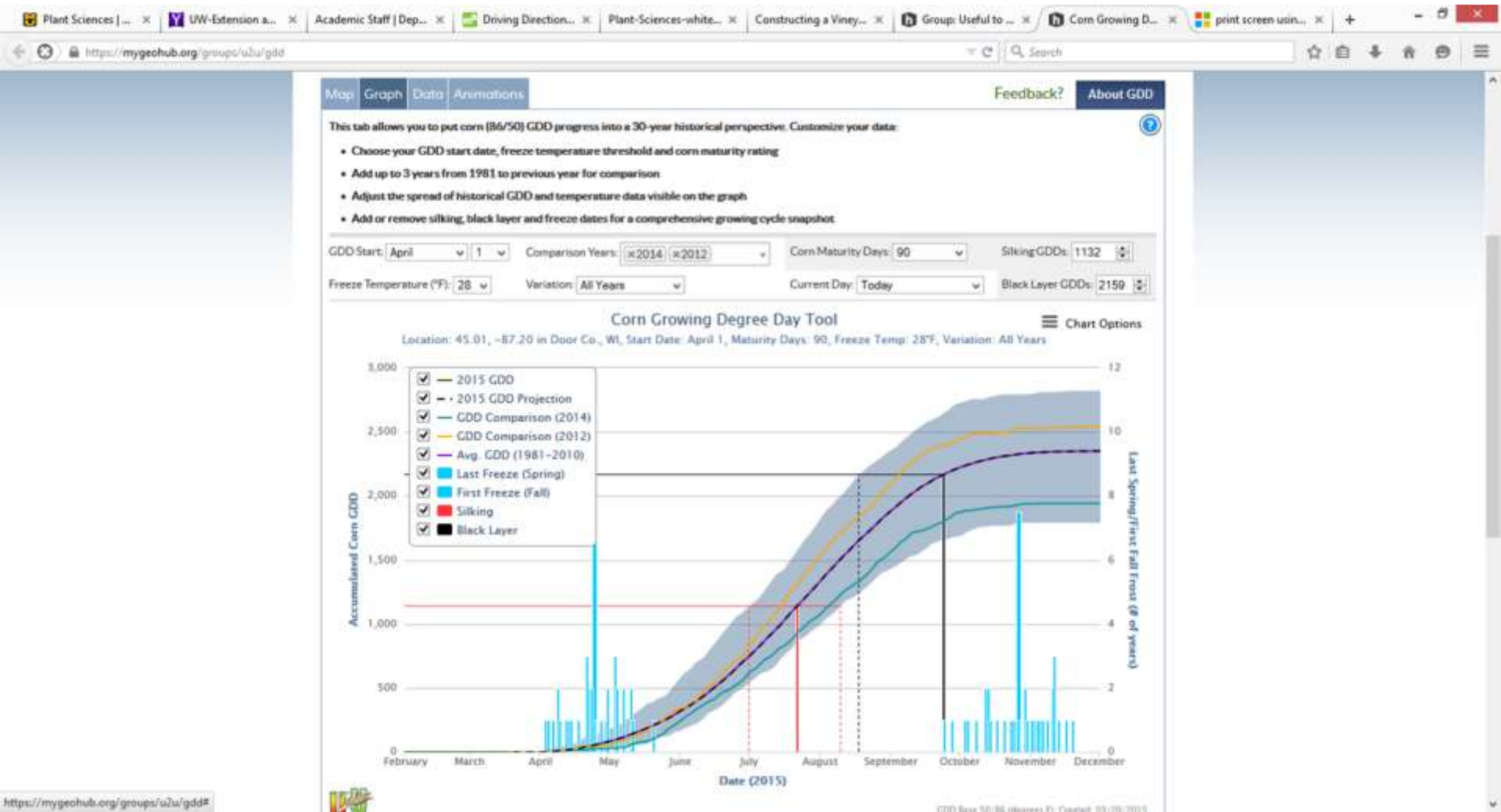
- Degree Days (DD) = average daily temperature - base temperature which =

Maximum daily temperature + Minimum daily temperature)/2 - base temperature

- Example: Calculate DD base 50, given 70 degrees maximum temperature and 35 degrees minimum temperature
- $DD \text{ (base 50)} = (70 + 35)/2 - 50 = 2.5$
- If answer is negative assume 0 DD

Climate Decision Dashboard

<https://mygeohub.org/groups/u2u/tools>

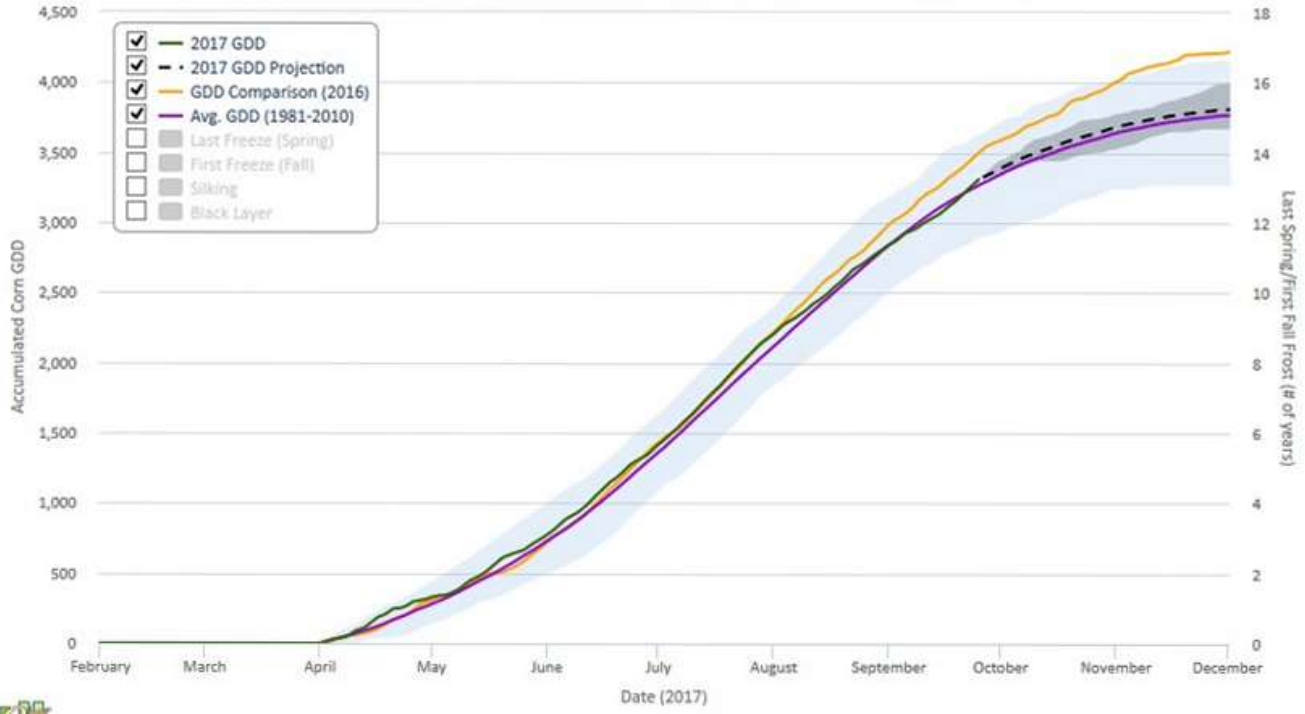


GDD Start: April 1 Comparison Years: 2016 Corn Maturity Days: 113 Silking GDDs: 1395
 Freeze Temperature (°F): 28 Variation: All Years Current Day: Today Black Layer GDDs: 2715

Corn Growing Degree Day Tool

Chart Options

Location: 38.44, -91.58 in Gasconade Co., MO, Start Date: April 1, Maturity Days: 113, Freeze Temp: 28°F, Variation: All Years



Site Selection

USDA Plant Hardiness Zone Map - Windows Internet Explorer

http://planthardiness.ars.usda.gov/PHZMWeb/

File Edit View Favorites Tools Help

USDA Agricultural Research Service
United States Department of Agriculture

Mapping by PRISM Climate Group - Oregon State University

Stay Connected

Home View Maps About Map & Data Downloads Interactive Map Help

Find Your Plant Hardiness Zone
Enter ZIP Code: 54801 Find
Zone 3b : -35 to -30 (F)

View Your State Map
For a static map of your state, click on the map below or Select a State

USDA Plant Hardiness Zone Map

The 2012 USDA Plant Hardiness Zone Map is the standard by which gardeners and growers can determine which plants are most likely to thrive at a location. The map is based on the average annual minimum winter temperature, divided into 10-degree F zones.

For the first time, the map is available as an interactive GIS-based map, for which a broadband Internet connection is recommended, and as static images for those with slower Internet access. Users may also simply type in a ZIP Code and find the hardiness zone for that area.

No posters of the USDA Plant Hardiness Zone Map have been printed. But state, regional, and national images of the map can be downloaded and printed in a variety of sizes and resolutions.

USDA Plant Hardiness Zone Map

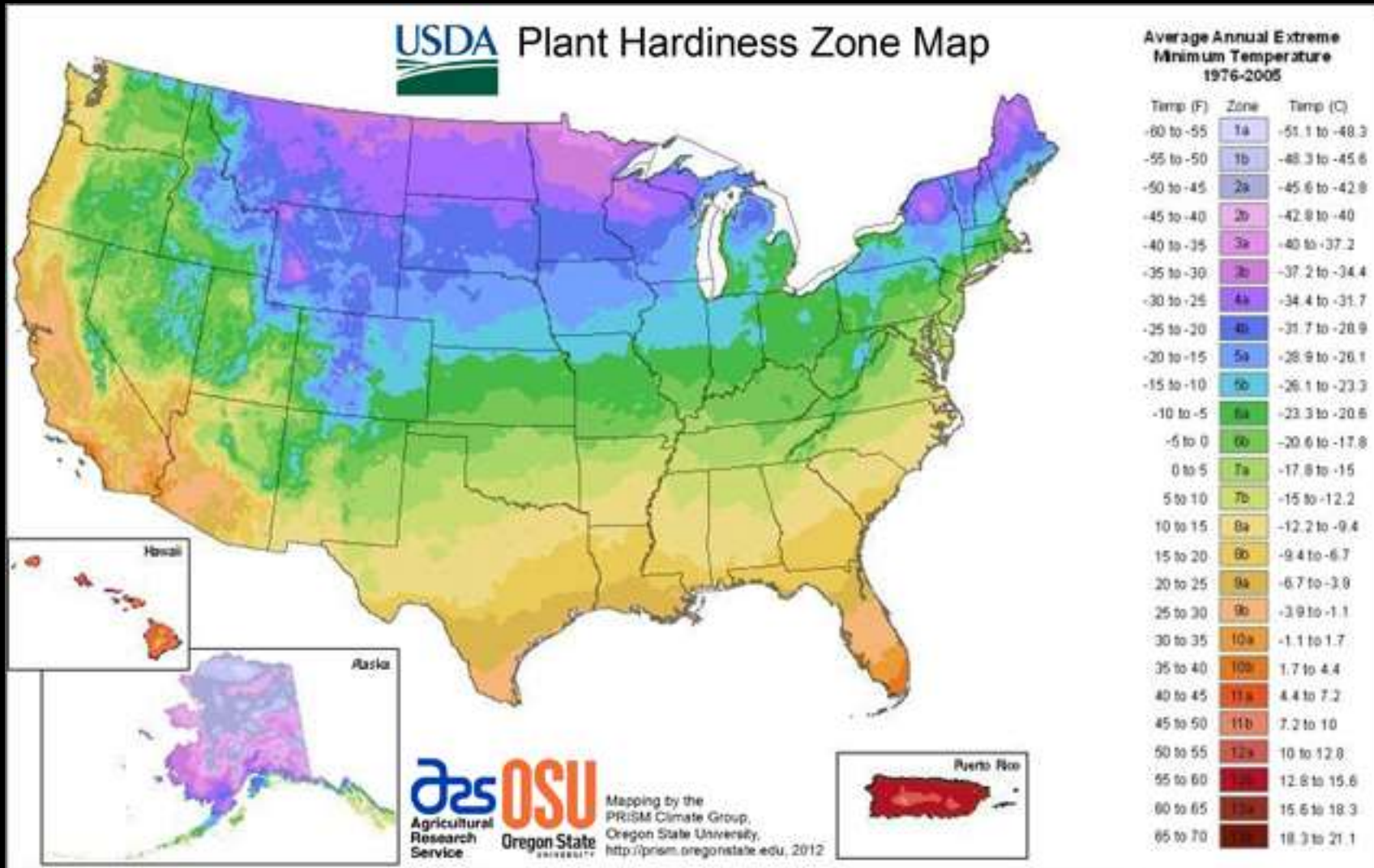
Average Annual Extreme Minimum Temperature in Fahrenheit

Zone	Temp (F)
1	0 to 10
2	10 to 20
3	20 to 30
3a	30 to 35
3b	35 to 40
4	40 to 50
4a	50 to 60
4b	60 to 70
5	70 to 80
5a	80 to 90
5b	90 to 100
6	100 to 110
6a	110 to 120
6b	120 to 130
7	130 to 140
7a	140 to 150
7b	150 to 160
8	160 to 170
8a	170 to 180
8b	180 to 190
9	190 to 200
9a	200 to 210
9b	210 to 220
10	220 to 230
10a	230 to 240
10b	240 to 250

OSU Oregon State University

USDA.gov | Site Map | Policies & Links | Our Performance | Report Fraud on USDA Contracts | VMI CGO | Plain Writing | Open EDS | Accessibility Statement | Privacy Policy | Non-Discrimination Statement | Information Quality | USA.gov | Whitehouse.gov

Macroclimate



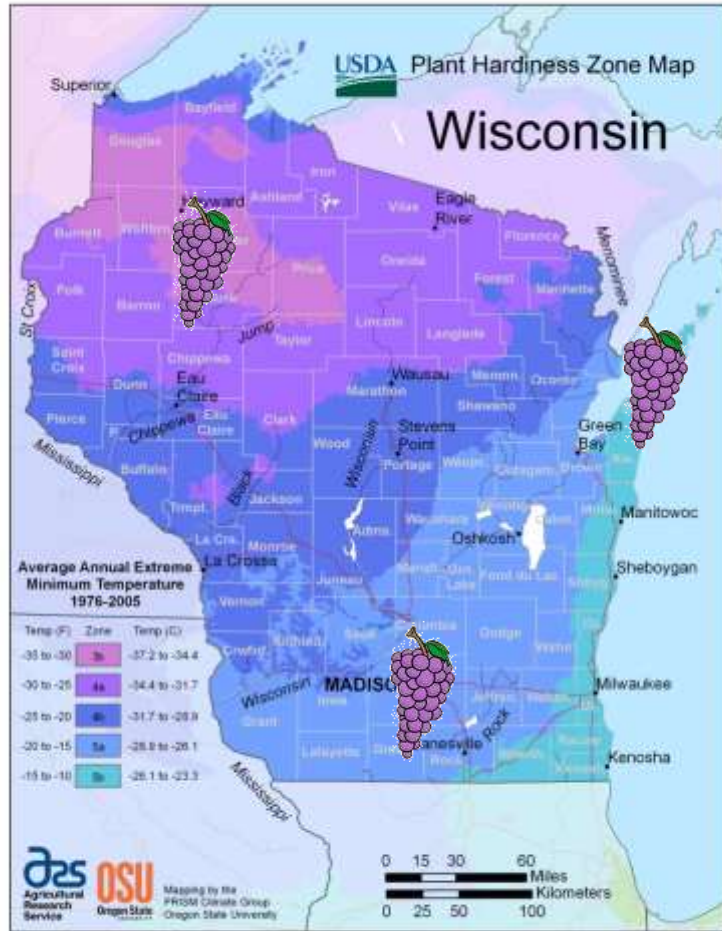
Macroclimate



Importance of
Site Selection

Image credit:
<http://planthardiness.ars.usda.gov/PHZMWeb/#>

Macroclimate



Trial Location	Hardiness Zone	Extreme Minimum Temperature
		°F
PARS	5b	-15 to -10
WMARS	5a	-20 to -15
SARS	3b	-30 to -35

Number of days in selected temperature ranges at West Madison, Spooner, and Peninsular Agricultural Research Station for the period 12/1/2010 to 2/28/2011 (3rd winter after establishment)

Temperature range (°F)	West Madison ¹	Spooner ¹	Peninsular ¹
	Days		
0 to - 9	8	24	10
- 10 to - 19	4	7	0
- 20 to -29	0	6	0
> -29	0	2	0

¹Minimum low temperatures were - 15, - 31, and -9 °F for West Madison, Spooner, and Peninsular Agricultural Research Stations, respectively.

Macroclimate



California Soil Resource Lab

Home Links Online Soil Survey People Projects Software Site Map

SoilWeb: An Online Soil Survey Browser

- Accessing Soil Survey Data via Web-Services
- Dynamic Export of Soil Survey Data to KML through SoilWeb
- Initial SoilWeb Concept on Paper
- Major updates to CA, AZ, NV online soil survey system
- Migrating to Ka-Map! Online Soil Survey for AZ, CA and NV
- Planned Improvements in SoilWeb
- Saving Chunks of SSURGO Data in SoilWeb for Google Earth
- Soil Properties Visualized on a 1km Grid
- SoilWeb for the iPhone
- SoilWeb Usage Statistics
- Streaming Soil Survey Data in Google Earth (updates)
- Three New Soils-

SoilWeb: An Online Soil Survey Browser

Submitted by dylan on Fri, 2010-02-26 16:13.

Our online soil survey can be used to access USDA-NCSS 1:24,000 scale detailed soil survey data (SSURGO) in many parts of the lower 48 states. Where this data is not yet available, 1:250,000 scale generalized soils data (STATSGO) can be accessed instead. An interactive map interface allows for panning and zooming, with highways, streets, and aerial photos to assist navigation (Figure 1). Soil polygons become visible near a scale of 1:30,000. Alternatively, a GPS point, CA Zip code, or a street address can be used to zoom in on a specific location. General usage notes and information on how our online soil survey work can be found [here](#). Statistics on who is using our online soil survey can be found [here](#). Technical details on SoilWeb can be found in this [publication](#). Please note that we are currently transitioning to a new server, and planning to have our local copy of the SSURGO, STATSGO, and OSD databases updated in the coming months.

The SoilWeb app is a portable version of the UC Davis California Soil Resource Lab's Web-based interface to digital soil survey data from USDA's Natural Resources Conservation Service (NRCS).

Select an Interface to SoilWeb

- An [iPhone App](#) for real-time, location-based soil queries! [[details](#)] [[SSSA News Brief](#)] [[ANR News Article](#)] [[UCD Aggie Article](#)]
- Similar App for [AndroidOS](#) smartphones
- [Google Maps](#) interface
- [Google Earth](#) Interface
- A [Text-only](#) interface to SSURGO
- HTTP SoilWeb API:
 1. [WMS](#) queries (access our data in QGIS etc.)
 - [WMS GetCapabilities](#) request
 2. Text-based queries



SSURGO Map
Units



STATSGO Map
Units

REAL TIME SOIL
DESCRIPTIONS BASED
ON YOUR CURRENT
LOCATION

Soil Resources

The screenshot shows the USDA Web Soil Survey homepage. At the top, there's a navigation bar with 'Home', 'About WSS', 'Help', and 'Contact Us'. Below this is a search bar and a 'START WSS' button. The main content area features a 'Welcome to Web Soil Survey (WSS)' section with a photo of people in a field and text explaining the service. To the left is a 'Browse by Subject' menu with categories like 'National Cooperative Soil Survey (NCSS)', 'Official Soil Series Descriptions (OSD)', and 'Soil Geology'. To the right are sections for 'I Want To...' (with links like 'Start Web Soil Survey (WSS)', 'Know the requirements for running Web Soil Survey', etc.), 'Announcements/Events', and 'I Want Help With...'. The bottom of the page shows the Windows taskbar with the start button and various application icons.

Web Soil Survey - Home - Windows Internet Explorer

http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

File Edit View Favorites Tools Help

Web Soil Survey - Home

USDA Natural Resources Conservation Service

Web Soil Survey

You are here: Web Soil Survey Home

Search

Enter keywords Go

All NRCS Sites

Browse by Subject

- Soils Home
- National Cooperative Soil Survey (NCSS)
- Archived Soil Surveys
- Status Maps
- Official Soil Series Descriptions (OSD)
- Soil Series, Exhibits, Mapping Tools
- Geospatial Data Gateway
- eFOI
- National Soil Characterization Data
- Soil Geochemistry Spatial Database
- Soil Quality
- Soil Geography

The simple yet powerful way to access and use soil data.

START WSS

I Want To...

- Start Web Soil Survey (WSS)
- Know the requirements for running Web Soil Survey - will Web Soil Survey work in my web browser?
- Know the Web Soil Survey users of operation
- Find what areas of the U.S. have soil data
- Find information by topic
- Know how to hyperlink from other documents to Web Soil Survey

Announcements/Events

- Web Soil Survey 3.0 has been released! View description of new features.
- Web Soil Survey Release History
- Sign up for e-mail updates via GoDelivery

I Want Help With...

- Getting Started With Web Soil Survey
- How to use Web Soil Survey
- How to use Web Soil Survey Deluxe Help
- Known Problems and Workarounds
- Feedback: eMail

Welcome to Web Soil Survey (WSS)

Web Soil Survey (WSS) provides soil data and information produced by the National Cooperative Soil Survey. It is operated by the USDA Natural Resources Conservation Service (NRCS) and provides access to the largest natural resource information system in the world. NRCS has soil maps and data available online for more than 98 percent of the nation's counties and anticipates having 100 percent in the near future. The site is available online as the single authoritative source.

Soil Series Exhibit Mapping Tool

Soil surveys can be used for general farm, local, and wider area planning. Onsite investigation is needed in some cases, such as soil quality assessments and certain conservation and engineering applications. For more detailed information, contact your local [USDA Service Center](#) or your [NRCS State Soil Scientist](#).

Four Basic Steps

- 1 Define...
Use the Area of Interest (AOI) to define your area of interest.

Click to view larger image.
- 2 View...

<http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

You are here: Home / Interactive Map

Interactive Map

ZIP Code:

Choose Location:

Choose Basemap:

Turn on Basemap Roads and Labels

[Help with this Map](#)

Zone Color Transparency



Area of Interest

Import AOI

Quick Navigation

Address

Address: 23056 Highway J Mexico, MO 65265

Show location marker:

State and County

Soil Survey Area

Latitude and Longitude

PLSS (Section, Township, Range)

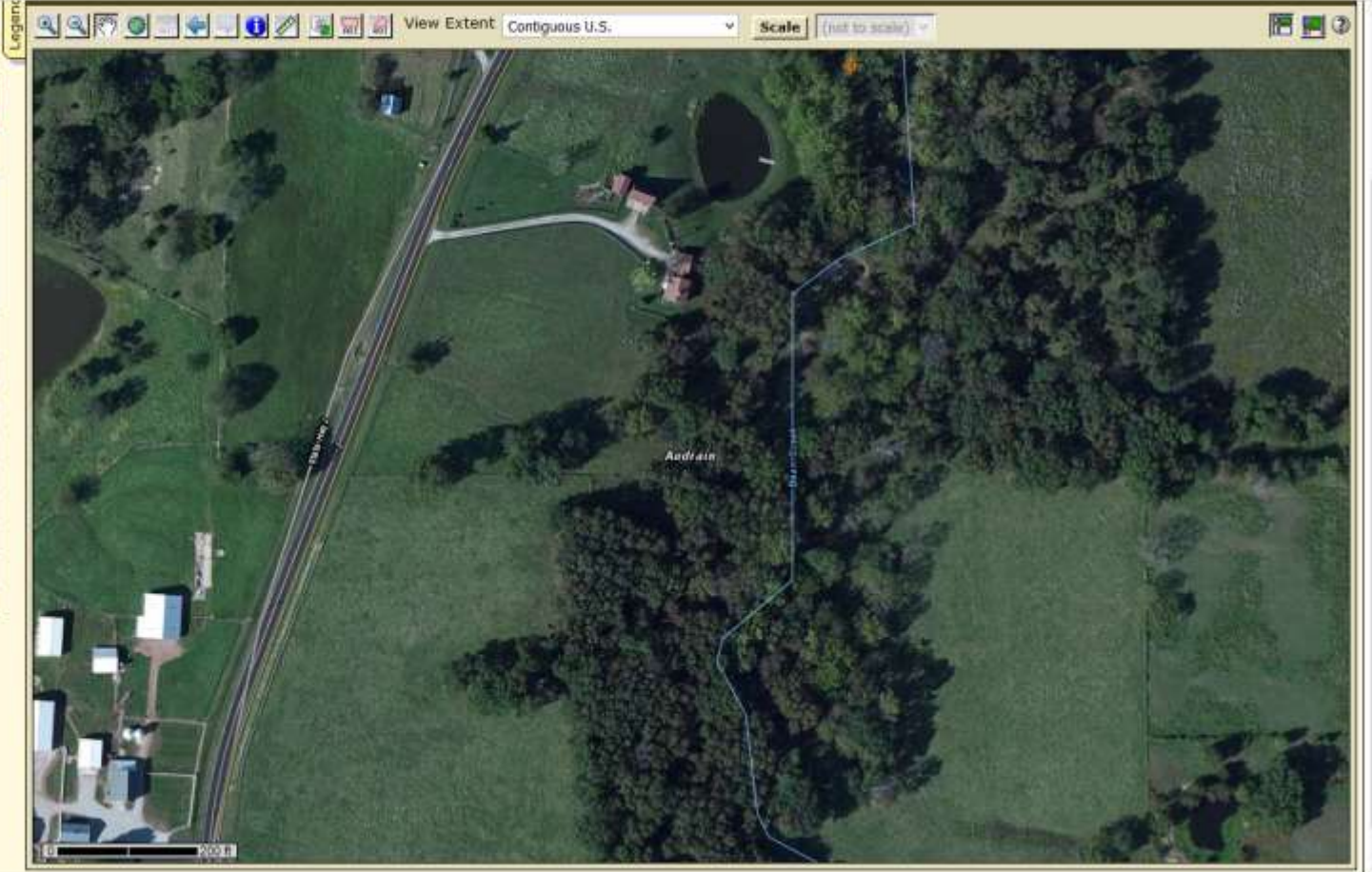
Bureau of Land Management

Department of Defense

Forest Service

National Park Service

Hydrologic Unit

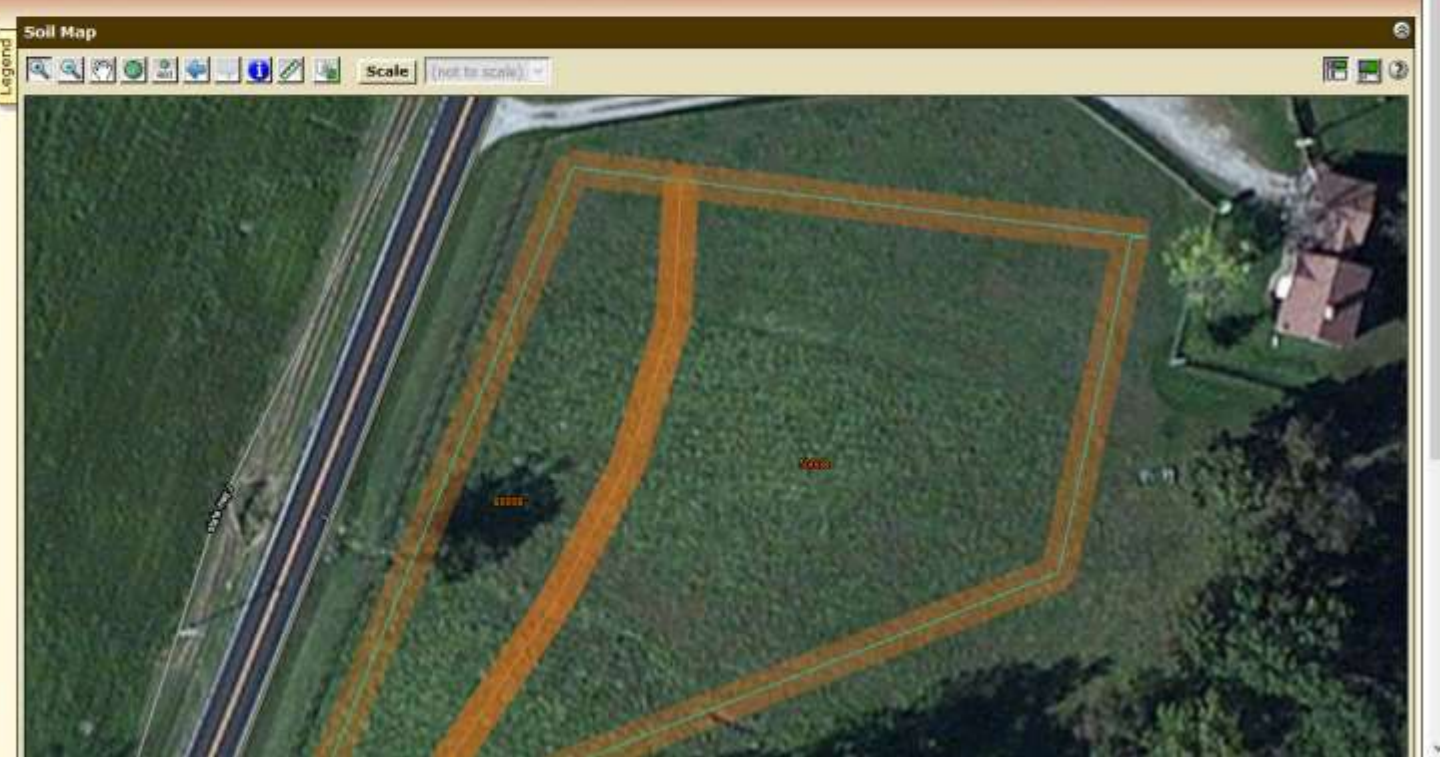


Search

Map Unit Legend

Audrain County, Missouri (MO007)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
50008	Keswick silt loam, 5 to 9 percent slopes, eroded	0.9	69.6%
60006	Marion silt loam, 2 to 5 percent slopes	0.4	30.4%
Totals for Area of Interest		1.4	100.0%





The screenshot shows the website for the Midwestern Regional Climate Center (MRCC). The page title is "Midwest Climate: Climate Summaries" and it displays a "Growing Season Summary for Station USC00234544 - KIRKSVILLE, MO". A table provides monthly and annual climate data for various Growing Degree Days (GDD) and Modified Growing Degree Days (MGDD) bases.

MIDWEST CLIMATE: CLIMATE SUMMARIES [Change Selections](#)

Growing Season Summary for Station USC00234544 - KIRKSVILLE, MO

Element	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
GDD Base 40	10	29	132	344	659	921	1094	1038	747	419	133	20	5546
GDD Base 45	3	12	74	228	505	771	939	883	598	286	73	8	4380
GDD Base 50	0	4	38	135	358	621	784	728	452	175	33	3	3332
GDD Base 60	0	0	5	30	121	326	474	420	195	40	3	0	1614
MGDD* Base 50	8	22	90	209	396	614	750	699	473	247	79	13	3601

*Modified Growing Degree Days: Base 50 Ceiling 86.

Growing Season Summary - Derived from 1981-2010 Averages

Base Temp °F	DATE OF LAST SPRING OCCURRENCE					DATE OF FIRST FALL OCCURANCE				
	Median	Early	90%	10%	Late	Median	Early	90%	10%	Late
36	05/02	02/28	05/16	04/19	05/31	10/01	09/07	09/18	10/15	03/15
32	04/24	02/28	05/05	04/09	05/25	10/11	09/13	09/25	10/26	03/15
28	04/13	02/28	04/29	03/31	05/04	10/23	09/26	10/06	11/06	03/15
24	04/04	02/27	04/20	03/19	05/04	11/02	10/06	10/19	11/17	03/18
20	03/26	12/26	04/11	03/08	04/24	11/12	10/09	10/30	11/29	03/01
16	03/15	12/26	04/02	02/27	04/12	11/23	10/23	11/05	12/10	07/03

Mesoclimate

Length of Growing Season (Days) - Derived from 1981-2010 Averages

*Annual/seasonal totals may differ from the sum of the monthly totals due to rounding

Base Temp °F	Median	Shortest	10%	90%	Longest
36	149	112	129	169	214
32	169	128	149	190	221
28	190	157	169	211	247
24	211	161	189	232	262
20	230	196	209	254	288
16	149	161	227	275	262



Mesoclimate

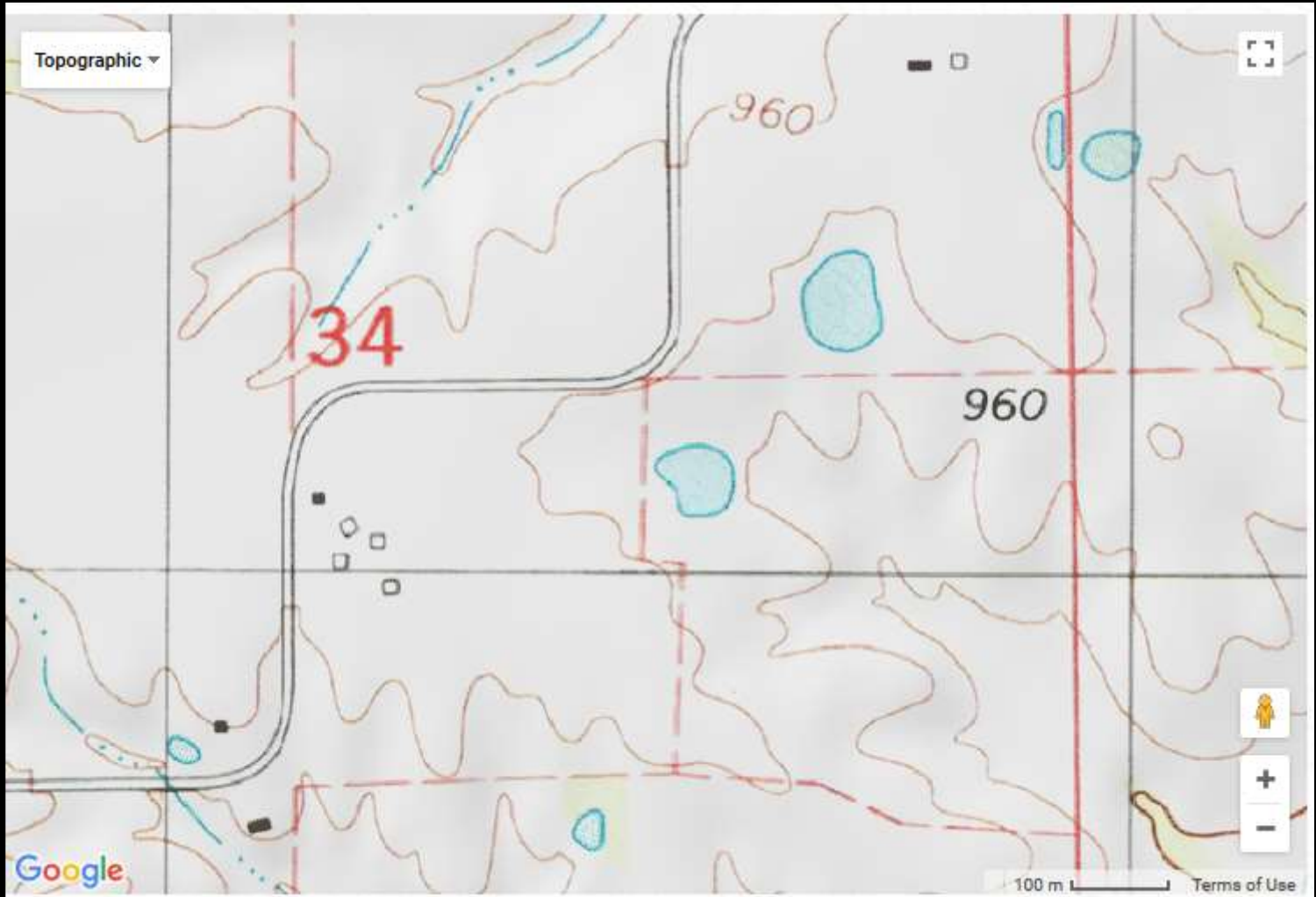
Frost damaged bud of Marquette.
29 °F on May 8 and 9, 2010.




Undamaged bud of Marquette.
29 °F on May 8 and 9, 2010.



Mesoclimate





Web Soil Survey

Home About Soils Help Contact Us


You are here: Web Soil Survey Home

Search


Browse by Subject

- Soils Home
- National Cooperative Soil Survey (NCSS)
- Archived Soil Surveys
- Status Maps
- Official Soil Series Descriptions (OSD)
- Soil Series Extent Mapping Tool
- Geospatial Data Gateway
- eFOTG
- National Soil Characterization Data
- Soil Health
- Soil Geography

The simple yet powerful way to access and use soil data.



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Four Basic Steps

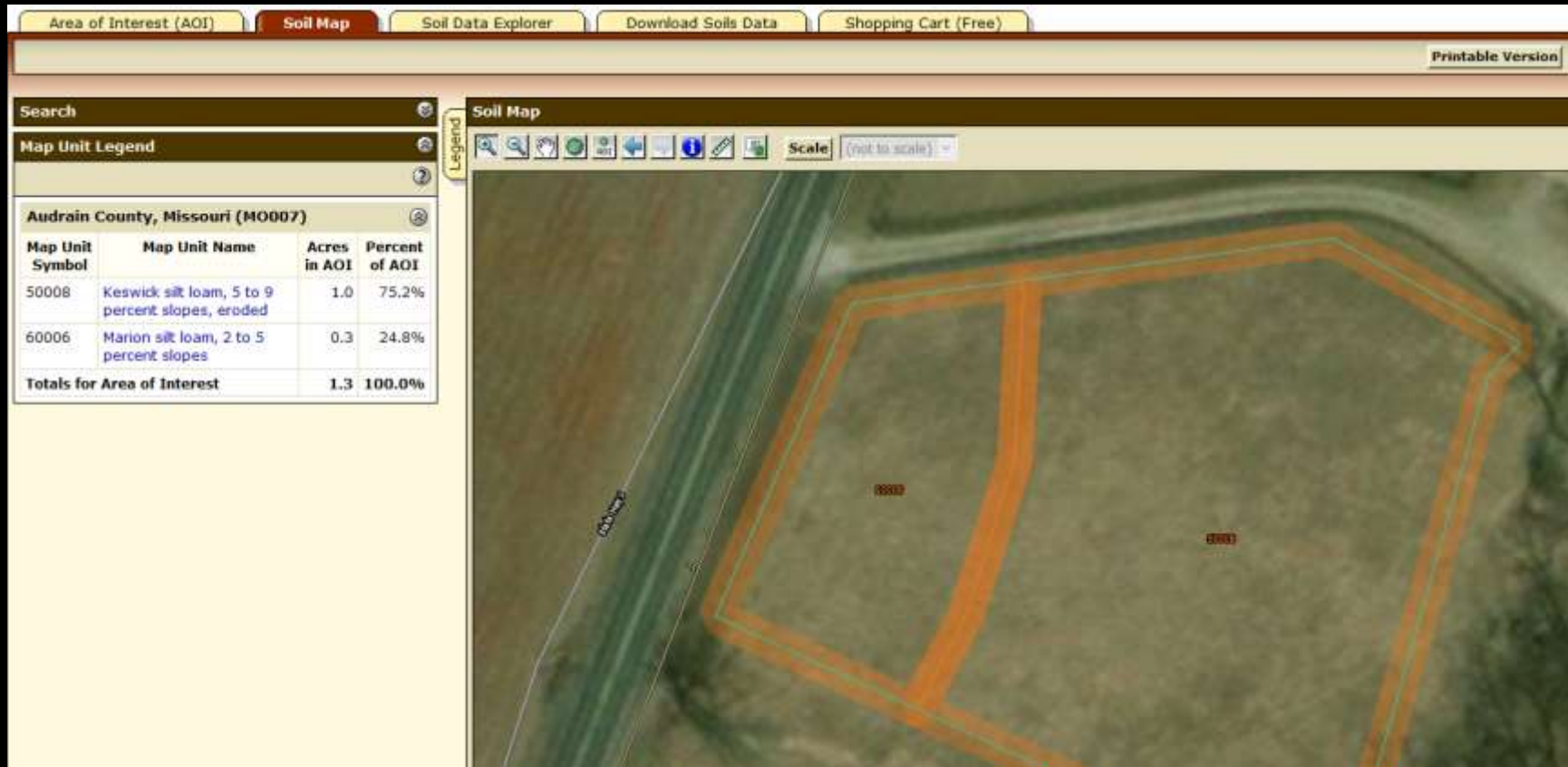
I Want To...

- Start Web Soil Survey (WSS)
- Know the requirements for running Web Soil Survey — will Web Soil Survey work in my web browser?
- Know the Web Soil Survey hours of operation
- Find what areas of the U.S. have soil data
- Find information by topic
- Know how to hyperlink from other documents to Web Soil Survey
- Know the SSURGO data structure

Announcements/Events

- Web Soil Survey 3.2 has been released! View description of new features and fixes.
- Web Soil Survey Release History
-  Sign up for e-mail updates via GovDelivery

Mesoclimate - Soil



Mesoclimate - Soil

Tables — Grape non-irrigated (MO) — Summary By Map Unit

Summary by Map Unit — Audrain County, Missouri (MO007)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
50008	Keswick silt loam, 5 to 9 percent slopes, eroded	unsuited	Keswick (75%)	unsuited - Texture (0.00)	1.0	75.2%
				unsuited - pH (0.24)		
				poorly suited - Wet Layer (0.35)		
				poorly suited - AWC (0.45)		
				moderately suited - OM (0.60)		
			Leonard (5%)	unsuited - Texture (0.00)		
				unsuited - Wet Layer (0.10)		
				unsuited - pH (0.24)		
				poorly suited - AWC (0.49)		
				moderately suited - OM (0.68)		
60006	Marion silt loam, 2 to 5 percent slopes	unsuited	Marion (90%)	unsuited - Texture (0.00)	0.3	24.8%
				unsuited - Wet Layer (0.23)		
				unsuited - pH (0.24)		
				moderately suited - AWC (0.50)		
				moderately suited - OM (0.63)		
			Mariosa (5%)	unsuited - Texture (0.00)		
				unsuited - Wet Layer (0.07)		
				unsuited - pH (0.24)		
				poorly suited - OM (0.35)		
				moderately suited - AWC (0.61)		
Totals for Area of Interest					1.3	100.0%

Table — Grape non-irrigated (MO) — Summary by Rating Value

Summary by Rating Value						
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Mesoclimate - Soil

The screenshot shows the UC Davis California Soil Resource Lab website. The header includes the lab's name and a search bar. A navigation menu contains links for HOME, SOILWEB APPS, PEOPLE, PROJECTS, SOFTWARE, LINKS, and BLOG. The main content area is titled "SoilWeb Apps" and provides instructions on using USDA-NCSS detailed soil survey data (SSURGO). It features two columns: "SoilWeb" and "SoilWeb Earth".

SoilWeb

Explore soil survey areas using an interactive Google map. View detailed information about map units and their components. This app runs in your web browser and is compatible with desktop computers, tablets, and smartphones.

The SoilWeb application interface shows a map with soil survey data overlaid. A legend on the left lists map units such as 37A-38A12, 37A-38A12, 37A-38A12, 37A-38A12, 37A-38A12, and 37A-38A12. The map displays various soil survey areas with different colors and patterns.

SoilWeb Earth

Soil survey data are delivered dynamically in a [KML](#) file, allowing you to view mapped areas in a 3-D display. You must have [Google Earth](#) or some other means of viewing KML files installed on your desktop computer, tablet, or smartphone.

The SoilWeb Earth application interface shows a 3D map of soil survey data. A legend on the left lists map units such as 37A-38A12, 37A-38A12, 37A-38A12, 37A-38A12, 37A-38A12, and 37A-38A12. The map displays various soil survey areas in a 3D perspective.

Mesoclimate - Soil



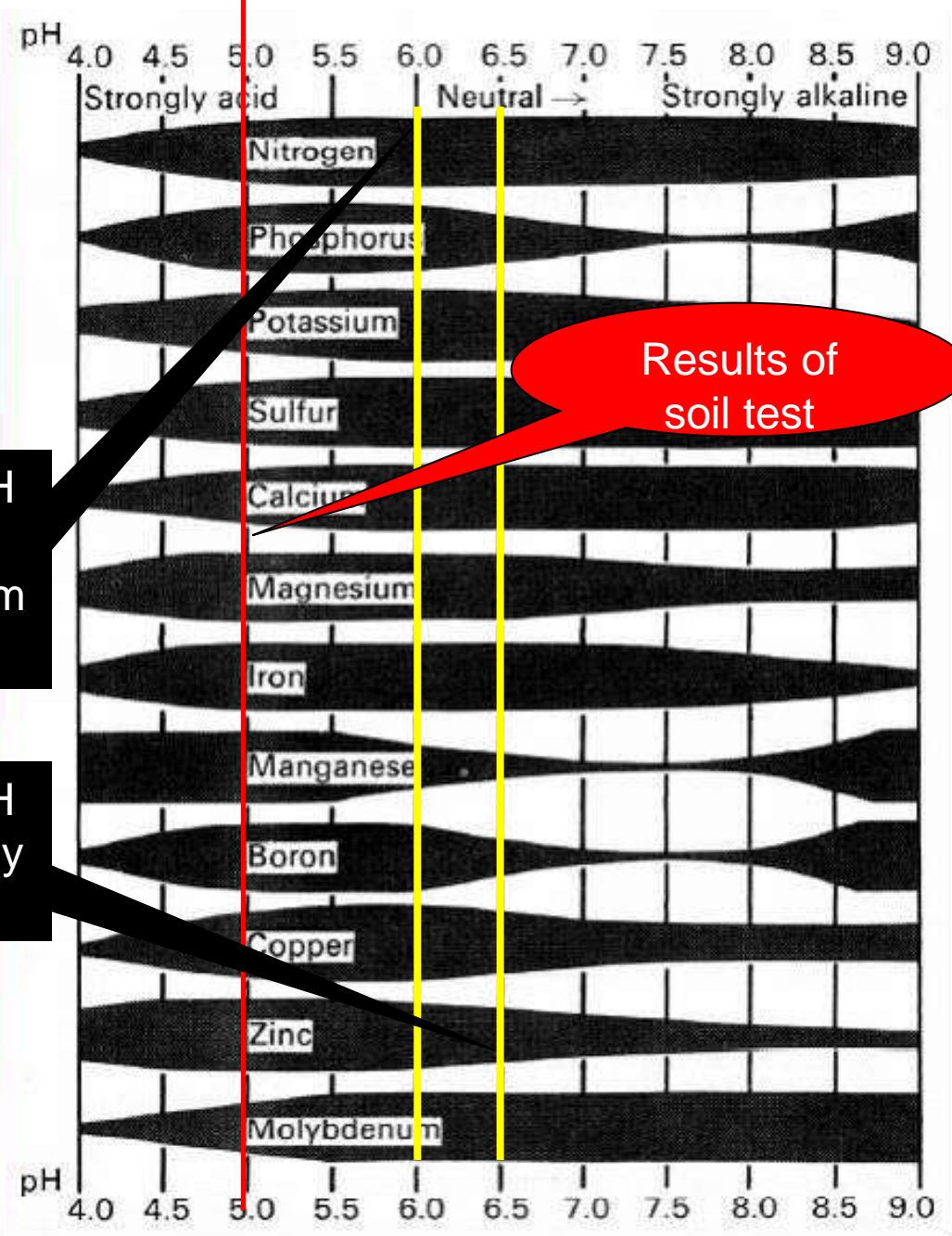
1. Hole 12" diameter either 12" or 36" deep
2. Fill hole with water and let drain
3. Refill and measure water level over time
4. 1 to 3" drainage per hour

Mesoclimate - Soil

SOIL TEST INFORMATION			RATING	SOIL TEST INFORMATION			RATING	
pH _s (salt pH)	5.0		Low	Sulfur (SO ₄ -S)	9.8 ppm		Medium	
Phosphorus (P)	65 lbs/a		Medium	Zinc (Zn)	0.9 ppm		Medium	
Potassium (K)	486 lbs/a		Very High	Manganese (Mn)	10.8 ppm		High	
Calcium (Ca)	4418 lbs/a		Medium	Iron (Fe)	93.7 ppm		High	
Magnesium (Mg)	516 lbs/a		High	Copper (Cu)	0.83 ppm		High	
Sodium (Na)				Boron (B)	1.04 ppm		High	
Organic matter	3.3 %		Neutralizable acidity	5.5 meq/100g		Cation exchange capacity	19.3 meq/100g	
pH in water			Electrical conductivity			Soil texture	Clay loam, Clay	
Nitrate (NO ₃ -N) Topsoil		ppm	Subsoil		ppm	Sampling depth Top	inches	
						Subsoil	inches	
Cropping options	NUTRIENT REQUIREMENTS						LIMESTONE SUGGESTIONS	
	Pounds per acre*							
	N	P ₂ O ₅	K ₂ O	Zn	S	B	Effective neutralizing material (ENM)	
4 Grapes (New-planting)	40	50	0	5	0	0		1810
10 Grapes (Established)	20	40	0	0	0	0	Effective magnesium (EMg)	lbs/a
								0

*To obtain a value of lb/1,000 square feet, divide the value of pounds per acre by 43.56

Comments:

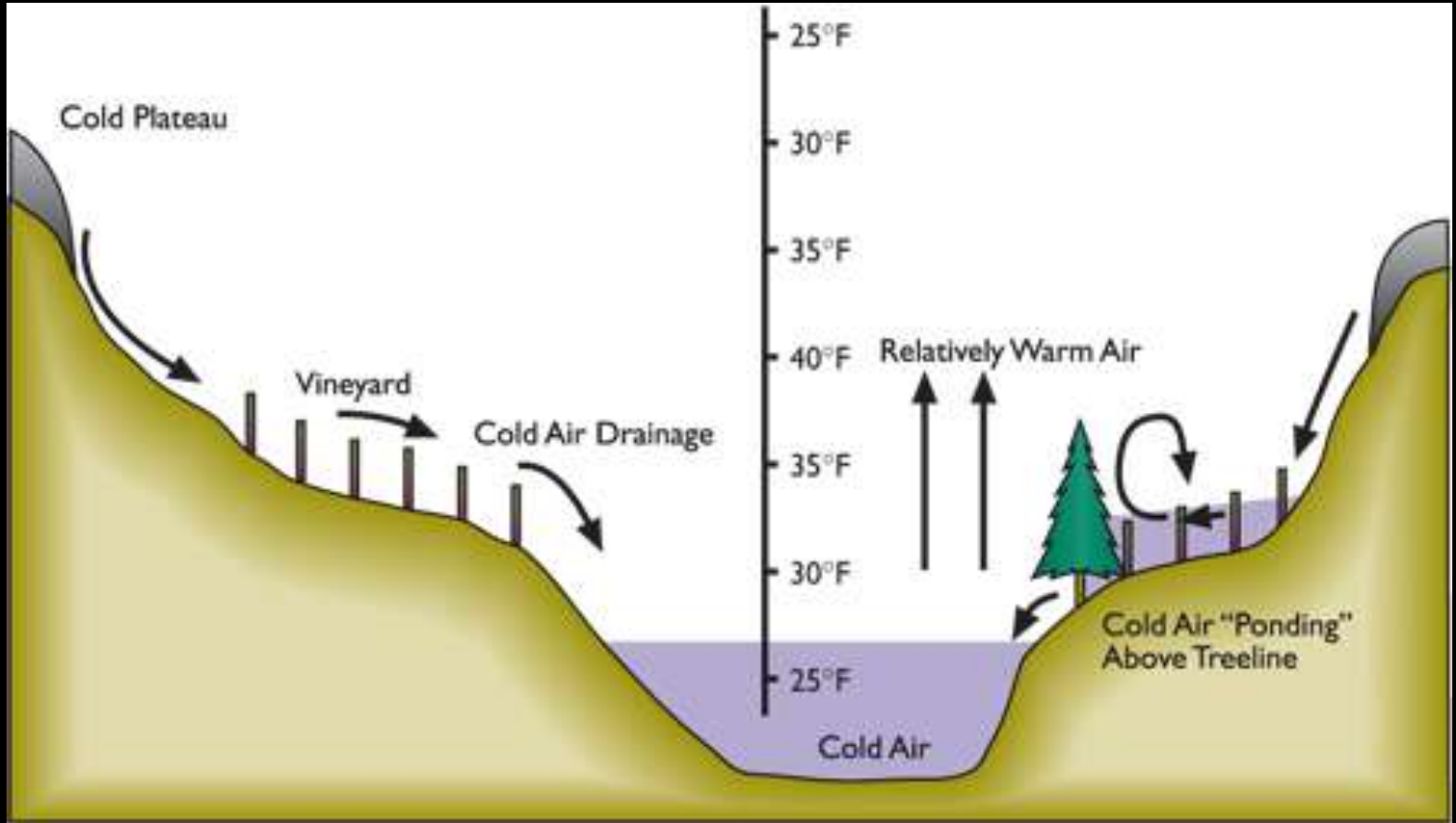


Ideal pH for clay/loam soils

Ideal pH for sandy soils

Results of soil test

Mesoclimate - Slope



Mesoclimate - Slope



Mesoclimate - Slope

- Inclination or declination from horizontal
- 5 - foot fall over 100 – foot = 5% slope
- Slopes $\geq 15\%$ are dangerous for equipment operation
- Greater the slope the faster cold air drains

Compass direction the slope faces

- South – early season warm up
 - Potential for early bud break
 - May help mature late ripening cultivars
- East – early morning warm up
 - Promotes dry-down of tissue and clusters
 - Decrease hot afternoon sun
- North – warms up latter compared to South
 - May delay bud-break on cultivars prone to early bud-break
- West – late afternoon and evening warm up
 - May help mature late ripening cultivars

Mesoclimate - Water

- Need water source
- Especially important during establishment



Image credit:

https://www.google.com/search?q=water&source=lnms&tbn=isch&sa=X&ved=0ahUKEwi3mM7viLLWAhVM42MKHcnVAOoQ_AUICigB&biw=1600&bih=767#imgrc=HY3RWLsmNzxBzM:



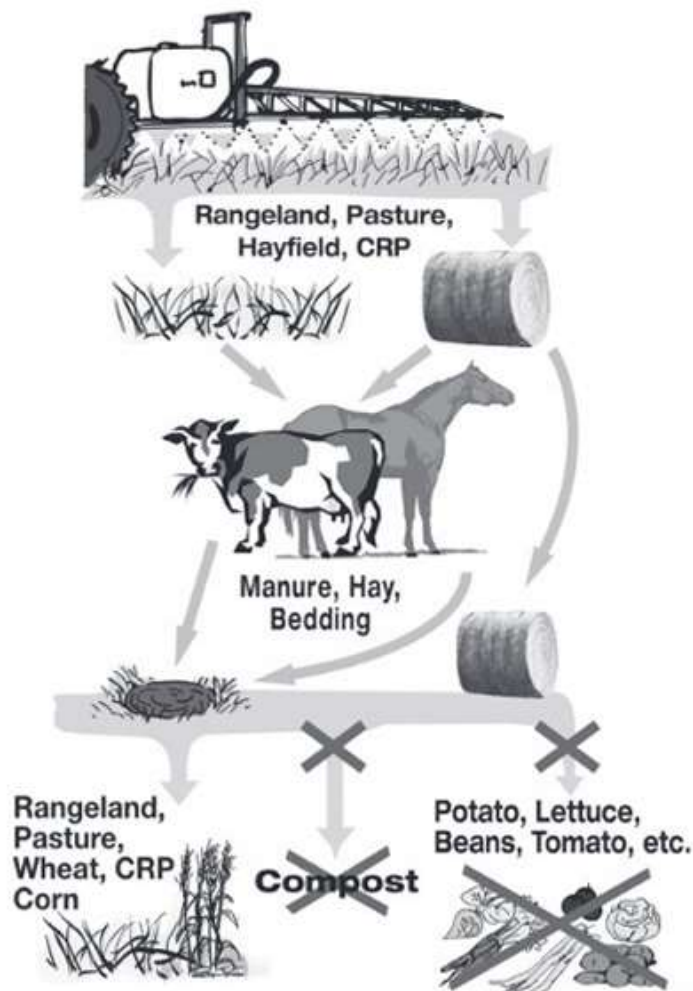
Mesoclimate - Vegetation

- Pasture Sites
 - Perennial plants
 - Herbicide history
 - Grazon Herbicide
 - Aminopyralid, clopyralid, picloram, triclopyr
 - Bioassay –green bean

IMPORTANT USE PRECAUTIONS AND RESTRICTIONS TO PREVENT INJURY TO DESIRABLE PLANTS

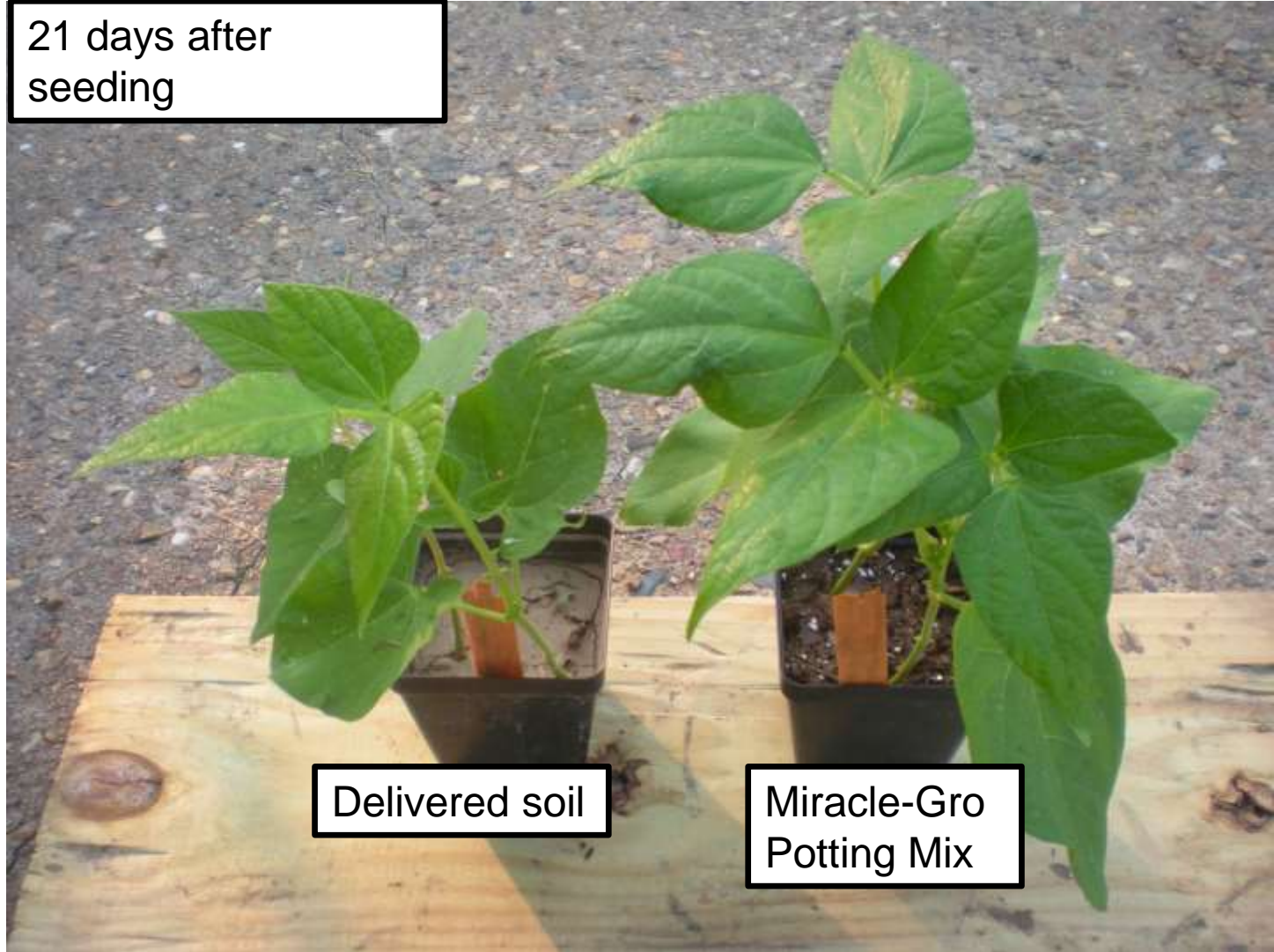
- Carefully read the section "*Restrictions in Hay or Manure Use*."
- It is mandatory to follow the "*Use Precautions and Restrictions*" section of this label.
- Manure and urine from animals consuming grass or hay treated with this product may contain enough aminopyralid to cause injury to sensitive broadleaf plants.
- Hay can only be used on the farm or ranch where product is applied unless allowed by supplemental labeling.
- Consult with a Dow AgroSciences representative if you do not understand the "Use Precautions and Restrictions".
Call [1-(800) 263-1196]
Customer Information Group.

Forage and Manure Management



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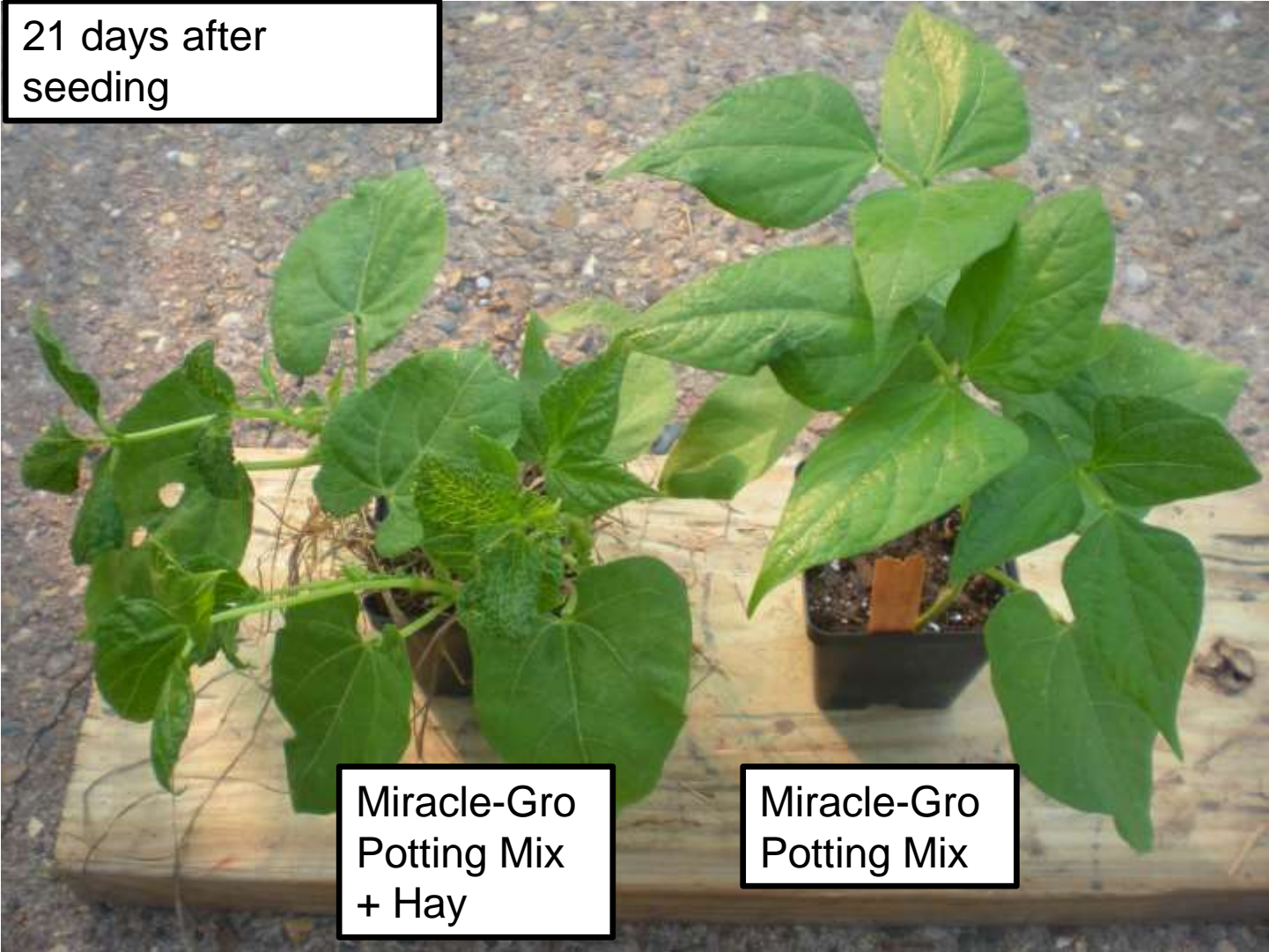
21 days after
seeding



Delivered soil

Miracle-Gro
Potting Mix

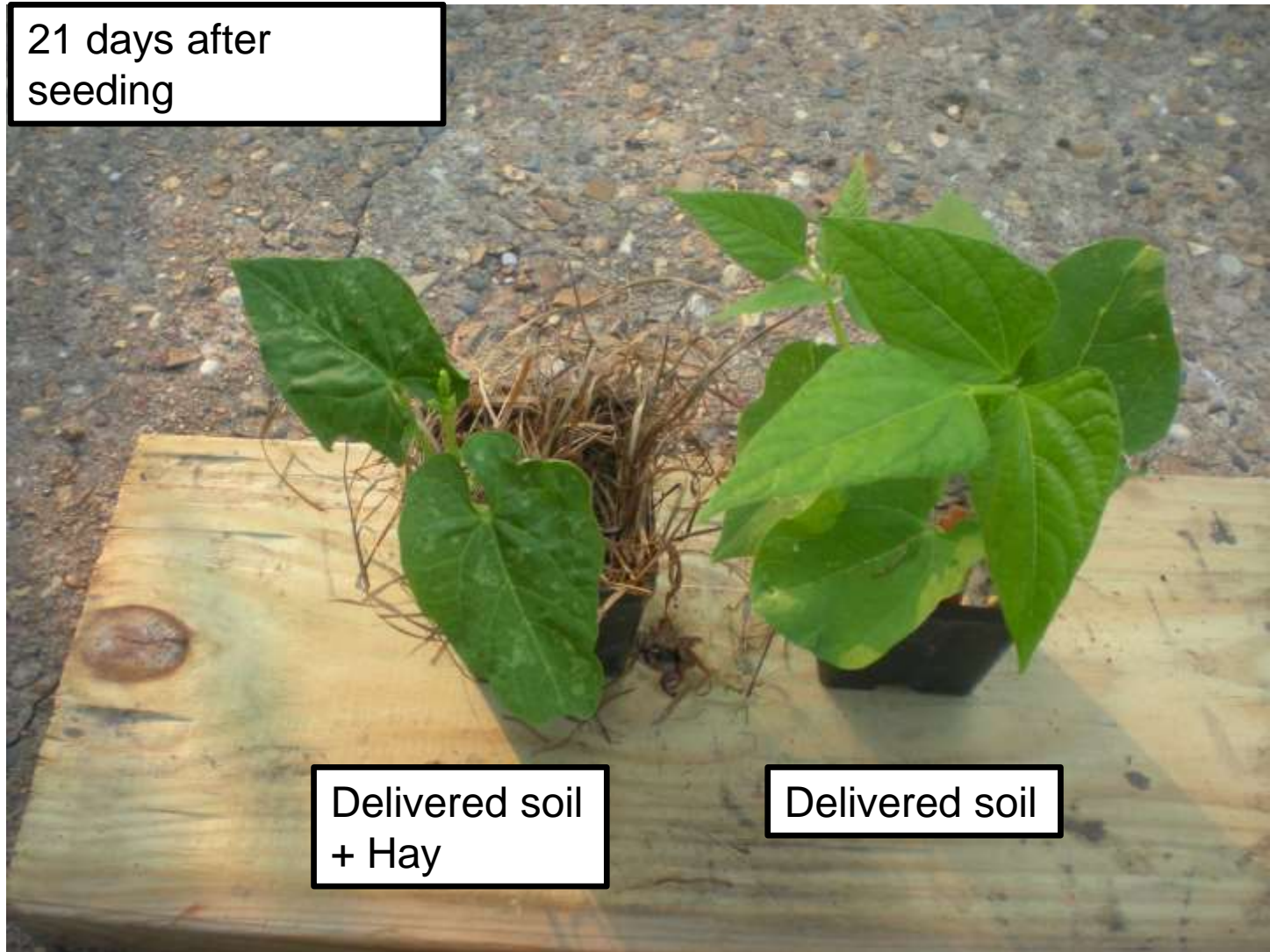
21 days after
seeding



Miracle-Gro
Potting Mix
+ Hay

Miracle-Gro
Potting Mix

21 days after
seeding



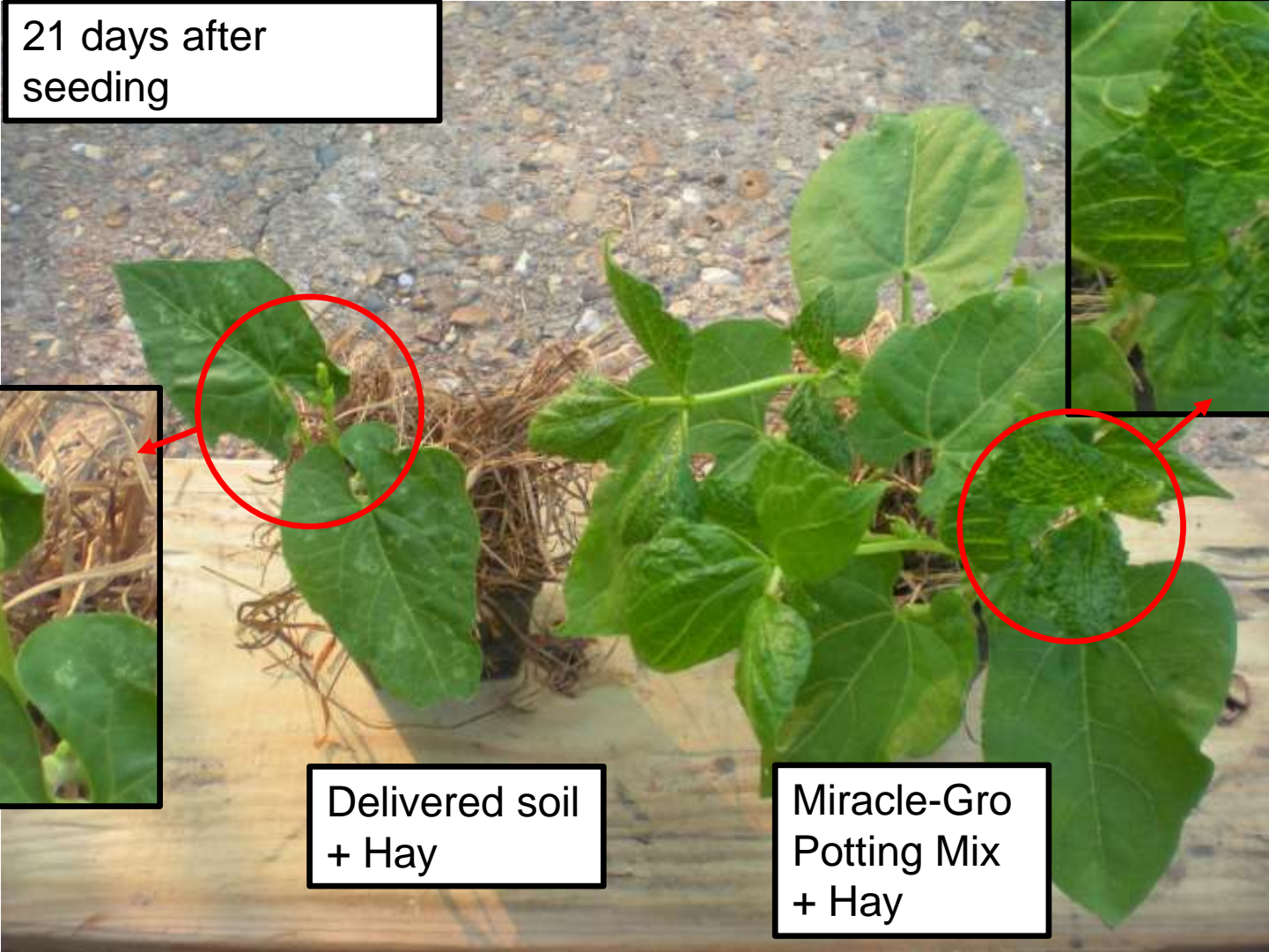
Delivered soil
+ Hay

Delivered soil

21 days after seeding



Delivered soil
+ Hay



Miracle-Gro
Potting Mix
+ Hay



HERBICIDE CARRYOVER IN HAY, MANURE, COMPOST, AND GRASS CLIPPINGS:

Caution to Hay Producers, Livestock Owners, Farmers, and Home Gardeners

Many farmers and home gardeners have reported damage to vegetable and flower crops after applying horse or livestock manure, compost, hay, or grass clippings to the soil. The symptoms reported include poor seed germination; death of young plants; twisted, cupped, and elongated leaves; misshapen fruit; and reduced yields. These symptoms can be caused by other factors, including diseases, insects, and herbicide drift. Another possibility for the source of these crop injuries should also be considered: the presence of certain herbicides in the manure, compost, hay, or grass clippings applied to the soil.

THE HERBICIDES OF CONCERN

Aminopyralid, clopyralid, and picloram are in a class of herbicides known as pyridine carboxylic acids. They are registered for application to pasture, grain crops, residential lawns, commercial turf, certain vegetables and fruits, and roadsides (Table 1). They are used to control a wide variety of broadleaf weeds including several toxic plants that can sicken or kill animals that graze them or eat them in hay. Based on USDA-EPA and European Union agency evaluations, when these herbicides are applied to hay fields or pasture, the forage can be safely consumed by horses and livestock—including livestock produced for human consumption. These herbicides pass through the animal's digestive tract and are excreted in urine and manure. They can also remain active in the manure even after it is composted. The herbicides can also remain active in hay, straw, and grass clippings taken from

<http://content.ces.ncsu.edu/herbicide-carryover.pdf>

Also see [Contaminated Compost](#) by Debbi Kelly



Table 1. Herbicides registered for use in North Carolina that contain picloram, clopyralid, and aminopyralid

Pasture and hayfields	Commercial turf and lawns	Commercial vegetables and fruits
Darts (2,4-D + clopyralid)	Control (triclopyr + clopyralid)	Clopyr AG (clopyralid)
Forefront (aminopyralid + 2,4-D)	Control (clopyralid)	Stinger (clopyralid)
GrassNave (aminopyralid + 2,4-D)	Milamium Ultra Plus (MSMA + 2,4-D + clopyralid + dicamba)	
Grass P + D (picloram + 2,4-D)	Milamium Ultra and Ultra 2 (2,4-D + clopyralid + dicamba)	
Milestone (aminopyralid)		
Reston R&P (triclopyr + clopyralid)		
Sunmount (picloram + fluroxypyr)		

All products listed are manufactured by Dow Agrosciences, LLC with the exception of the Milamium products by Nufarm, America's Inc., and Clopyr AG by United Phosphorus, Inc.. Herbicide product names and formulations change; always check labels for active ingredients.

Mesoclimate – Cropping History

- Abandoned Orchard Sites –
Lead arsenate,
copper
acetoarsenate –
“Paris green, and
calcium arsenate



IPM & Vineyard Site Selection

- Look Up
 - Birds
 - Trees
- Look Around
 - Know your neighbor
 - Know their crops



IPM & Vineyard Site Selection

- Phenoxy herbicide injury
 - 2,4-D
 - Dicamba
 - Clopyralid
 - Triclopyr



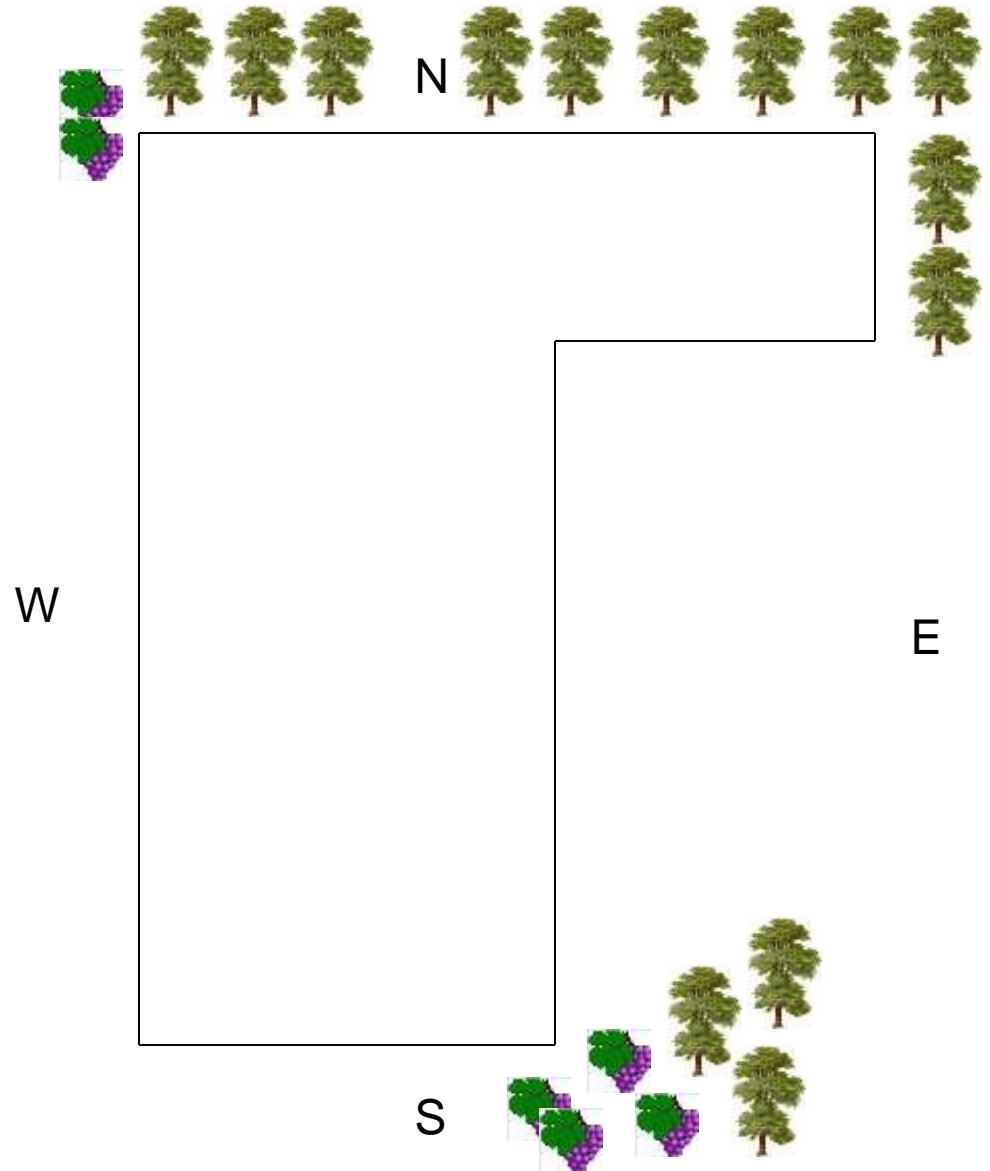
Other Herbicide Off-Target Sources

- Homeowners lawns
- Golf courses
- Highway Right-of-way
- Invasive plant management



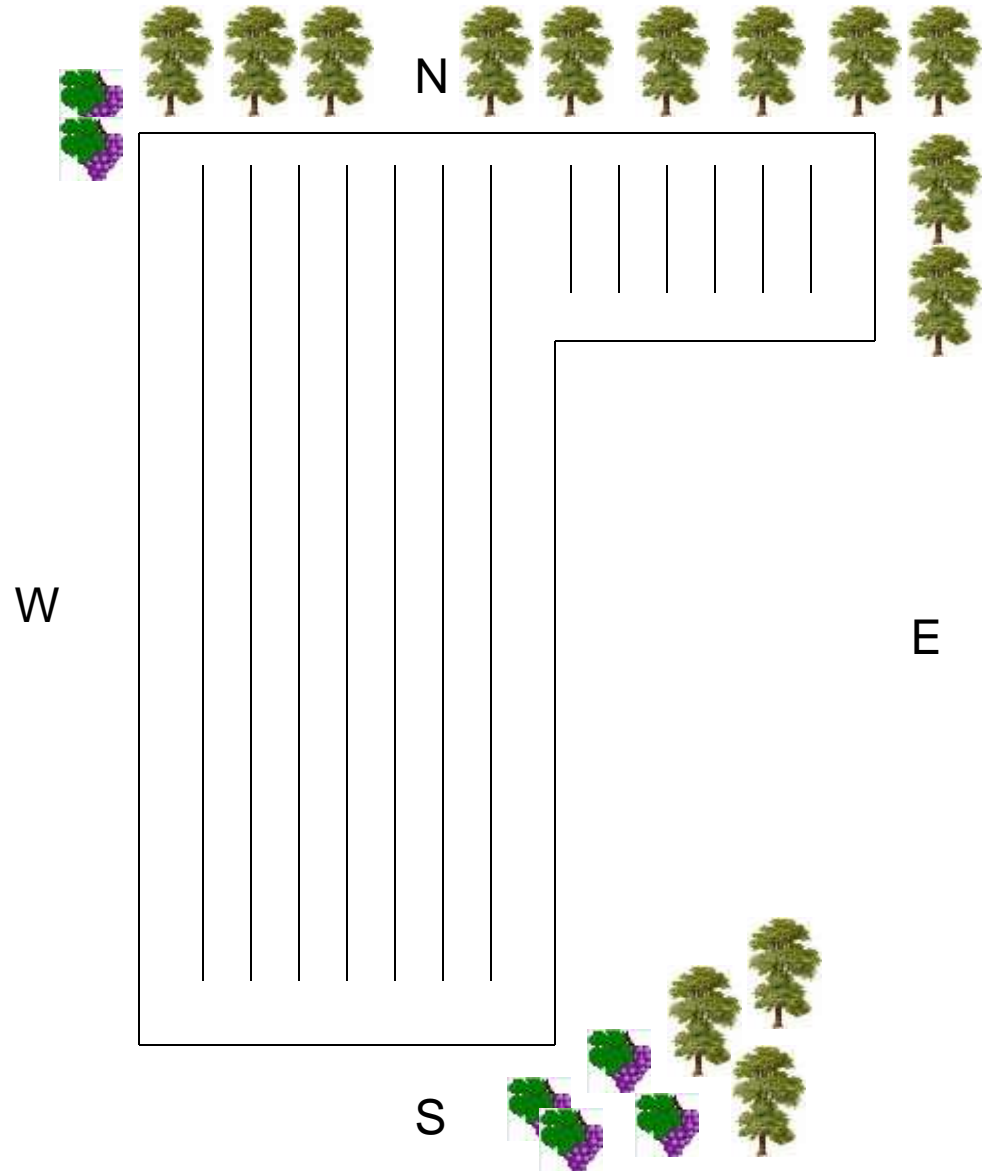
IPM & Vineyard Site Selection

- Map your site and surroundings



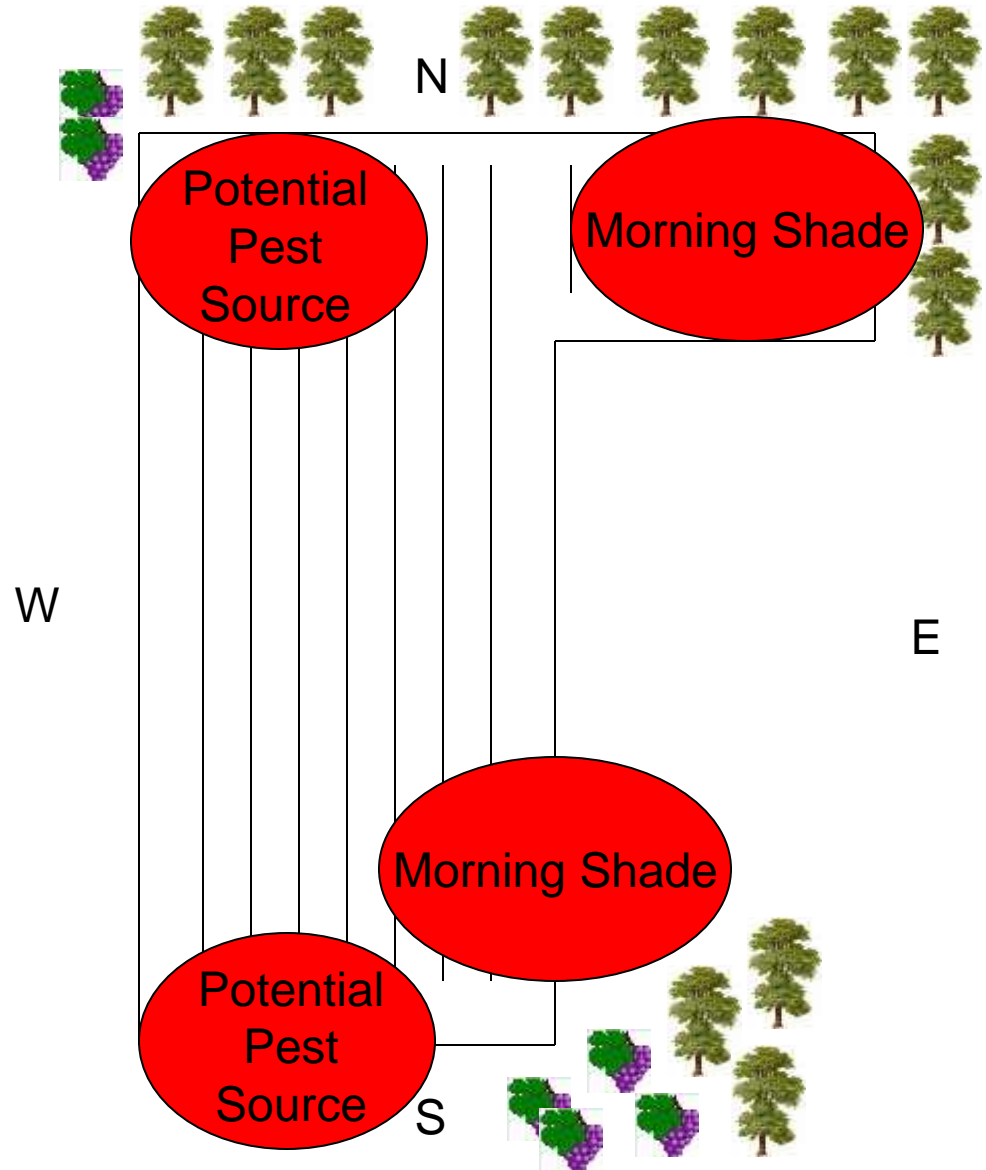
IPM & Vineyard Site Selection

- Map your site and surroundings
- Lay out rows



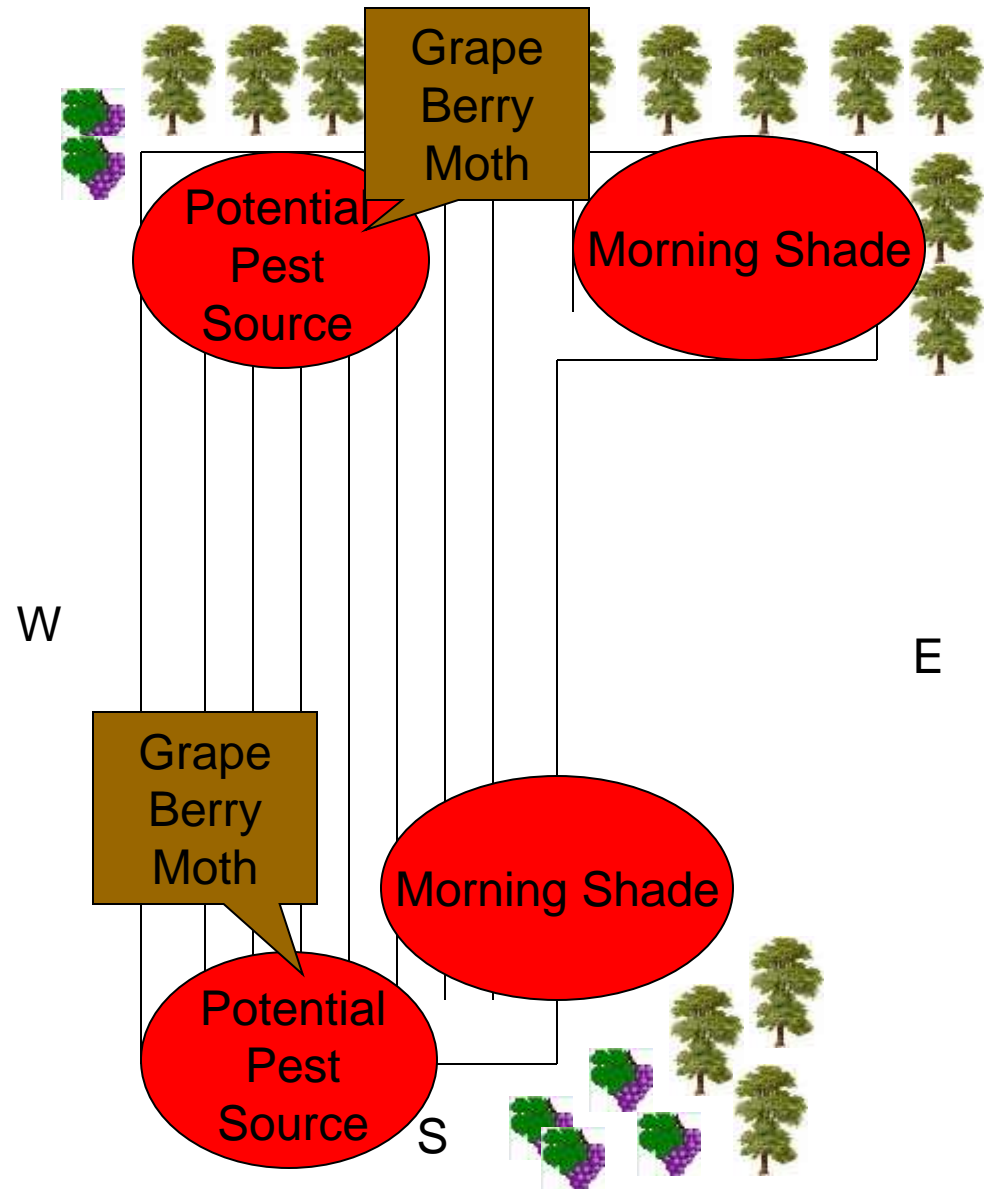
IPM & Vineyard Site Selection

- Map your site and surroundings
- Lay out rows
- Identify potential problem pest areas



IPM & Vineyard Site Selection

- Map your site and surroundings
- Lay out rows
- Identify potential problem pest areas



- Trellis training system
- Dormant pruning
- Canopy management
- Weed management
- Insect and disease management



Common Mistakes Along the Way

- Planting at the bottom of a slope
- Planting in swales
- Planting with high water table
- Planting near row crops
- Site located next to golf course
- Site surrounded by woods
- Site with unknown cropping or pesticide history
- Site was a capped sanitary landfill

Your Site Should Have a Story

- Besides having the physical and environmental features
- Does the site have a history
- Does the site have culture
- Does the site have family roots – living history
- Can you connect your site to the consumer – does it tell a story that the consumer will remember

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