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Better Data,  
Better Decisions:

## Standards of Excellence for Operational Data Gathering

Presented by

USLGA Expert Member Panel

May 9, 2024

# Agenda

- Introduction/ Meet the Panel
- Topic one: Planting
- Topic two: Variety Selection/ Crop Harvest
- Topic three: Distilling/Essential Oil/Hydrosol
- Topic four: Business Operations
- Questions & Answers
- Resources



# Presenters



Mary Pilotte

Plant Density/Bloom Data



Marilyn Kosel

Variety Selection/Crop Harvest



Sherri Wood

Distilling/EO/Hydrosol



Barbara Cesiro

Business Operations

# Introduction

Our presentation discusses the importance of using key data gathering for your lavender farm. Our expert panel demonstrates how to use industry standards of excellence to achieve year-over-year success, and scalability. Although production processes may be diverse amongst farmers, by understanding, and applying the standards, USLGA strives to build a membership of lavender farmer “experts” who can consistently create high quality products and improve their farm business exponentially.

USLGA supports and promotes the United States lavender industry through research, education, networking, and marketing. We conduct surveys to promote standards of excellence and gather related data. For ten years, the USLGA Annual Harvest Survey has documented its lavender harvest data and trends report of, and for, the U.S. lavender industry.



# Topic one

Planting

Expert Insights / Standards of Excellence



# Overview

Why is this type of data important?

- Hardiness Zone data
- Bloom data
- Planting Density Layouts
- Acreage



# Planting Related Data - Why is it so important?

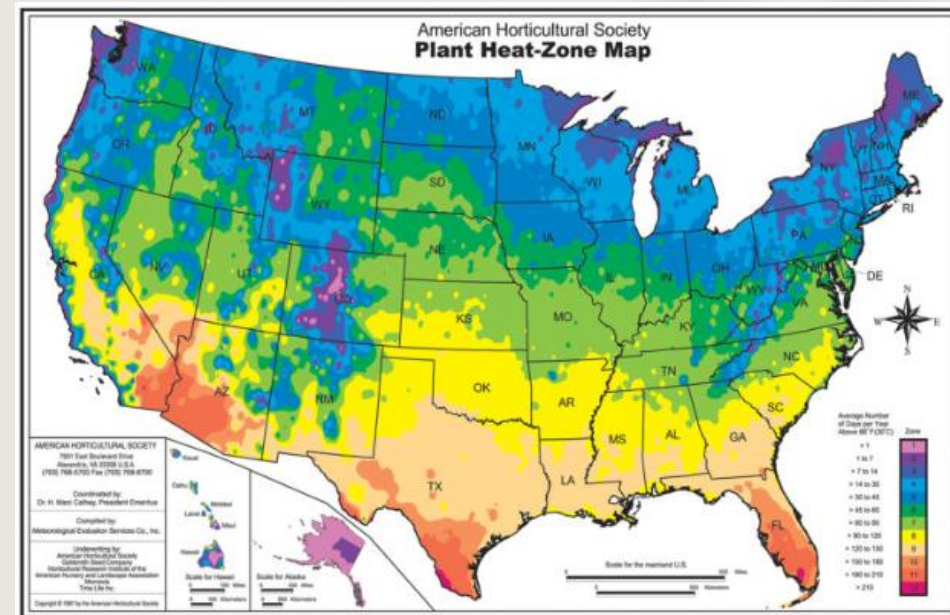
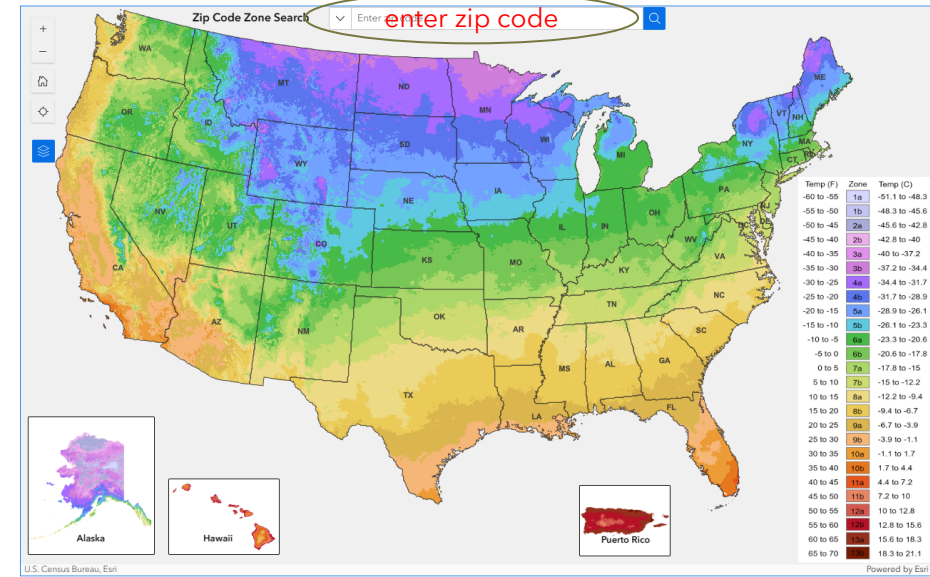
- To **learn about regional and geographic** norms (temperature, humidity, etc.).
- To **learn the behavior of your cultivars/varieties** (budding, repeat bloom, etc.)
- Determine **optimum or maximum plant population** for your farm.
- Explore **appropriate plant spacing** for unique **farm/crop uses**.
- Plan for/**calculate inputs and costs** (fertilizer, lime, micronutrients, etc.)
- Estimate **labor/methods to cultivate** the harvest.
- **Plan for water and irrigation** options/costs.
- **Establish a margin of safety** when accounting profit from crop yield.



# Why Report USDA Hardiness Zone

- Help **research your area.**
  - Homework *before* you plant.
  - Variety selection options.
- Help **plan for plant care.**
  - First/last frost date by zone?
  - Min/Max temperature expectations?
  - Overwintering and irrigation needs?
- Help to **connect and seek advice within USLGA.**
  - Locate mentor farms *within the same zone*, irrespective of region or state.
- Help USLGA begin **to report national trends and norms** *by zone.*
  - Correlations between zone and bloom time, variety success, etc..

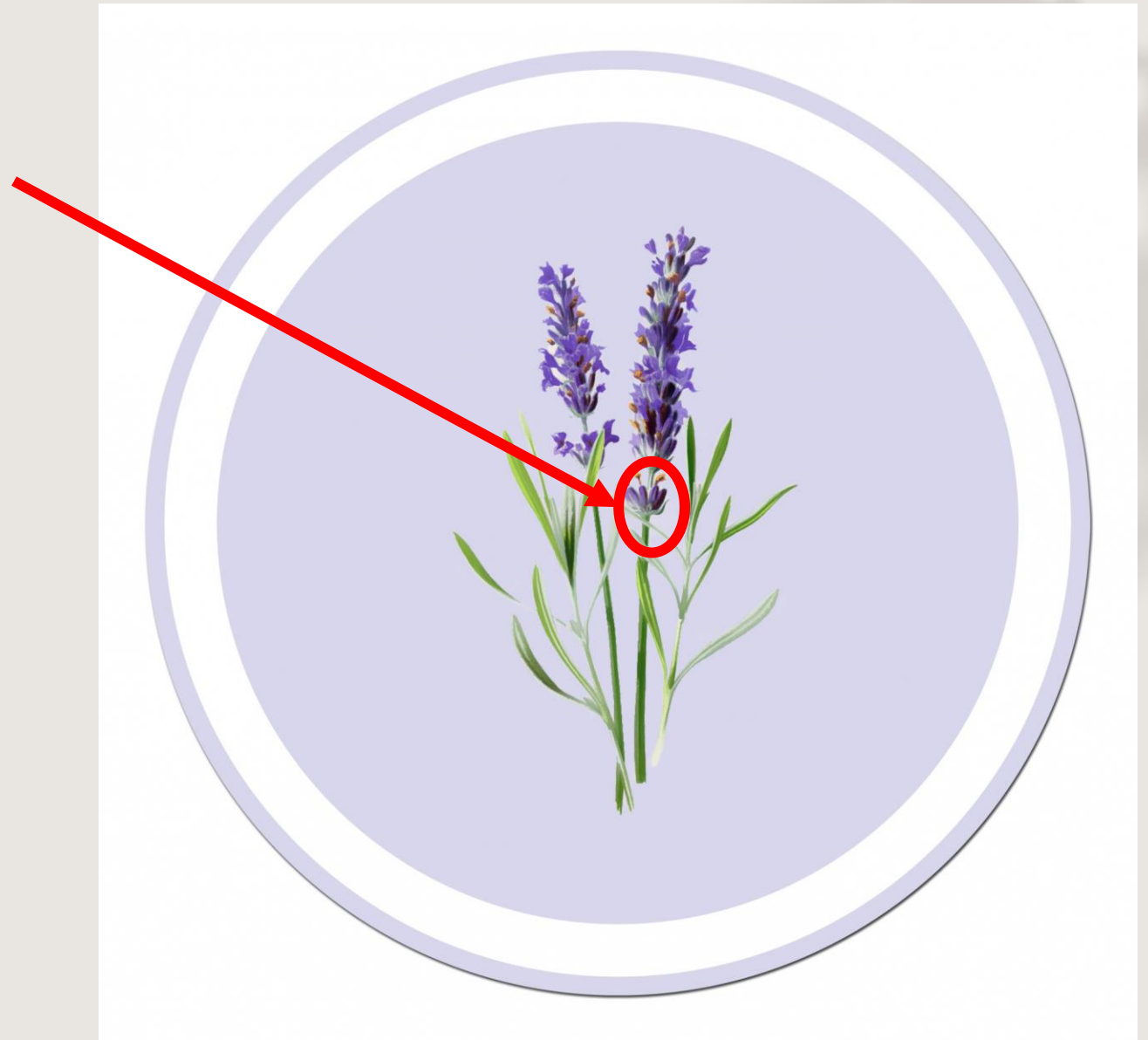
2023 USDA Plant Hardiness Zone Map



Report the **ZONE** your operation is located in, using USDA Hardiness Zone map.

# Why Report Bloom Data?

- Help estimate the **DURATION** of harvest and/or agritourism activities.
  - More dates available for events due to longer blooming season ?
  - Will labor requirements need to be extended or shortened?
- Help to **plan for “busy season”** needs
  - Extra labor, equipment purchases, support personnel, outlets for sales/distribution expanded, etc..
- Help USLGA begin **to report national trends** (and opportunities) within the community for agritourism season and harvest demands.
  - Bloom time and elevation?
  - Bloom time and new varieties?



Report the **approximate bloom month and date** by cultivar *Angustifolia* and/or *X-Intermedia*).

# Plant Density – Use informs plan

Planting density layout (PDL) impacts use, now and in the future.

Example uses :

- U-Pick, PDL: 3x5 (15 sq ft)
- Mechanized Harvest/in Field Dining, PDL: 3x6 (18 sq ft)
- Staging/Landscaping, PDL: 4x5 (20 sq ft)

Tractor/Dining Between Rows



Upick



Festivals



Staged: Photo Opps, Painting Sessions

# Plant Density – Impact of Regional & Operational Factors

Example data from 2023 USLGA Harvest Survey

## AVERAGE PLANTS per acre (Farms > 1 acre)

	<u>2023</u>	<u>2022</u>
North Central	1,042	1,504
Northeast	1,300	1,316
<b>Northwest</b>	<b>1,442</b>	<b>2,062</b>
South Central	661	1,152
Southeast	476	938
Southwest	1,520	1,522

## AVERAGE PLANTS per acre (Farms < 1 acre)

	<u>2023</u>	<u>2022</u>
North Central	1,131	783
Northeast	1,405	935
Northwest	1,856	2,111
South Central	613	635
Southeast	1,088	973
Southwest	1,830	991

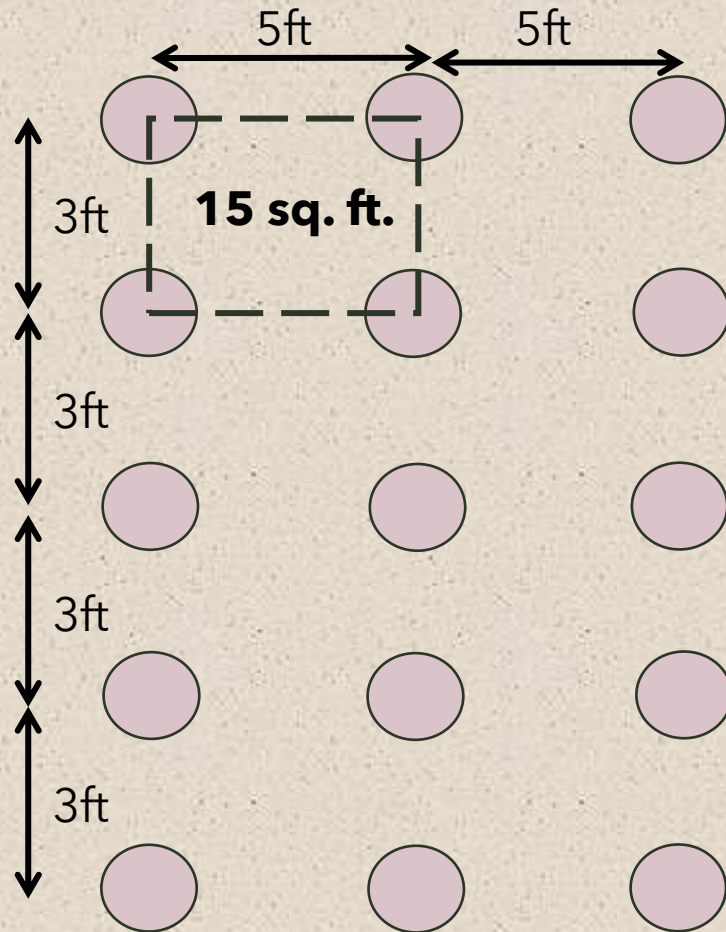
## Key Insights:

The **Northwest region consistently reports higher density** planting, regardless of acreage in production.

Overall, < 1-acre enterprises seem to be increasing planting density, while some regional reporting for farms > 1 acre show decline in plant density.

2023 International: >1 acre Avg. 3,250; <1acre 500 plants/acre

## 3' X 5' Planting Density



**43,560 sq. ft./Acre**

## How to Calculate?

$$\frac{43,560 \text{ sq. ft./acre}}{15 \text{ sq. ft.}} = \mathbf{2,904 \text{ plants/acre}}$$

**Note:** If this is your plant spacing, your plants per acre is the same no matter if you have .25 acres or 500 acres .

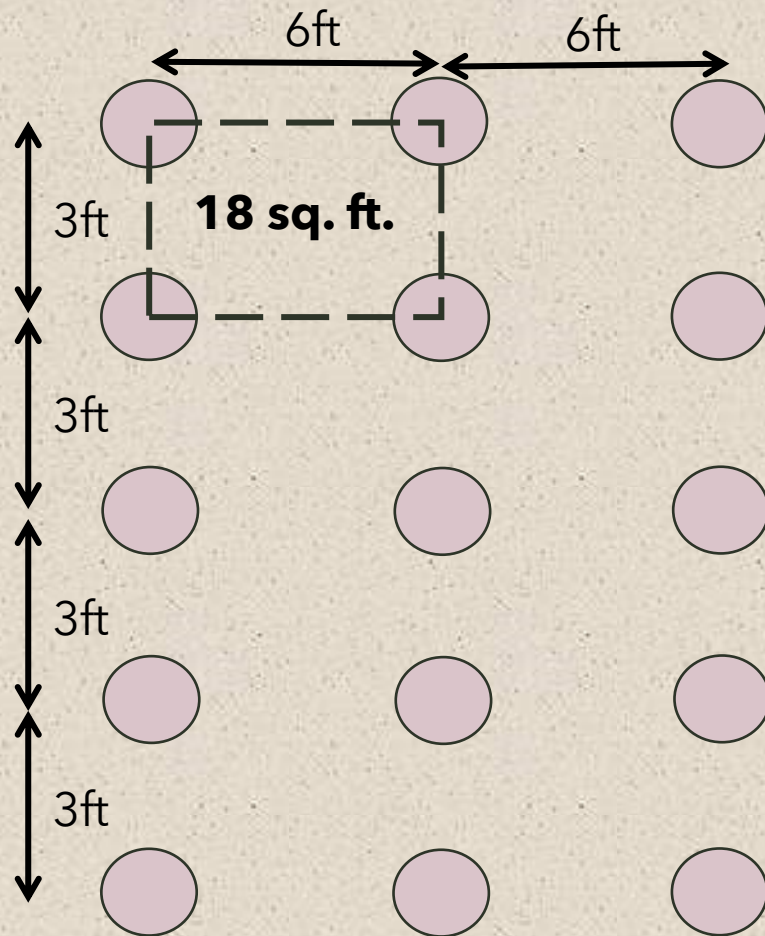
### Typical for...

- Smaller cultivar plants (Angustifolia)
- Agritourism and "curb appeal" considerations.

### Considerations...

- Tighter plant density = MORE water/irrigation demands.
- INCREASED density does NOT necessarily = INCREASED outputs/harvest.
- How will you manage plant losses (replacement plant options are DECREASED with a tighter planting density)?

## 3' X 6' Planting Density



**43,560 sq. ft./Acre**

## How to Calculate?

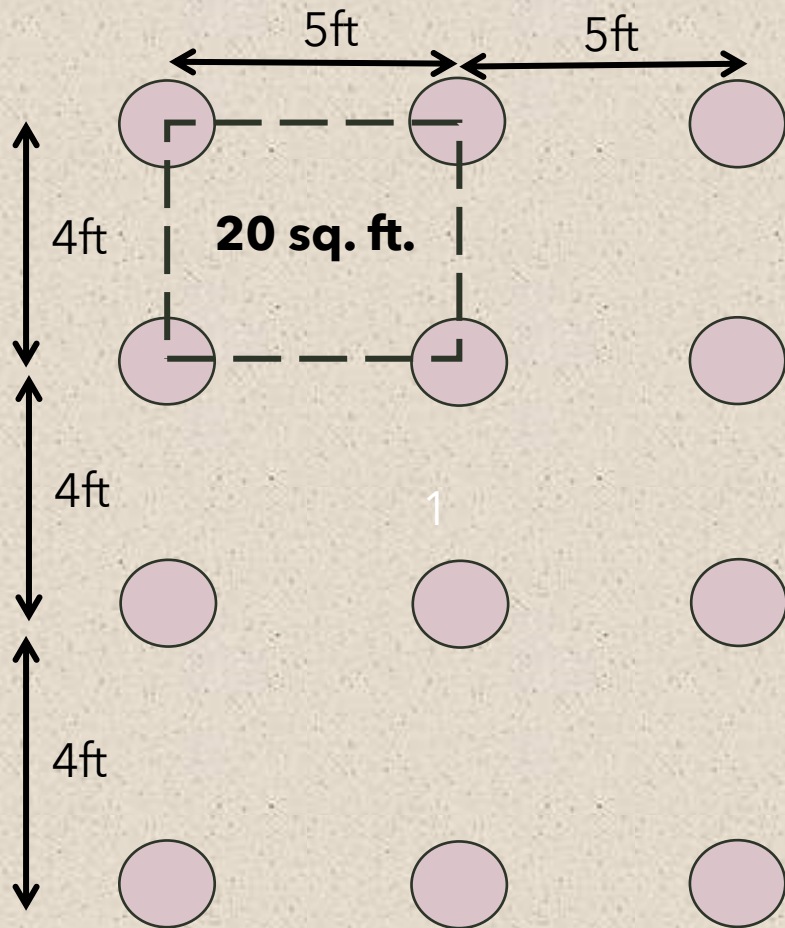
$$\frac{43,560 \text{ sq. ft./acre}}{18 \text{ sq. ft.}} = \mathbf{2,420 \text{ plants/acre}}$$

**Note:** If this is your plant spacing, your plants per acre is the same no matter if you have .25 acres or 500 acres.

### Typical for...

- Larger cultivar plants (X-Intermedia)
- The ability/ desire for mechanized harvest (equipment access).
- The ability to host agritourism activities/events "in field" spacing that is typical of this set up.

## 4' X 5' Planting Density



**43,560 sq. ft./Acre**

## How to Calculate?

$$\frac{43,560 \text{ sq. ft./acre}}{20 \text{ sq. ft}} = \mathbf{2,178 \text{ plants/acre}}$$

**Note:** If this is your plant spacing, your plants per acre is the same no matter if you have .25 acres or 500 acres.

### Typical for...

- "Landscape" type needs.

### Considerations...

- How will you manage plant losses (replacement plant options are INCREASED with a wider planting density)?

# Plants Per Acre - Standards of Excellence

How do we calculate plants per acre for our unique lot size?

	Data
Total # of living <b>P</b> lants	300 (P)
Measure field <b>W</b> idth in feet	70 (W)
Measure field <b>L</b> ength in feet	100 (L)
Multiply <b>W</b> x <b>L</b> = Area In square feet	7,000 (sqft)
Divided by 43,560 sq. ft = <b>A</b> area in acres	.161(A)
Divide <b>P</b> lants (300) by .161 (A) = Total Plants per Acre	1866 (P/A)*

## Steps to calculate # of acres planted and plants per acre:

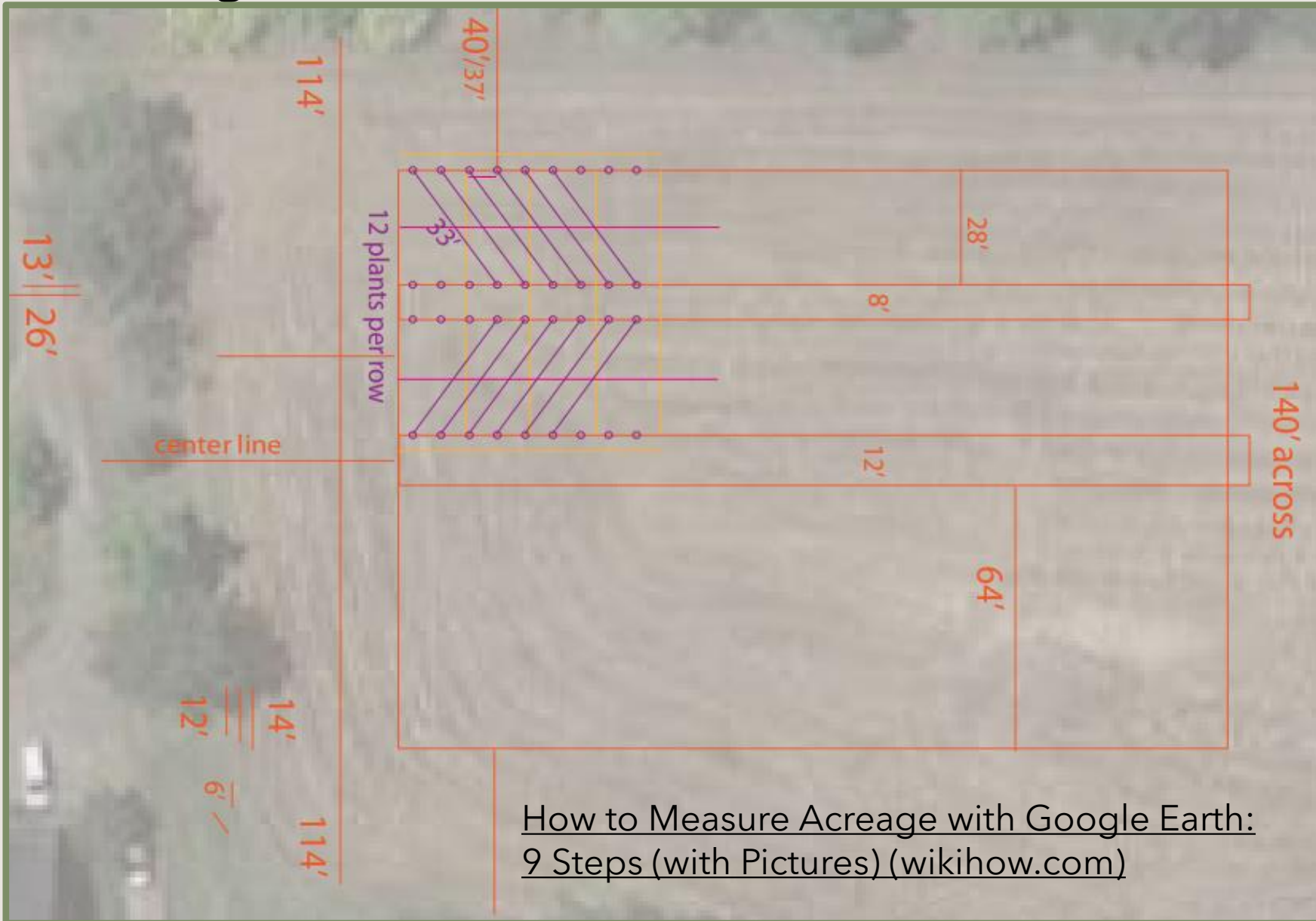
1. Determine the total number of plants (P) in the field.
  - ✓ Living plants (important to subtract plant losses year/year)
2. Determine the area of the field in acres.
  - ✓ Measure field width (W # feet)
  - ✓ Measure field length (L # feet)
  - ✓ Multiply W x L = Area (a in square feet)
  - ✓ Divided by 43,560 sq. ft = Area in acres (A)
3. Take total plants P / A area in acres = Plants / Acre (see note\*)

Report the **Acreage** of your operation and **Plants/Acre**.

\* Note: This does not mean you are reporting 1,866 plants, *rather*, based on the spacing for the area, if you had a full acre planted you would have capacity for 1,866 plants.



# Acreage Data - Standards of Excellence



## Get help from Google Earth...

- Allows you to have **multiple individual and odd shaped layouts**.
- **Calculates acreage** of individual plot shapes.
- Provides an ariel view on which to **create your unique planting layout plans**.

# What's the Bottom Line?



**Know your  
"basic"  
data/profile**

Hardiness Zone  
Plant Bloom times  
Plant spacing  
Acreage



**Know your plants  
and their  
behavior**

What plants  
How many  
WHY selected  
Needs/uses



**Know who to call  
for help and  
mentorship**

"Zone partners"  
"Variety partners"  
"Harvest partners"



**USLGA is tracking and sharing  
the data with & for you!**

**YOU can become a  
local USLGA EXPERT  
knowing YOUR data**



# Topic two

Variety Selection/Crop Harvest  
Expert Insights / Standards of Excellence



# Variety Selection/Use Data – Why is it so important?

- Advances the USLGA forward to be able to **establish standards of production use related to specifics of plant type** and density.
- Begins the process of helping the U.S. lavender market mature in **reporting production in units that are meaningful and translatable to other international producers.**
- Creates a **historic baseline of production** that can be examined over time, in relationship to farm density, weather conditions, grower impacts associated with adoption of “best practices”, etc.

# Variety Selection - Percent of Use Standards of Excellence

How do we track/report percentage of crop use by cultivar? Example: angustifolia

Use Type	X-intermedia	angustifolia	other
Culinary	10%	50%	
Wreath making	2%	5%	
U-Pick	25%	20%	
Sachets	30%		
Value Added Products	33%	25%	

NOTE: %'s reported should be based roughly on how much of your crop was allocated to each use type. "Proxy estimates" can be generated from sales data, visitor counts, inventories taken, etc.

# Crop Harvest Data – Overview

## Documenting Harvest

- Why it's important
- Simplifying and averaging
- Form examples
- Harvest data 2023



# Crop Harvest Data – Documentation

## Why Documentation is Important

- Calculating input cost, know your ROI
- Determining best use or value of cultivars
- Industry development benefits all



# Crop Harvest Data – Documentation Methods

## Documentation Methods

- It all leads to weight
- What to weigh
- Averaging methods
- Documentation, simple is best







# Bundles Harvested - Standards of Excellence

How do we figure out how many bundles / pounds we harvest as accurately and easily as we can?

	15 Bundles (baseline)	100 Bundles	500 Bundles	1000 Bundles
Weigh sample of 15 bundles (in Lbs.)	Enter weight here ex. 3.75 (Lbs.)	-	-	-
<b>Average Bundle Weight</b> Divide reported weight / by 15 bundles	ex. $3.75/15 = .25$ (1/4 Lb.)	.25 (1/4 Lb.)	.25 (1/4 Lb.)	.25 (1/4 Lb.)
<b>Total weight harvested</b> = .25 x # of bundles harvested	ex. $.25 \times 15 = 3.75$ (Lbs.)	<b>25 (Lbs.)</b>	<b>125 (Lbs.)</b>	<b>250 (Lbs.)</b>

Note: Example uses 4 ounces (1/4 lb.) of dried lavender, however a best practice would be to track and weigh X-intermedia and Angustifolia separately.

# Crop Harvest Data – USLGA Harvest Survey Data

## Harvest Production – Total Fresh Lavender

n=38 16%  
Response Rate

	Angustifolia	Xintermedia	Other	Grand TOTAL
<b>Total Pounds (lb) Reported</b>	<b>5,646</b>	<b>11,848</b>	<b>799</b>	<b>18,293</b>
<i>AVG Pounds (lb)</i>	<b>148.6</b>	<b>515.1</b>	<b>88.8</b>	<b>752.5</b>
<b>Total Bundles Reported</b>	<b>122,661</b>	<b>87,401</b>	<b>9,622</b>	<b>219,684</b>
<i>AVG Bundles</i>	<b>1,703</b>	<b>1,533</b>	<b>641</b>	<b>3,878</b>



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**Key Insight:** Lavandin is harvested in pounds at levels 2X that of Angustifolia, yet Angustifolia growers reported nearly 1.5X the bundle count of Xintermedia producers. Growers report strong individual preferences for how production *should be* accounted for (pounds vs. bundles). These individual preferences may account for some reporting variability.





# Topic three

Distilling - Essential Oil - Hydrosol  
Case Study / Expert Insights / Standards of Excellence



# Case Study: Distilling - EO - Hydrosol

## Scenario

### Product Development

- Proper measurements and data tracking during distillation helps with essential oil production consistency and output quality.
- Creating value-added with your essential oil can reduce expenses and build customer loyalty.
- Lavender essential oil is a valuable product. By tracking distillation processes, we can optimize oil yields and share best practices to maximize profits.
- Hydrosols, or floral waters, are produced during the steam distillation process alongside essential oils. They contain micro-elements of the essential oil and have value of their own for uses requiring a gentler potency and aroma.

## Challenge

### Knowing Our Why

- How does tracking lavender inputs ensure quality control during the distillation process?
- How can tracking inputs/outputs reduce wasting plant material or extracting insufficient oil, while also minimizing time and monetary losses?
- How can measuring hydrosols offer insights into my distillation processes?

## Solution

### Knowing Our Numbers

- How do we track pounds of fresh lavender used for distillation purposes as accurately and easily as possible.
- How do we easily track ounces of essential oil produced as accurately and easily as possible?
- How do we track gallons of hydrosol we produce as accurately and easily as possible?

# Distilling– Overview

## Overview:

Steam distillation is the most popular process for extracting lavender essential oil from harvested lavender plants. Here is an overview of the process.

## Harvesting Lavender Plants:

- ✓ Harvest early in the morning after dew has evaporated to maximize aromatic compounds.
- ✓ Distill before about 90% of the flowers have bloomed to maximize oil yield.
- ✓ Cut each sprig with as little stem as possible to maintain plant health and effective oil extraction.

## • Set Up Equipment:

- ✓ Choose a still or distillation apparatus made of stainless steel or copper.
- ✓ Ensure it can accommodate the amount of lavender plant material you've harvested.

## • Distillation Process:

- ✓ Heat water and lavender plant material in the still.
- ✓ Steam carries essential oil vapors from the plant material.
- ✓ The steam containing essential oil vapors passes through a condenser, cooling it back into liquid form.
- ✓ Collect the cooled liquid, which is a mixture of hydrosol (the byproduct) and essential oil.
- ✓ Separate the essential oil from the hydrosol using gravity separation, skimming techniques or freezing.

## • Benefits of Lavender Essential Oil:

- ✓ Used in aromatherapy for relaxation.
- ✓ Contains antibacterial & anti-inflammatory properties for skincare.

### Basic Essential Oil Distillation Steps

- Place plant material in still
- Boil water under plant matter
- When steam rises through plant matter, collect the oil vapor and steam as they travel into condenser tube
- Cool/condense vapors in tube back into liquid
- Collect essential oil and water (now hydrosol) liquids from tube

# Hydrosol – Overview

## Overview:

Lavender hydrosol, also known as floral water, is a byproduct of the steam distillation process used to extract essential oil from dried lavender flowers. It is a gentle versatile product that captures the aromatic and therapeutic properties of lavender in a milder form. Because hydrosol has a short shelf life and risk of bacteria contamination you may wish to use a preservative to protect your product and keep it safe for use.

- Common uses & benefits of lavender hydrosol:

- ✓ Facial Toner: Lavender hydrosol can be used as a refreshing facial toner. It helps balance the skin's pH, soothes irritation, and provides a subtle lavender scent.
- ✓ Skin Soother: It is suitable for all skin types, including sensitive skin. Lavender hydrosol has calming, and anti-inflammatory properties, making it ideal for soothing redness, sunburn, or minor skin irritation.

- ✓ Antiseptic: Lavender hydrosol has natural antiseptic properties. It can be used as a gentle wound cleanser or to disinfect wound minor cuts and scrapes.
- ✓ Aromatherapy: Spritz lavender hydrosol in the air, or on your pillow, to promote relaxation or better sleep. The soothing lavender scent can help reduce stress and anxiety.
- ✓ Insect Repellent: Lavender hydrosol can be used as a natural insect repellent. Spray it on your skin or clothing to keep mosquitos and other bugs away.

- Benefits of Lavender Hydrosol:

- ✓ Milder than lavender essential oil.
- ✓ Safe for direct skin application without dilution.
- ✓ Choose high-quality, pure hydrosol for best results.



# Essential Oil – Certificate of Analysis (COA)


A certificate of analysis ensures that the essential oil you choose is pure and safe for use. When purchasing essential oils, look for brands that prioritize rigorous testing and transparency.

Where do you get a COA?

- Essential Oil Analysis (1)
- Essential Oil Validation Services (2)
- Essential Oil University (3)
- Phytochemia - third party testing (4)

What does a COA include? Ex: Eden Botanicals (5)

- Common/Latin Name, Origin, Cultivation/Extraction Methods, Type, Plant Part, Use, and other details.
- Comments, Company Information, Contact & Date
- Specific components list, and GC/MS analysis and complete chemical breakdown of your provided essential oil sample, with comments pointing out any potential contamination.



**CERTIFICATE of ANALYSIS (COA)**

COMMON NAME	Lavender, Bulgaria - Organic	
LATIN NAME	Lavandula angustifolia	
COUNTRY OF ORIGIN	Bulgaria	
CULTIVATION METHOD	Certified Organic	
TYPE	Essential Oil	
EXTRACTION METHOD	Steam Distilled	
PLANT PART	Flowers	
USE	Aromatherapy, Natural Perfumery	

SKU	521	
LOT #	11	
MANUFACTURING DATE	July 2017	
BEST BY DATE	July 2019	

	SPECIFICATIONS (Range)	
SPECIFIC GRAVITY @20°C	0.875 – 0.890	0.879
REFRACTIVE INDEX @20°C	1.570-1.4670	1.46
OPTICAL ROTATION @20°C	-3.0° to -10.0°	-8.77°

PHYSICAL APPEARANCE	Transparent liquid	Conforms
COLOR	Pale yellow	Conforms
ODOR	Floral, sweet-herbaceous, smooth and complex	Conforms
SOLUBILITY	Soluble in alcohol and fixed oils	
SPECIAL USE INSTRUCTIONS	Dilute before use	

PRIMARY CONSTITUENTS	Linalool, Linalyl Acetate, (E)-Caryophyllene	
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COMPONENTS	% RANGE	%	COMPONENTS	% RANGE	%
LINALOOL*	na	31.99	BORNEOL	na	0.51


COMMENTS	Odor quality is excellent.
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This Essential Oil is a 100% pure and natural product and does not contain any artificial ingredients or adulteration of any kind to the best of our knowledge. The analysis and statements herein constitute the most complete information available to Eden Botanicals. This product is guaranteed by Eden Botanicals to be of excellent quality.

Eden Botanicals  
[www.edenbotanicals.com](http://www.edenbotanicals.com)  
 info@edenbotanicals.com  
 T: 1-707-509-0041 / F: 1-707-949-2526  
 Document created: 05.31.18  
 Document updated: 12.06.18

File : C:\SPC\DATA\52111.D  
 Operator : GIBBY  
 Acquired : 5 Jul 2018 11:08 pm using AcqMethod EDEN  
 Instrument : GC/MS Int  
 Sample Name: Lavender, Bulgaria Organic Lot 11  
 Misc Info :  
 Vial Number: 2


Lab report



# Distillation Worksheet– Standard of Excellence

## Distillation Worksheet:

- First, Distillation worksheets help ensure quality control.
- How to use distillation worksheets.
- Next, prepare Distillation Spreadsheets.
- How to use Distillation Spreadsheets shown on the following slides.



DISTILLATION WORKSHEET

Distillation Date: \_\_\_\_\_ Distillation No.: \_\_\_\_\_  
Harvest Date: \_\_\_\_\_ Outside Temp: \_\_\_\_\_

Heat turned on: \_\_\_\_\_  
Water boiling: \_\_\_\_\_  
Distillate flow begins: \_\_\_\_\_  
Shut off: \_\_\_\_\_

Plant Material:  
Variety: \_\_\_\_\_  
Pounds: \_\_\_\_\_ Comment: | \_\_\_\_\_

Yield:  
Oil \_\_\_\_\_ Distiller \_\_\_\_\_

NOTES:

# Distillation Log Sheets - in process

**GROS BLEU**

Date	Heat On	Distillate	Heat Off	Oil	Variety	Oil	Comments
7/2	7:17	7:44	8:48	60		G	hydro
	7:16	7:36	8:36	30			
	7:26	7:46	8:26	30			
	8:10	8:28	9:38	30			
	8:24	8:33	9:03	35			
	8:28	8:43	9:28	45			
	7:20	7:26	8:12	30			
	8:07	8:14	8:48	45			
LOTS OF WASTE							
				300 ml	10		
				3.81 ml per			
				30%			

**PHENOMENAE PHENOMENAL**

Date	Heat On	Distillate	Heat Off	Oil	Variety	Oil	Comments
7/1	8:30	8:55	7:30	130		Ginger #1	AR jar of boy
	8:35	9:00	9:30	100		Jill	
	8:50	9:15	9:40	100		L	
	9:45	10:00	10:35	85		G	
	9:55	10:05	10:35	100		J	
	10:00	10:15	10:40	125		L	
				610	30%		
							10.66 ml per
							60 percent harvested

Date	Heat On	Distillate	Heat Off	Oil	Variety	Oil	Comments
6/25	9:07	9:13	9:49	80		L	} hydrocol in pot
	9:13	9:21	10:00	88		G	
	10:28	10:28	11:00	98		J	
	10:28	10:32	11:00	110		L	
	10:28	10:32	11:00	90		J	
	11:17	11:24	11:53	100		L	
6/23	7:37	8:03	9:42	90		G1	water
	7:41	8:05	8:30	100		J1	water
	7:47	8:09	8:36	168		L1	Hydrocol
	8:24	8:27	9:12	120		J2	water
	8:58	9:13	9:40	100		L2	Hydrocol
	9:07	9:26	10:00	110		G2	water
	10:01	10:28	10:39	90		J3	water
	10:24	10:29	10:39	95		L3	Hydrocol
	10:26	10:46	11:30	98		G	water
	11:07	11:17	11:43	100		L4	Hydrocol
	11:07	11:22	11:46	95		J4	water
				105			Class - Leslie
				105			Class - Jill
				90			Class - Ginger #1

2005

# Distillation Log Sheets – Standard of Excellence

Completed Log from 2019

	A	B	C	D	E	F	G	H	I	J	K
1		Date	Heat On	Material In	Boiling	Flow Begins	Shurt Off	Time	Oil	Notes	
2	22	10/2/2019	3:45	3:35	3:56	4:04	4:31	0:46	25	Hidcote - Block 12	
3	21	8/15/2019	10:22	10:15	10:43	10:45	11:16	0:54		tossed	
4	20	8/14/2019	10:27	10:15	11:11	11:18	11:40	1:13	85	G/P	
5	19	8/13/2019	10:12	10:06	11:02	11:10	11:50	1:38	60	G/P	
6	18	8/9/2019	9:29	6:50	10:24	10:33	11:05	1:36	80	G/P	
7	17	8/6/2019	1:49	1:39	2:33	2:44	3:10	1:21	80	G/P	
8	16	8/1/2019	1:58		2:46	2:58	4:12	2:14	87	soaked Grosso	Hydrodistillation- 2 jars
9	15	7/25/2019	10:36	10:35	10:50	10:55	11:28	0:52	70	G/P	
10	14	7/25/2019	8:35	8:30	9:06	9:15	9:45	1:10	65	G/P	
11	13	7/24/2019	8:30	8:25	9:00	9:16			70	G/P	propane ran out
12	12	7/18/2019	1:50	1:48	2:17	2:27	3:00	1:10	85	G/P	
13	11	7/15/2019	12:12	12:07	12:40	12:57	1:31	1:28	92	G/P	
14	10	7/15/2019	1:28	1:18	1:50	1:59	2:30	1:02			
15	9	7/15/2019	11:00	10:56	11:05	11:15	11:42	0:42	80	G/P	
16	8	7/15/2019	9:33	9:20	9:57	10:06	10:31	0:58	65	G.P	
17	7	7/13/2019	11:32	11:10	11:51	11:54	12:06	0:34			
18	6	7/12/2019	1:09	12:04	1:32	1:40			100	G/P	
19	5	7/11/2019	1:04	12:57	1:19	1:24	1:49	0:45	70	G/P	
20	4	7/11/2019	10:18	10:14	10:49	10:58	11:24	1:06	95	G/P	
21	3	7/10/2019	12:32	12:32	1:00	1:11	13:35	1:03	95	G/P	
22	2	7/9/2019	1:35	1:25	2:08	2:26	3:10	1:35			
23	1	7/8/2019	12:04				12:24	0:20	60	G/P	
24											
25									1364		
26											
27									.33	Gallon	

# Lavender Oil Production - Standard of Excellence

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1		2023				2022				2021				2020			
2		Pounds	mL of EO	ml/pound		Pounds	mL of EO	mL/pound		Pounds	mL of EO	mL/pound		Pounds	mL	ml/Pound	
3	Hidcote									371	1,370	3.69					
4	Royal Velvet									167	760	4.55					
5	Twickle Purple									98	1,095	11.17		110	518	4.71	
6	Betty's Blue									220	798	3.63					
7										856				110			
8																	
9																	
10	F 1 -Grosso	880	7,458	8.47		680	6,020	8.85		228	1,900	8.33					
11	F 1 - Provence									307	1,782	5.80					
12	F 1 -Purple Ambience	20	150	7.50		20	325	16.25		15	250	16.67					
13	F 1 - Super	300	3,300	11.00		300	3,300	11.00									
14	F 2 - Field of Dreams	420	3,465	8.25		950	8,075	8.55		693	4,250	6.13		775	4,496	5.80	
15	F 3 -Phenomenal	60	640	10.67													
16	F 3 - Gros Bleu	80	305	3.81													
17	F 3 - Riv Tom	50	300	7.5													
18	F 4 - Riv Tom	629	5,459	8.68													
19																	
20																	
21		2,439	21,077			1,950	11,700			1,243	8,182			775	4,496		
22																	
23	Equipment:	3 60 L stills				2 60 L & 1 150 L				1 60L & 1 150 L				1 60 L			
24																	
25																	
26																	
27	First Harvest	6/18/2023				6/12/2022				6/5/2021				6/5/2020			
28	Finished	7/20/2023				7/21/2022				7/18/2021				6/18/2020			
29	Days	23				27				23							
30																	
31	Labor Cost	\$4,140	\$0.196														
32	D = 1 x \$20 x 5 hrs a day	\$2,300															
33	H = 2 x \$20 x 2 hrs a day	\$1,840															
34																	

# Topic four

Business Operations:

Value Added Products - Marketing & Sales - Agritourism - Workforce



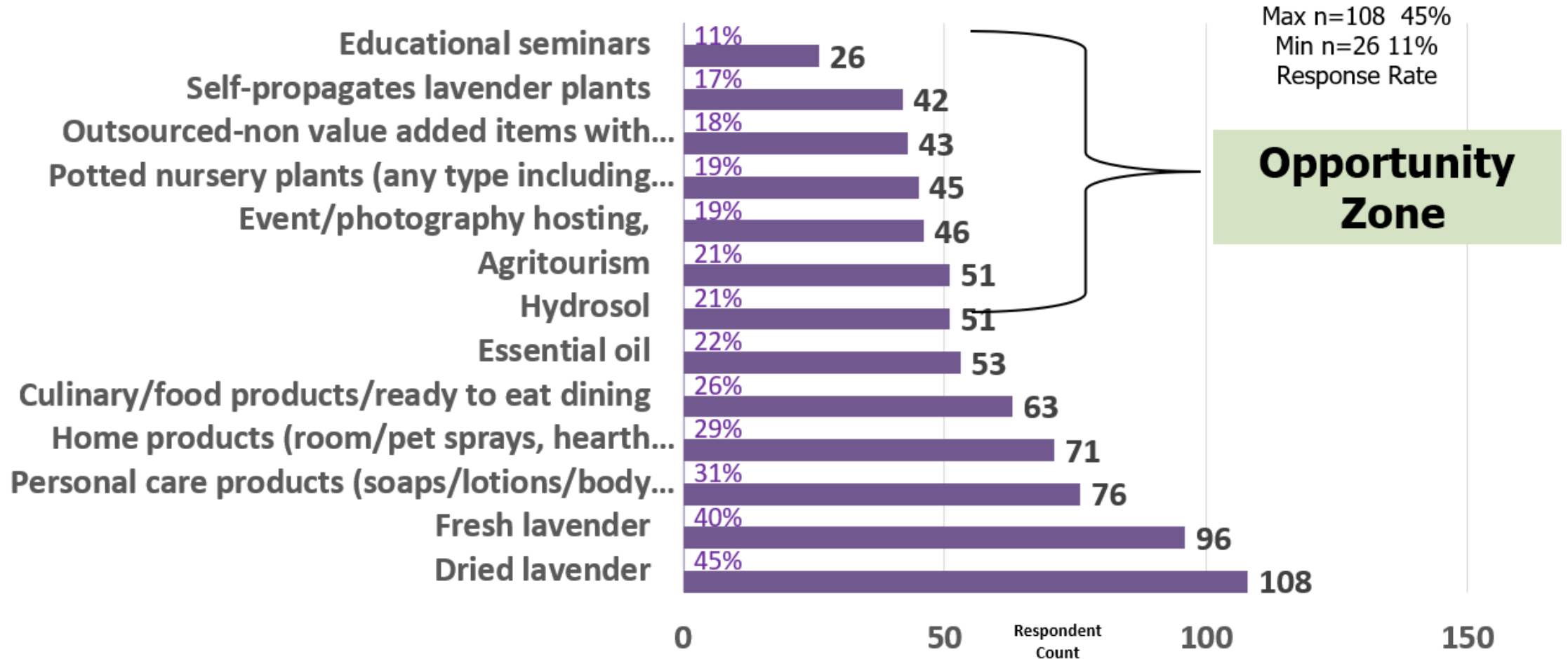
# Business Operations Data – Value Added Products

Value added products, for example, a personal care line including hand lotions, lip balms, soaps, essential oils, and others, will help build your farm's revenues. Let's discuss best practices taken from the Front Porch Event entitled, "Lavender Personal Products," by Sarah Richards of Lavender Wind Farm (see Fast Facts).

- **Select what's best for you:** Creating the right line of personal products is both strategic and valuable. Select what's best for you, and your business, with an eye on scalability. Discover what sells best in your region, or research on ETSY.com, great ideas, and price comparisons.
- **Plan long-term growth:** Planning a product line is best during the preliminary stages of business planning. In her FPE presentation, Sarah advises us to start out listing what you already make, for example Sachets; Personal Care; Food; Hydrosols; Essential oils, and then build out from there. If a product is time or budget prohibitive, think about purchasing wholesale to expand your line. Reminder: USLGA Wholesale Directory.
- **Research what others are selling:** Let's use data from last year's harvest survey for an overview of what other U.S. lavender growers are selling and note growth opportunities.
- **Sell wholesale to others:** Gift Shops/Boutiques, Spas, Botanical Garden Gift Shops, Faire.

# Business Operations Data

## Farm Operations – Product/Service Offering





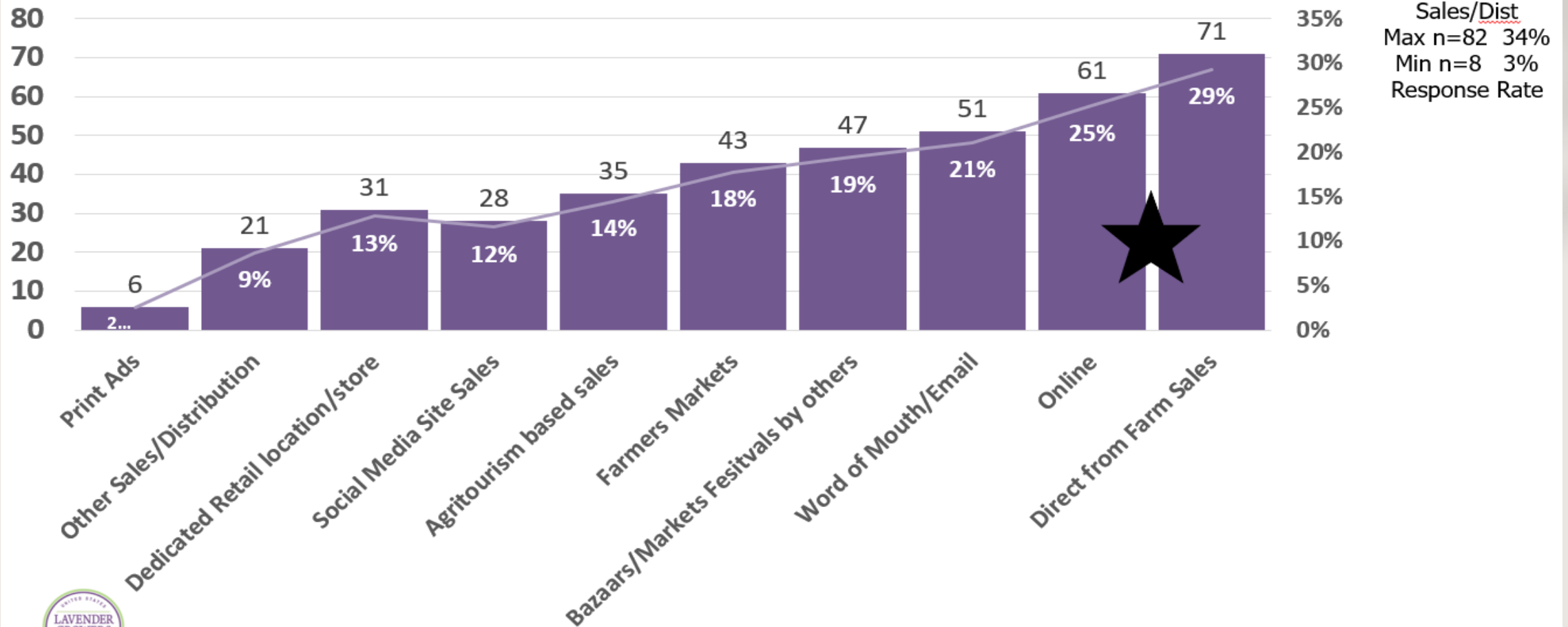
# Business Operations Data – Sales & Marketing

Building a strong brand identity is essential to boosting awareness and recognition. Once implemented, your brand, image, packaging, marketing strategies and tactics become the foundation of your ongoing business. Let's discuss best practices taken from the Front Porch Event entitled, "Lavender Marketing Plan," given by Trish Dennis, and Danielle Lee, of Indigo Lavender Farm (see Fast Facts).

- **Marketing plan:** Develop a brand image and keep that style consistent across your website, packaging, and signage so that all are aligned. Consider your brand voice everywhere to reinforce and resonate your message so it's recognizable and uniquely your own. Save time by using design tool, CANVA.com.
- **Research:** Choose the right audience, and best media outlet to reach them at the "best time of day." Consider posting on social media, local markets, and online platforms carefully, as these options can be more cost effective than print ads or even Facebook ads. Save time by using research tool, STATISTA.com.
- **Social Media:** Social media has huge benefits, and creates significant value, it is worth the required time and attention to master. Save time by using a social media scheduler, for example: META.
- **Product showcases:** Showcasing at Farmer's markets, craft fairs, and festivals are great opportunities, check out the expert tips by Julie Haushalter, and Tina Schooler, FPE, "Farmer's Market," (see Fast Facts).
- **Network/Collaborate:** Local businesses, spas, and gift shops.
- **Agritourism:** We'll cover in upcoming slides.

# Business Operations Data

## Farm Operations – Sales and Marketing



# Business Operations Data - Agritourism

Existing farm research suggests the growth of Agritourism is an opportunity to explore. Let's discuss best practices taken from the Front Porch Event entitled, "Business Plan," given by Christine Teeple of Red Rock Lavender (see Fast Facts).

- **Events are profitable:** Days of agritourism events at her farm, such as festival sales, fall sales, and farm store sales, revenues increased by approximately 33% - 47%.
- **Customer research pays off:** What is your target audience, and what most interests them? What is the rest of your farm region offering, possibly Farm tours, U-Pick, Photo sessions, Weddings, In-Field Dining, Concerts, Farm Stays (B&B), Crafting, or Yoga/Wellness Workshops, CSA? Choose what's best for you.
- **Which events are worth investing in long-term:** Once you pick events to hold at your farm, start to compare year over year profitability. Christine compared eight yearly events at Red Rock and charted the best revenue producers for her farm (Lavender Festival, Fall Sale, U-Pick/Farm Store, Guided Tour). Over time, you'll know the events that garner the greatest exposure, longevity, and profitability for your farm, and can invest in them so they grow in popularity, and your business grows year over year.

# Business Operations Data - Agritourism

## Farm Operations – Visitor Volume



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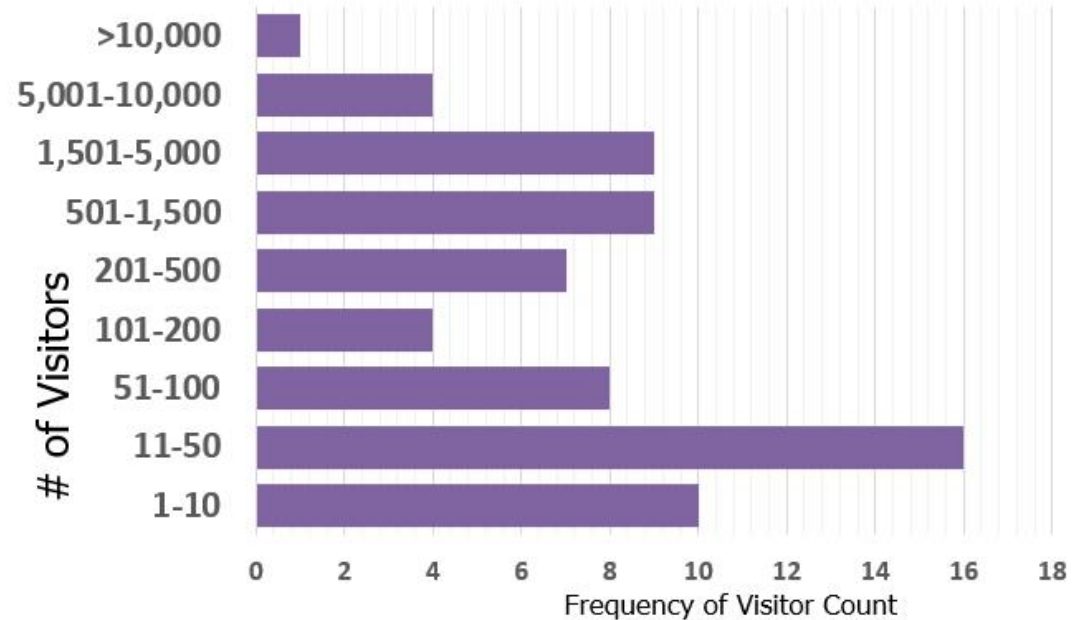
2023 Visitors to respondent farms would overflow historic Lambeau Field, home of the Green Bay Packers football team. Capacity 81,441.



**A total of 86,267 visitors were reported visiting the farms of 66 respondents**

n=66 27%  
Response Rate

- The **AVERAGE** visitor count was 1,327



# Business Operations Data – Workforce

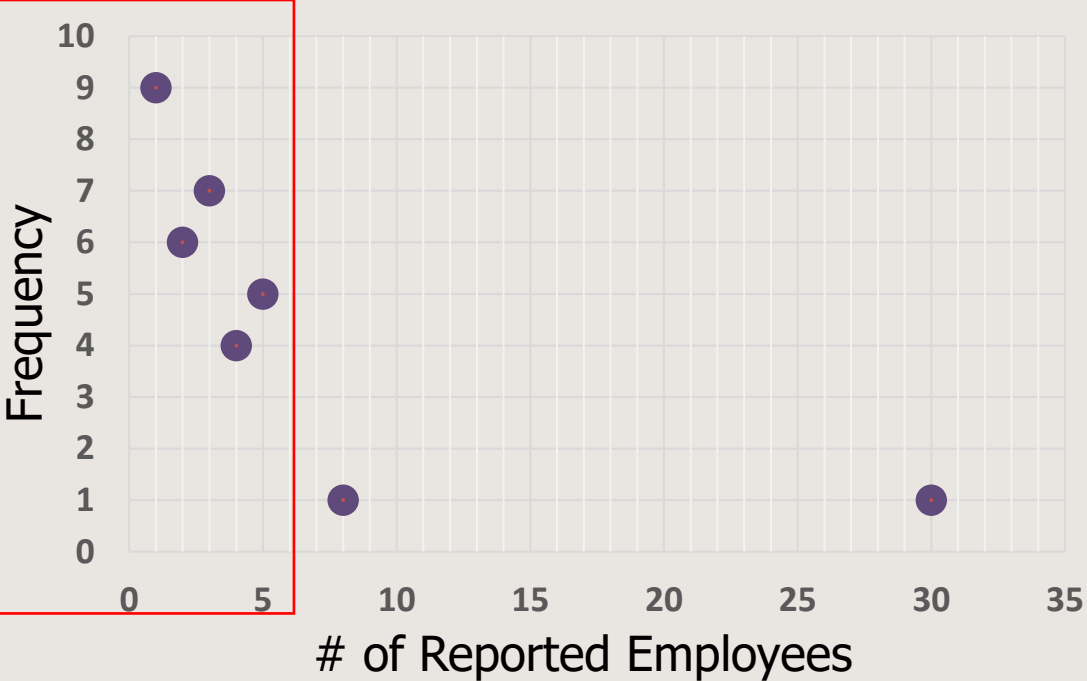
Lavender farming is both rewarding, and hard work. Hiring farm help for tasks such as planting, pruning, harvesting and processing is a time saver. Let's discuss considerations around building a workforce to help around the farm. Notes taken from several Front Porch Events.

## Workforce -

- Our harvest survey found that farm operations are still, most commonly, supported by family, friends and volunteers.
- An interesting statistic in our survey showed 90% of respondents use family members to support their farms, with 42% reporting that they employ 2 family members.
- Additionally, 21% of respondents indicated friends and volunteers supported their workforce needs.
- If hiring farm helpers is an essential part of your enterprise, a national average for labor costs runs \$15 p/hour, however, these costs can vary based on the size of your lavender farm and the specific task.
- For farmers markets/offsite events: Julie Haushalter advises, "If it takes more than one person to comfortably work a market, pay a friend or hired help in the form of an hourly rate, with or without a sales bonus".

# Farm Operations – Workforce Family, Friends, Volunteers

n=33 14%  
Response Rate



- **Maximum number of employed associates** for any respondent **was 30**
  - **Most commonly reported** number of associates was **1 (27%)**
- **21% of responders indicated FRIENDS & VOLUNTEERS** supported their workforce needs (n=50)
  - **72%** of those utilizing Friends & Volunteers used **1-2** to support their enterprise
  - **20%** utilized **between 5-20** Friends & Volunteers

# Business Operations Data – Legal/Financial

Structuring your lavender business as a formal legal entity is crucial to avoid legal penalties. Notes taken from several Front Porch Events.

## Legal Planning-

- Register your lavender farm as a business entity (Sole/LLC/Partner/Corp)
- Obtain necessary permits/licenses and comply regulations, as applicable.
- Ellen Reynolds, Beagle Ridge, advised in her Front Porch presentation to, “Insure against any risk at, or around, agritourism activities. Even a cancelled wedding may cost you money, draft an agreement that covers you, and clarify expectations, including restrictions (what you will and will not allow), and any special fees for property use before, during, and post event”.
- Other insurance: Health Insurance, Liability Insurance, Property Insurance, Crop Insurance, and Workers’ Compensation & Disability Insurance, and/or Life Insurance.

## Financial Planning-

- Estimate start-up costs of any new venture/event, ex: equipment, supplies, marketing, signage.
- Create a detailed budget for ongoing expenses, or consider financing options, grants, or loans.
- Develop pricing for products/services that include production costs, and marketing (3x mark up rule).
- Last, but not least, keep accurate records of expenses, sales, and profits.

# Summary

Remember, lavender farming combines science, art, education, business acumen, and networking. Whether you're a budding lavender grower or established, the use of industry standards of excellence to achieve year-over-year success, and scalability will help you master consistent high-quality products and improve your farm business exponentially year over year.

Our annual survey goes out in Fall. Please use this year's growing season to apply the standards of excellence we've learned today, and participation in our annual survey so it becomes an annual USLGA community event that benefits all of us now, and in the future.





# Questions & Answers



# Resources

The following slides provide a deep dive into some of the topic areas presented during the Front Porch Event, "Better Data, Better Decisions: Standards of Excellence for Operational Data Gathering".

Please visit the [uslavender.org](https://uslavender.org) dedicated webpage for more information.



# Case Study: Plant Density

## Scenario

### Planning & Management

- Essential to track acreage so we can monitor key productivity factors and crop/farm trends.
- Management of input costs requires knowing one's farm size, number of plants and plants per acre.
- Making informed decisions around planting density, irrigation, and crop management is paramount.

## Challenge

### Knowing Our Why

- How do I utilize acreage/plant density data to aid my operation? (best use for water, fertilizers, labor, etc.)

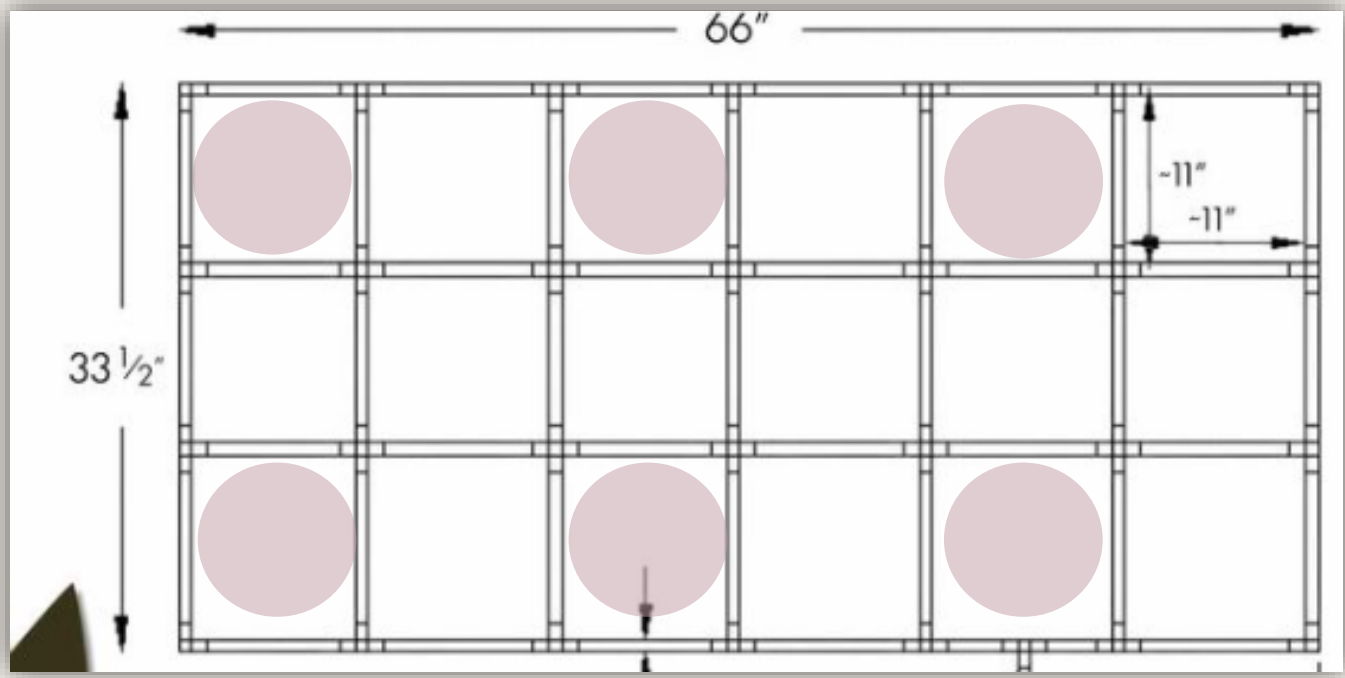
## Solution

### Knowing Our Numbers

- We need to first calculate how many acres we have in lavender cultivation.
- We need to maintain records of live lavender plants in production.
- We need to utilize the info above to determine lavender plants per acre.
- Sharing plant density data helps to determine best practices by geographic and growing regions.

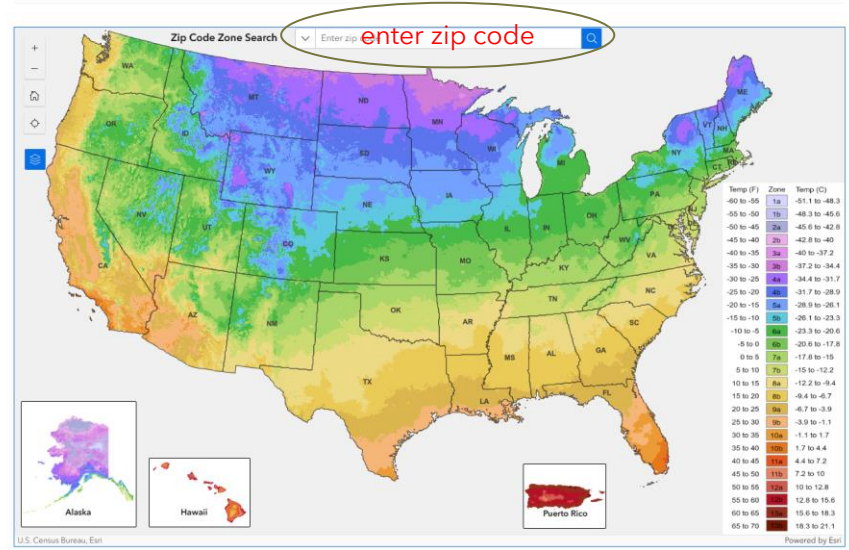
# Plant Density – Ideal vs Reality

- For planning purposes, ideally, our farms would be in a set shape that's perfectly mathematically divisible, however, the reality is not that easy. Standard layouts offer a general calculation for number of plants per acre so you can best plan farm use, cultivars, plant density, and resources.



# USDA Hardiness Zones Map & Plant Density - Grosso

2023 USDA Plant Hardiness Zone Map



Plant Density:

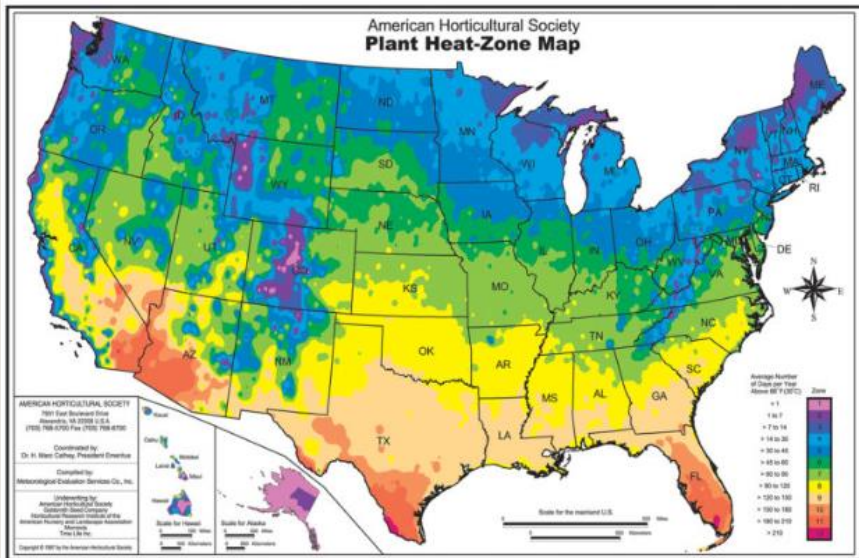
- Plant density should correlate with your region/climate. For example, since lavender is adapted to Mediterranean conditions of full sun, and arid conditions, with infrequent rainfall, so **making plant density adjustments based on your region is important.**

Let's look at lavender 'Grosso':

- In temperate climates (such as WA, OR, or even UK), **space lavender 'grosso' approximate 2-3 feet apart.**
- In hot climates, (CA), space lavender 'Grosso' at approximately 3 feet apart.** This will help airflow which prevents fungal disease.
- If your climate is humid, plant lavender in the highest sunniest area, spaced as far apart from other plants as possible, **at 3 feet or more.**

Two helpful maps to plan for regional plant density differences:

- 2023 USDA Plant Hardiness Zone Map | USDA Plant Hardiness Zone Map - Identify how well your plants will withstand the **lowest cold winter temperatures** in your zone compared to plant hardiness zone.
- Heat Zone Map developed - American Horticultural Society (ahsgardening.org) identify how well your plants will withstand the **highest heat temperatures.**



Footnote: 2023 USDA Plant Hardiness Zone Map | USDA Plant Hardiness Zone Map, Heat Zone Map developed - American Horticultural Society (ahsgardening.org), Proper Lavender Plant Spacing: Promoting Growth And Preventing Issues | Garvillo, Lavender 'Grosso' Spacing (Definitive Guide) - Gardener Report,

# Plants in Production - Standards of Excellence

How do we track how many lavender plants are in production?

	1 year old Plants	2 year old Plants	3 year old Plants	➤ 3 yr old Plants	<b>TOTAL</b>
Living plants at End of Season /year Count	100 plants	500	500	3,000	<b>4,100 plants</b>
Plant losses tracked during start of season inspection	-5 plants	-120	-10	-70	<b>-205</b>
New plants planted at start of season	200 plants	n/a	n/a	n/a	<b>200</b>
<i>Total Plants in the Field</i>	298	380	490	2,930	<b>4,095</b>
% Producing bud for harvest or U- Pick?	0%	10%	100%	100%	
<b>Total Plants in Production</b>	<b>0</b>	<b>38</b>	<b>490</b>	<b>2,930</b>	<b>3,458</b>