





# Successful Blueberry Growing

*~ Critical Factors & Considerations ~*

*by*

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## Introduction

A few years ago my wife Elizabeth and I purchased the ground on which Chautauqua Hills Farm now sits, in southeastern Kansas near the Oklahoma border. As we started working to develop the farm into a place we could enjoy, we noted several features of the property, including the climate, water, soil structure and native pollinators, and began exploring what we might be able to grow there. After many months of research and work, we settled on growing blueberries, blackberries, and asparagus.

We found that our location was ideal for growing blueberries, a crop commonly thought nearly impossible to grow well in Kansas. However, the research and work only increased after we made our decision, and our path to success and becoming “Home of the Nickel-Size Blueberries” was not simple or easy. We want to emphasize that wherever you are, growing blueberries will not be easy; but it is rewarding nonetheless.

For the past two years, we have completely sold out of our entire crop of blueberries, and received rave reviews about the size, quality, and taste of our berries. We continue to nurture and grow healthy, maturing plants and refine the conditions in which our plants grow and produce.

We’ve written this e-book to help you think through the critical factors that relate to growing blueberries successfully, whether you’re considering adding a few bushes to your garden, an established grower of other crops wanting to diversify, or perhaps a current blueberry grower who wants to improve quality, yield rates, or taste.

This is not a how-to manual; growing blueberries is a process unique to every locale in which it is done. Rather, consider it a thorough field manual of questions to ask yourself and make sure you’ve considered. Just like any good business has a well-thought-out business plan, you will need to make sure you’ve researched and answered the questions in this e-book, preferably in writing, for your own documentation, reference, and success.

Best of luck! - Lance Chastain, Owner, Chautauqua Hills Farm

## A Note to the Reader

If you're reading this book, your questions probably fit into one of the following five categories. We've provided a few brief notes for each, to help you know what to focus on in this e-book and possible next steps:

1. *"I've tried more than once to grow blueberries, but they always die within a year or two. I'd really like to grow them, but I'm not sure what the problem is. Do you have any suggestions?"*

**(Growing attempted; problems or failed; seeking solutions)**

### **Recommendations:**

- ~ Read this entire booklet through once, making notes about which areas you've not thoroughly addressed, to come back to.
- ~ Work to establish positive relationships with local growers who may be willing to share knowledge; know help may not be free.
- ~ Determine your goals: Growing for fun? Health? Profit?

2. *"I'm looking at buying a piece of ground or starting a small farm and CSA. I've done a lot of reading, have the resources and time, but I'm concerned about getting started correctly. What would you recommend?"*

**(New growing situation; grower is well-researched & informed)**

### **Recommendations:**

- ~ The easiest things to overlook are the details, details, details. Don't.
- ~ Don't be in a hurry; continue to research to get the best deal and location. Once you get started, it will not be easy to move.
- ~ Chronicle your progress as you try things & experiment.

*"I have a farm and grow other crops and produce. I have a piece of ground that I think has potential for growing blueberries. I want to plant 2-3 year old quality plants, but they're expensive. I want to get started correctly. Where would you suggest I begin?"*

**(Existing grower; know blueberries = challenging; seeking input)**

**Recommendations:**

- ~ Don't be afraid to wait till you can invest funds to raise blueberries right. On the other hand, the sooner you get your bushes planted, the more time they'll have to mature.
- ~ Don't spread the word too early about your offerings.
- ~ Berries will be very different than other crops you've grown.

3. *"I've spent a great deal time researching what may be missing from my approach, but can't seem to develop a program that I'm confident in. Can you take a look at what I'm doing & give input?"*

**(Existing berry grower; not achieving desired quality/taste/yield)**

**Recommendations:**

- ~ Document all results so that you can duplicate what works.
- ~ Sometimes all you need to do is tweak one or two things, sometimes several simultaneously. Review all questions in book.
- ~ The author is available for consulting projects; info at back.

4. *"What options have you found to maintain the acidity of the soil or keep weeds and grass down without using chemicals? Should peat moss be used in planting? How do you know when and how much to water? What types of soil and plant testing do you use?"*

**(Existing grower seeking specific, informed answers to questions)**

**Notes:**

- ~ We provide some of what has worked for us in this booklet; however, your unique situation will be different - experimentation and local research will be your best tools.

## "It Can't Be That Hard"

Have you ever watched a home improvement show on television in which a project was completed for "less than \$2,000" in a matter of 1-2 days, which, in reality, probably cost 2-3 times as much and took 2-3 times as long (or longer) to complete as the show suggested?

In our tech-centric, 2-minute-instructional-video-world, the details, difficulty, skills required and nuances of doing just about anything successfully on a larger scale are glossed over. It's easy to fall into thinking the same way about growing blueberries. "It can't be *that* hard, right?"

Unfortunately, I've encountered this mistaken belief in conversations with many individuals, some on the phone, some in person and some taking time to visit our farm and spend an hour or two with me walking our fields. Most it seemed were attempting to validate all the answers they'd found elsewhere or for free on the internet. While we're always glad to take a little time and offer answers to general questions, I often come away with the distinct impression that my answers to their questions are not the answers they're looking for!

It's easy to be misled into believing that growing blueberries is "not that complicated" and that having just 1-2 acres isn't much more difficult than having a fairly large garden. After all, the plants are sold now at most large, big-box retail stores and outlets every spring. We even see plants sold on TV promising incredible size and numbers of blueberries grown right in your own home, just waiting to be picked!

In reality, it's very important not to underestimate the difficulty or diminish the importance of every detail when developing your growing plan. Consider this: If growing blueberries **was** really easy, we'd see them growing everywhere - but that's simply not the case - even though they are rated to grow in almost every climate zone of the USA.

Blueberries cannot be grown just anywhere. They're very site-specific and require proper planning, preparation, the right products & processes and intense management to grow successfully.

Here's what we've learned – and it's especially true with blueberries – growing almost anything successfully on any commercial scale requires a detailed plan, comprehensive range of skills, effort (hard work and sweat), the right products and support team, resources, equipment, time - and let's not forget the money. And all of that is after you have the proper location with the right soil conditions.

This paper is written with the beginning or smaller grower (up to 2 acres in size) in mind. For readers considering growing blueberries on any scale, we strongly encourage you to avoid diminishing or underestimating the importance of any outline topic in the following list of critical factors. Any one of these could be the reason your growing success is limited or failure is encountered.

The information presented here is a result of experience obtained in the field, from hands-on situations, in extreme heat, cold and drought conditions, and studying and working with the relevant variables every day. It has been expensive, very time-consuming and some days almost impossible to determine "what the problem is."

We've spent hundreds of hours in research, reading and experimenting with solutions for dealing with a wide-ranging host of issues encountered in our fields. Despite various challenges experienced each year at Chautauqua Hills Farm, we've consistently produced very high quality nickel-and-quarter-sized blueberries (BRIX measured 16 to 20) and are continuing to develop a brand recognized for its fruit quality, size, and most importantly, taste. We hope thinking through the following critical factors will help you find success in your blueberry endeavors as well.

# 10 Critical Factors for Blueberry Growing Success

The following outline consists of the critical factors referred to earlier for anyone looking to grow blueberries. Think of it as an outline similar to a business plan - except for growing. We've included a few example questions under each topic for reference. As you contemplate your own situation, think about these questions and how they might relate. This list is not exhaustive, but a thorough start.

1. [Field Location](#)
2. [Field Layout](#)
3. [Soil Conditions](#)
4. [Water Source & Delivery](#)
5. [Field Drainage](#)
6. [Plant Selection](#)
7. [Nutrient, Pest & Disease Program](#)
8. [Equipment & Personnel](#)
9. [Market](#)
10. [Maintenance](#)

# 1. Field Location

There are many considerations when looking at an existing or prospective growing site. These become even more important as the size of the field increases due to the investment required in a larger scale growing operation.

## High/low ground - exposure to extremes

- How is the potential field location positioned on the property?
- Is it surrounded with trees or not?
- Is it positioned in a valley or up on a hill?

## Elevation of surrounding ground

- Is the surrounding ground the same elevation as intended site?
- If the field location is in a valley, what are the characteristics of the higher ground?
- What could concentrate the heat or cold in your field?

## USDA climate zone

- Are there any localized climate issues that may affect your growing plans?
- Are you in a transitional area that may be subject to issues not normally encountered in this climate zone?
- Can the position and location of your field within a climate zone make a difference?

## Possible weather extremes

- Is there risk of wide weather extremes?
- Dramatic influence on bloom times and fruit yields?
- Where can you get real, on-the-ground references for your prospective field location?
- How will wide swings in temperatures be dealt with?

## Weather patterns

- Are moisture, temperature, and wind patterns reliable?
- What is the risk of erratic frost /freeze dates - reliable or not?
- Does the field location/elevation make it more subject to these?

## Wind issues

- If the field is surrounded by trees, how will that impact growing conditions?
- Is the field exposed on all sides or otherwise, and how will that affect the plants?

## Available pollinators

- Is there a lack of or abundance of native pollinators?
- Can you attract more native pollinators?
- Are there pesticide usage patterns around your area (think "drift") that could impact pollinators?

## Sunlight

- If full sun is required, has that been considered in the field location at the edges?

## Wildlife pressure

- What are the wildlife pressures that could be encountered?
- Is fencing feasible? What type of fence will actually work?
- What will bother your plants and how should you plan for that?

## Proximity of market for finished produce

- Who will buy your produce?
- Where are the buyers located?
- How far away is that from your field?
- How will you get enough produce to market to make it worthwhile?

## Surrounding environment, crops & growing methods

- What non-growing activity is going on in the immediate area around your field?
- What is being grown around your location? Why?
- How are those crops being grown? With what methods?
- Are there cattle or other ranching operations nearby?

## **Other growers in the area growing similar products with similar methods vs. being a "pioneer"**

- Do you have anyone else in your area doing the same type of growing? If no, why not?
- Where will you get help if you need it?
- Can your extension agent help if needed? Do they have field experience with what you're doing?

## 2. Field Layout

There are many questions to consider and issues to explore before finalizing on a field layout. We touch on the important ones below and even these will vary with each field size & location, soil type, climate, plant varieties and natural drainage patterns. Remember, once your field layout is complete, it's very expensive to change!

### Rows

- Is there a best way to orient the rows in the field?
- Can you determine if mounded rows are required? If so, what is the best way to implement mounded rows?

### Row and plant spacing

- Can you determine the best spacing between row and plant?
- How wide should the rows be?

### Anticipated weed control

- What should be considered in field layout for efficient weed control?

### Irrigation equipment

- Where should this be located and why?

### Harvesting

- What are the important considerations for picking?
- If a Pick Your Own operation is intended, how could that impact field layout?

### 3. Soil Conditions

Soil conditions are where it all begins. Having a comprehensive understanding of the soil in a prospective field is imperative in order to get a successful growing operation started.

#### Comprehensive testing performed

- Is the soil test company and its methodology being used or selected the best? How do you know?
- What happens if the testing methodology underestimates or overestimates nutrients available?
- Once a soil test is taken, how are the results to be interpreted for your specific crop?

#### Type

- What type(s) of soil is/are located in your field?
- How can you find the type(s) of soil?

#### Condition

- What do the soil test results reveal about your field soil?
- Will it be conducive to growing what you want?
- What is required to improve it for maximum economic yield?

#### Prior use

- Is the history of the field location known?
- Should it be tested for any prior contamination issues?

#### Preparation required

- What preparations are required for the particular crop to be grown?
- What amendments are needed?
- What is the best application of those?
- Does the company who sells the products actually know from field experience how to use them?

## 4. Water Source & Delivery

Water will always be an important consideration when growing. Unpredictable climate swings and weather patterns require growers to consider carefully the implications of water availability and sources both now and in the future.

### Condition

- Has a source for irrigation water been planned for or known?
- Is it subject to any potential contamination or run-off issues?

### Source(s)

- Where will the water come from for irrigation?
- In a drought, will water still be available?

### Testing

- Has the intended source(s) of water been tested?
- How do you know if it's sufficient for irrigation purposes?
- How often should testing be performed?

### Replenishment/availability

- If a well - how old is it and what kind of condition is it in? What type of well and how deep vs. surrounding wells?
- If a pond, what is the condition of the pond? Is it used for anything else?

### Back up supply if drought conditions develop

- Are there at least two sufficient water sources available?
- If yes, how can you plan for this in the irrigation system?
- If not, can another water source be developed?

### Field measurement and delivery

- Do you know when and how much to water?
- If drip irrigation is to be used, how should the system be designed?

## 5. Field Drainage

Field drainage is critical when it comes to growing anything. *Blueberries are especially unforgiving in poor drainage conditions.* Below are the important considerations when looking at an existing or potential site.

### Slope

- How will the slope of your field location help or hinder your efforts?
- How can you determine what it is?
- Once you know, how should you plan around it?
- What if you have essentially a flat field? What then?

### Natural undulations in the field

- How do you use the natural undulations in the field to your advantage?
- What if these are in the way of your growing plan? Should you move them?

### Soil type

- How will the soil type affect drainage?
- What is required, based on soil type, to create the field drainage needed for blueberries?

### Heavy rains

- How will these affect field and rows?
- Could these impact the field in such a way as to wash out rows?  
How to avoid this?

### Run-off from surrounding ground

- Is there observable run off from surrounding ground?
- How is that ground being used and will the run off impact the field with unwanted elements?
- Are there any plans to change the surrounding ground after your field is in place?

### **Natural drainage patterns existing**

- Is this more complicated than it appears?
- How do you determine if you have more than one natural drainage pattern in the field?

### **Piping/drainage materials**

- Do you know what kind and size of pipe to use for drainage if needed?
- Do you know how and where to place the drainage piping?

## 6. Plant Selection

Choosing the right plants is critical. There is a wide selection of blueberry cultivars available (several hundred or so) depending on the climate zone. The plants vary in their production yields, ripening times, fruit size, quality and adaptability.

### Varieties (called "cultivars")

- There are so many cultivars of blueberries available. How to choose the right one(s)?
- Where are the best places to purchase from?
- What size(s) of plants to buy?
- What are the reasons you should buy a combination of cultivars?

### Markets to be served

- What fruit qualities will potential customers value? Taste? Quality? Size? All of these?

### Climate zone/hardiness

- Are there cultivars that are more hardy in your climate zone than others?

## 7. Nutrient, Pest & Disease Program

There are many important considerations when constructing a nutrient, pest and disease program. Does the market for the produce have any potential influence on the methods and products to be used?

### Natural/Organic or Certified Organic

- What are the key things to consider with this type of growing approach?
- Is it affordable and will it work?
- Does it require more effort vs. more conventional approaches?

### Sustainable

- How can a growing program be sustainable and effective at the same time?
- Will customers appreciate the extra effort made to be more sustainable?
- What are the influences in the market impacting this type of growing approach?

### Sources for products and materials

- There are so many sources for products and many seem similar. How will you know which ones work?
- Some products are hard to find and prices vary widely. How can you find what you need?
- Experienced, capable & affordable guidance/ support available?

### Soil, plant & water testing

- Are the soil test company and test results ideally suited for your growing plans?
- Aren't all testing companies basically the same?
- What are petiole tests and why are they important?

### Consultation & guidance

- How can you determine what really works based on experience?
- Where to get answers and solutions quickly to problems as they occur?

## 8. Equipment & Personnel

There is a trade-off (up to a point) between the cost and efficiency of equipment and using personnel to accomplish various projects. Some projects cannot be completed in a reasonable timeframe without equipment. Others however, are impossible to complete without equipment. This is an area often underestimated when looking to grow on any scale.

### Heavy lifting (1 ton +) capability

- What equipment will be needed?
- What is the best way to approach this?
- Should you buy new or used?

### Planting

- What equipment can be used to assist with planting?

### Irrigation

- Where should you begin with an irrigation system?

### Harvesting

- What equipment can be used to make harvesting the produce or crop efficient and fast?

### Composting/mulching

- What equipment can be used for applying compost and mulch on a larger scale?
- If truckloads of mulch or compost are needed, how should you plan for that?

### Netting for birds

- Will birds be an issue in your field?
- If so, what are ways to deal with that?
- What equipment is needed to apply bird netting over your plants and then remove it efficiently?
- Bird netting is expensive. Where are the best sources to buy it?

## **Spraying**

- What equipment is available to foliar-spray your crop or produce effectively?
- How can you balance the cost of equipment vs. the time and work required to spray manually?

## **Fencing**

- What kind of equipment will help with putting up fence if needed?

## **Storage**

- What size of storage is required for all the equipment and tools required?
- Will your harvested produce require storage?

## **Refrigeration**

- Will the unsold produce require refrigeration immediately following harvest?
- What kind of equipment is available?

## 9. Market

Knowing the target market for your produce and scaling your operation to fit that potential market is critical. What is the competition doing? How can you differentiate your produce? Is the market local only, or is there a regional appeal to what you're growing?

### Customers

- Who will be the customers for the produce being grown?
- How will they be reached and marketed to?
- Will the produce being grown have anything unique about it to create customer interest and loyalty?

### Pick and Pack

- What facilities and other requirements are to be provided for?

### Pick Your Own

- What on-site facilities have been planned for in anticipation of customers coming to the field?
- There are many prospective issues with Pick Your Own. What are they? How will you handle them? What are the really critical ones to anticipate?

### Delivery

- What are the important considerations in getting your berries to market?

### Website and social media

- How important and necessary are these to developing a market?
- How will you determine if time and resources should be spent here?

## 10. Maintenance

Here is an area that is not to be overlooked. Maintenance is critically important and must be considered whenever equipment is involved.

### Equipment

- What kind of schedule and costs are involved?

### Irrigation

- Filters, pipe connections, valves, drip lines, hoses are all subject to weather, animal pressure, normal wear and tear, clogging, etc... What should be anticipated and closely monitored throughout the year?

### Netting

- Bird netting presents a number of unique challenges. What are those and how to deal with them?

### Fencing

- Fencing can be very important in keeping out deer and other animals. What are the options that work?

### During the off-season

- The season doesn't end when harvest is over. What are the off-season items to stay on top of and what kind of planning should be happening then?

## Considerations – How to Proceed

As you think about your particular situation, regardless of whether you're a new or existing grower, we'd encourage you take some time and review the critical factors outline above as you consider the following questions:

- Do you have the answers you're confident in and meaningful solutions to each question?
- Do you have other questions or problems which you can't seem to find solutions for?
- If you have answers to all the critical factors above, do you have other questions which remain unanswered? If not, are you confident in where to begin?
- Are you confident with the advice and guidance you're receiving or are you still searching?
- Assuming you have a plan, are you clear on what elements of your plan should occur simultaneously?
- Do you have a clear timeline for your plan so the required items come together at the correct times?
- Are you confident in the soil testing and product sources you're relying on now? Are you seeing improvements based on their recommendations?
- Is your production yield and fruit quality the best possible?

## Resources

*Texas Plant and Soil Lab (TPSL), established in 1938, is a leading national testing lab for Soil, Plant, Water and Compost analysis. TPSL specializes in soil fertility and plant nutrition. If you don't know what's in your soil or water, if you are at a loss to explain poor plant performance, if you have been told your soil, water or plants are beyond help, if you desire better yields and consistent harvest, or if you are unaware of the heavy metals in your soil, water and crops, they can help with all your testing needs. In our experience, not all testing labs are the same!*

### **Texas Plant and Soil Lab**

Tel: 956.383.0739

5115 West Monte Cristo Road

Edinburg, Texas 78541-8852

Web: [www.texasplantandsoillab.com](http://www.texasplantandsoillab.com)

*We participated in the founding of Natural Organic Warehouse to provide experienced growing guidance, practical solutions and a comprehensive line of products for Growers, Farmers, Ranchers, Landscape & Turf Professionals, Commercial Contractors, Businesses, Homeowners and Retail Stores & Resellers.*

*Natural Organic Warehouse has a growing complement of products priced and packaged for all types and sizes of growing programs including Transitional, Sustainable, Certified Naturally Grown and Certified Organic.*

*Natural Organic Warehouse provides natural and organic recommendations for the comprehensive line of [soil, plant & water tests](#) from TPSL offered through [Natural Organic Warehouse online](#).*

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## About Chautauqua Hills Farm

What we eat really does affect our health. There are many methods for growing and producing food. As many are learning, some food production methods are clearly better than others.

We believe consumers will continue demanding cleaner, healthier food grown in a sustainable manner. This includes discovering and implementing real, sustainable and scalable methods and products not constrained by the ever rising costs and risks of conventional approaches. It's also apparent that there are increasing concerns about food grown in faraway places with methods and products that may not be entirely trustworthy.

At Chautauqua Hills Farm we've chosen to grow the food we produce using natural and organic products and methods. We believe this offers us the widest assortment of choices toward the goal of producing the very best food we possibly can. We've also made the commitment to leave the biodiversity intact at our farm as much as possible as we work to expand our growing areas. This is important for many reasons.

As we are fond of saying, there are better, cleaner, and healthier ways of producing our food. Many are discovering these ways today and are changing the way they eat and live because of it. At Chautauqua Hills Farm we eat what we grow and we continually strive to produce the **very best for our customers!**

## Contact the Author

For questions about our growing operation, practices and techniques:



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