

HERDS & HARVEST



HOPS

The Art of Fermentation



University of Nevada
Cooperative Extension



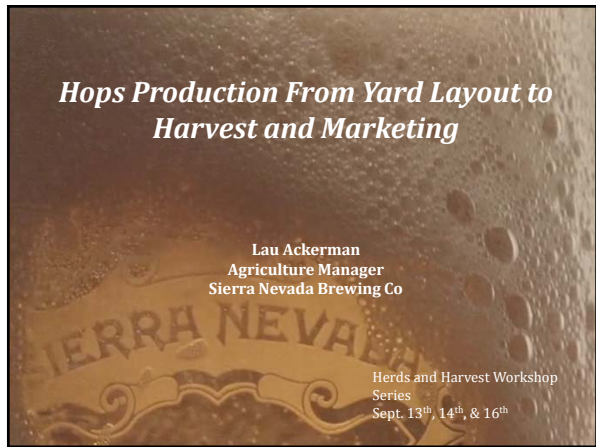
College of Agriculture, Biotechnology
and Natural Resources
University of Nevada, Reno

September 13, 2016 - Reno, NV
September 14, 2016 - Elko, NV
September 16, 2016- Las Vegas, NV

Table of Contents


Hops Presentation	1
Kellerweis Info Sheet	16
Nooner Info Sheet	18
Octoberfest Info Sheet	19
Otra Vez	21
Pale Ale	23
Torpedo	26
Business Planning	27
Start Smart	29
Budgets	43





So, how did I get here today?

- Well, it has been a long trip.....starting in Ann Arbor.
- Small farm in Colorado
- Agronomy degree at CSU, Chico
- Peace Corps in Paraguay
- 12 years at CSU, Chico
- Sierra Nevada Brewing Co - Ah..... home at last!
- I have got to be the luckiest farmer alive!
- **I am thrilled to be here today and am at your disposal. This is your time!**




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What will we cover today?


- General farming and hops overview
- Review of a full season
- Production practices
- Integrated Pest Management (IPM)
- Yard set up
- Planting
- Irrigation
- Organic and conventional
- Pests
- Harvest
- Processing
- Sales/Marketing
- Resources



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What are Hops anyway?

- They are the bitter that off sets the sweetness of the malted barley
- They are the aroma you get from most beers, especially the “hoppy” ones
- Hops are a food product!
- They have medicinal uses, historically and today
- China seems to be the center of origin
- Records of cultivation in 736 AD in the Hallertau region of Germany
- Grow best at 35-55 degrees latitude
 - Chico-39.7, Yakima-46.6, Elko-40.8, Reno-39.5, Las Vegas-36



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What do you want from today?

- What do you currently do?
- Looking to diversify?
- Looking to get started?
- Is this a second job?



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"A Farmer's Footsteps are the Best Fertilizer"

The more you see, witness, touch, smell, and ponder your field the better you will understand the directions you need to take. You will also lessen the chances of things catching you off guard.

Take notes. Then take more notes. Then write even more things down. You will need those observations in the future!

Make the best plan you can taking into account all you can envision happening in your yard on a monthly basis and seasonal basis. Also have a **plan B** that can be initiated at most anytime.



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Things to keep in mind;

- Every decision you make effects the outcome this year and beyond.
- In agriculture timing is SO important.
 - Crop response
 - Weather
 - Other duties
- What is your major challenge(s)?
 - This will dictate approaches (i.e. let the basal growth go or not?).
- What is your goal?
- What is most important to you?
- What types of equipment do you have?
- **Lets start at the beginning; setting up a yard to meet your goals, and to do that lets look at a full season...**



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A Typical Season

- Post Harvest-fertilize & plant cover crop
- Over winter-hop dormancy, weed control?
- March/April-fertilize, cross till, prune/scratch prune, plant cover crop
- April/May/June-fertilize, twine, train bines, pest counts (apply beneficial insects or pesticides?)
- June- fertilize, disk near hills, hilling, irrigation, pest counts, pesticide/herbicide applications (?)
- July-irrigation, pest and weed control, micro nutrients, spoon feed fertilizer
- August/September-irrigation, *Harvest and Brew*
- September/October-*Enjoy Estate IPA!*



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Let's look at each part from various angles

- Spacing
 - row and plant
- Irrigation system
 - Flood, sprinkler, drip
- Yearly practices
 - Pruning
 - Stringing
 - Training
 - Pest and weed control
 - Fertility
 - Irrigation
 - Harvest
 - Post harvest care





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What is IPM? What is IPM is your case?

- Conventional?
- Organic?
- Sustainable?
- Best Management Practices?
- Yard set up and production practices play a huge role.
- Always be thinking ahead.
 - Part of IPM is acting, not reacting.
- Farming in the city limits!







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How is it all connected?


- Spacing - weed control, beneficial insect movement, pest and disease movement, water use, maximum use of sun light,
- Variety - resistant to pests and disease, adapted to climate, vigorous growth, brewing quality
- Irrigation - flood, drip (on ground, elevated), overhead sprinklers, buried drip
- Fertility - enough but not too much; cone quality, yield, disease and pest susceptibility, nitrates in the beer
- Weeds - competing for nutrients, water, and sunshine, affecting harvest
- Over wintering insects - both good and bad
- Dust - mites like it for camouflage and the beneficial insects have hard time finding them
- Temperature-both winter and summer; too hot, too cold, just right
- Winter rain, or the lack there of
- Winter dormancy



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How is it all connected? (continued)



- Heat & Humidity - mites, disease
- Plant Health
 - Clean planting stock-expensive but pays in the long run especially on virgin ground
 - Nutrients/irrigation-too little, too much, just right
- Previous year's crop health, irrigation, yield, time of harvest (early?), weed pressure and seed bank, weather, etc.
- Cool or warm nights - hops like to rest at night
- Neighbors vs production practices (timing)-insects, weeds



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Yard Set Up (organic or conventional?)

- Labor
- Harvest-how do you intend to do it?
 - Do you think you will expand in the future?
- Row spacing
 - Equipment type and size
 - Orientation to the sun, infrastructure
- Plant spacing
 - Weed control, sunlight, pest control, irrigation
- Climate and latitude control
 - Sprinklers
 - Light
- Pest control
 - Weeds, insects and diseases
- Irrigation
 - Water and infrastructure cost
 - Water source
 - Drip,
- Fertility
 - Dry, liquid, cover crops, manure, compost



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Planting


- Rhizomes or potted hops
- Virus/Viroid free?



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At Planting and Three Years Later



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Hop Yards; summer, dormant, establishment

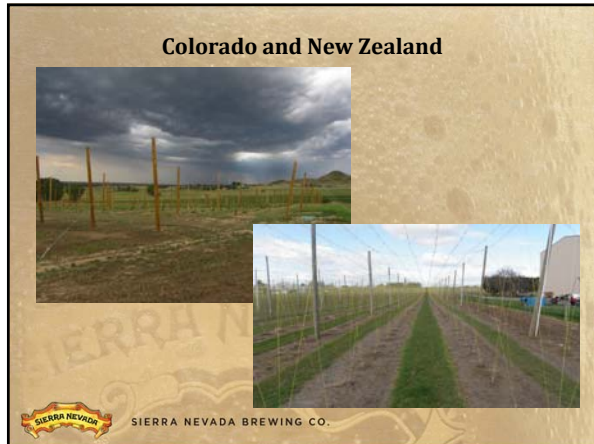


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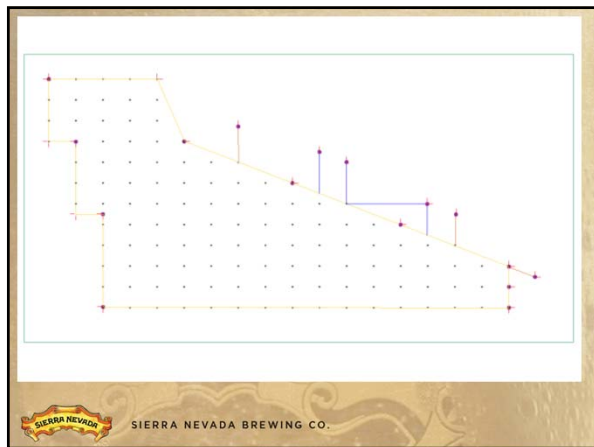
Hop Yard Examples



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Equipment...

- Air blast sprayer
- Side disc
- Mower
- Chisel
- Stringing tower (?)
 - Creativity/Safety
- Modify existing equipment



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Equipment



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Equipment.....



Tractor Models



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Weeds and their control (we hope)

- What weeds do you have?
- Annual grasses
- Perennial grasses
- Broad leaf weeds
- Root systems!!
 - Rhizomes
 - Tap roots
 - Fibrous
 - Nutlets, etc.



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Weeds and their control (a long war)

- Mulch
 - Straw
 - Filter pads
 - Tree chips
 - Compost
 - Weed mat
- Solarization
- Flaming
- Mechanical
 - Mowing
 - Disk/harrow
 - Weed badger
 - Hand hoe/machete
 - Weed whip
 - Hand pulling



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Weeds and their control (the war continues)

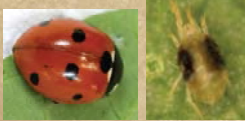
- Let basal growth (non-climbing bines) smother weeds after pruning/training
- Cover crops
- Sheep
- Clean field edges
- Equipment cleaning
- Organic herbicides
- Sub surface irrigation
- Weeder geese
- Other?



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Insects and their control (we can do this)

- Monitoring early & often-insects can reduce your yield to ZERO
- Climate control
 - Dry/wet
 - Hot/cool
- Beneficial insects
 - Hedge rows
 - Releases
 - Cover crops
- Cultural practices
 - Dust control
 - Weed control
- Pesticide applications (OMRI)
 - Trilogy, SucraShield, AzaDirect



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Insects and their control (continued)

- Two-spotted Spider Mite
 - Predatory Mites-persimilis & californicus
 - Lady Beetles-Transverse, Convergent, Asian, Seven-spot
 - Mite Destroyers-stethorus
 - Lacewing larvae-Chrysoperla rufilabris
- Hop Aphid
 - Lady Beetles
 - Heat and dry weather
 - Predatory Bugs
 - Minute Pirate Bug
 - Big-eyed bug



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Diseases: Powdery Mildew & Downy Mildew

- Monitoring by the book
- Equipment sanitation
- Climate control
 - Air flow (row/plant spacing)
 - Moisture (climate/irrigation type)
- Cultural practices
 - Pruning & pruning quality
- **Disease free planting stock**
- Variety susceptibility



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Diseases (continued)

- Multiple management tactics
 - Cultural practices, irrigation management, fungicide applications, careful propagation
- Variety Characteristics

	Powdery Mildew	Downy Mildew	Verticillium Wilt
Cascade	MR	MR	MR
Chinook	MS	MR	R
Centennial	MR	S	U
Willamette	MS	MR	S
Brewers Gold	S	MR	MR

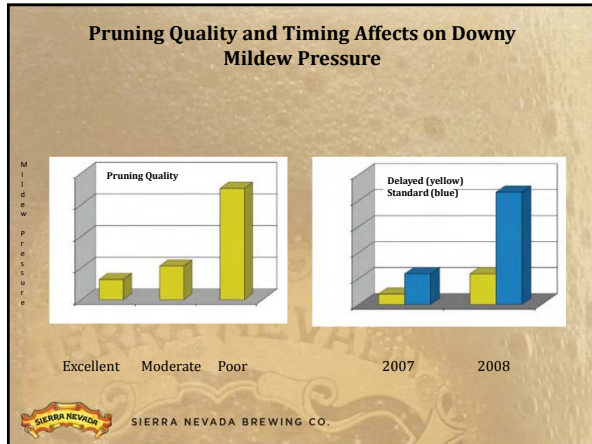


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Mechanical and Chemical Pruning


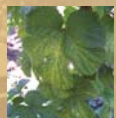


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Virus & Viroid

- American hop latent, Hop latent, Hop mosaic, and Apple mosaic Viruses
- Hop Stunt Viroid
- What is the level of incidence?
- What do we do?
 - Disease/Virus/Viroid free planting stock
 - Equipment sanitation (lack of can spread these)
 - Flame or chemical pruning instead of mechanical pruning
 - Aphid control (aphid can spread some of these)
 - Removal of plants
 - Variety and weather dependent
 - Keep farming and watch for research updates

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Harvest

- By hand, with or without friends
- Small machinery, bought or hand made
- Social media harvest
- Local brewer brings staff for a "field day"





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Harvest (continued)



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Processing; to do or not to do?

- In what form do you intend to sell your hops?
- *In what form can your possible customers use your hops?*
- How much money can you spend on infrastructure to be able to sell you hops.
- Creativity!
 - Build a drying system
 - Build a baler (trash compactor)
 - Pelletizing
 - Sell them as wet hops
 - Must move fast as they don't hold up well

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Sales and Marketing

- This is the tough one!
- Talk to your local brewer
- Talk to your local home brew shop
- Talk to your local holistic health shop, grocery coop, or health food store (food safety!)
- Look outside of your area, use your connections
- Be creative if at all possible
 - Sell your hops by the pint!

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Resources

Field Guide for IPM in Hops 3rd Edition
MSU Extension

The Hop Growers Handbook
Hops by R.A. Neve
USA Hops

The Vermont Hops Project
ATTRA-Organic Hops Production
Oregon Hop Commission



The Hop Grower's Handbook: The Essential
Guide for Sustainable, Small-Scale Production
for Home and Market



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Review

- "Farmers footsteps..."
- What do you want?
- What is of the most importance to you?
- What are your challenges?
- Be prepared
- Act, don't react
- Timing
- Take more notes!
- Have a plan B (and a plan C)
- Every decision you make affects current & future outcomes
- Like any crop, you really need to love growing hops, or it is just a chore!

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Questions, Thoughts or Comments?




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YEAR ROUND



KELLERWEIS®

Our Bavarian-style wheat beer is complex with flavors reminiscent of banana bread and spicy clove. This hazy-golden beer glows with suspended yeast, creating a velvety texture and refreshing finish.



YEAR ROUND
KELLERWEIS®

Inspired by traditional Bavarian techniques, Kellerweis is a true artisan experience. With Kellerweis, we brew in open fermentation tanks—a process rarely seen today—to let the ingredients truly shine. The result is a hazy wheat ale—untamed, raw, and alive. With a full, fruity aroma and notes of spicy clove and banana bread, Kellerweis is a truly unique brew.

Alcohol Content: 4.8% by volume
Beginning Gravity: 12.3° Plato
Ending Gravity: 3.5° Plato
Bitterness Units: 15
Color: Hazy golden

Yeast: Hefeweizen ale yeast
Bittering Hops: Perle, Stirling
Finishing Hops: Perle
Malts: Two-row Pale, Wheat, Munich



12 oz. Bottle



6-Pack



Loose Pack



Shipper Case



*All beer specifications and raw materials
subject to change at brewer's discretion.*



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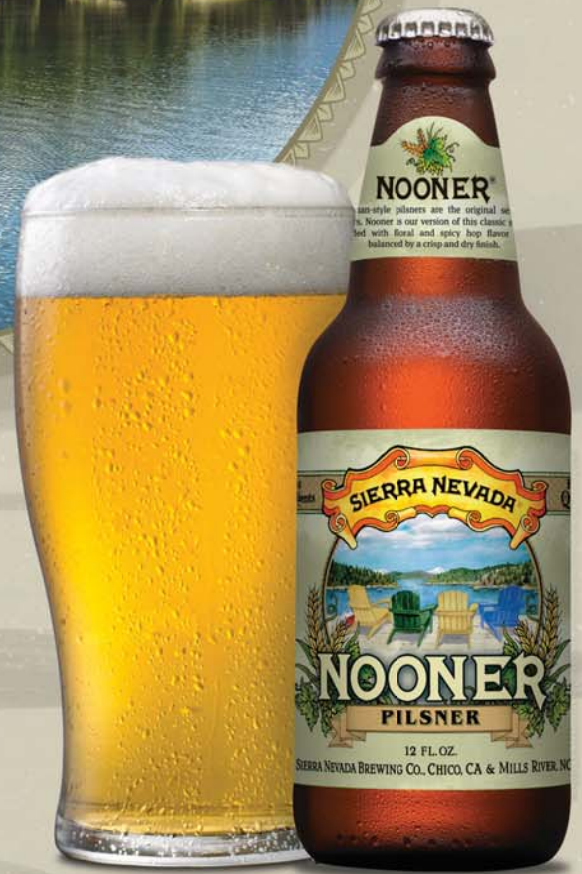


YEAR ROUND



NOONER®

German-style pilsners are the original session beers. Nooner is our version of this classic style, loaded with floral and spicy hop flavor and balanced by a crisp and dry finish.

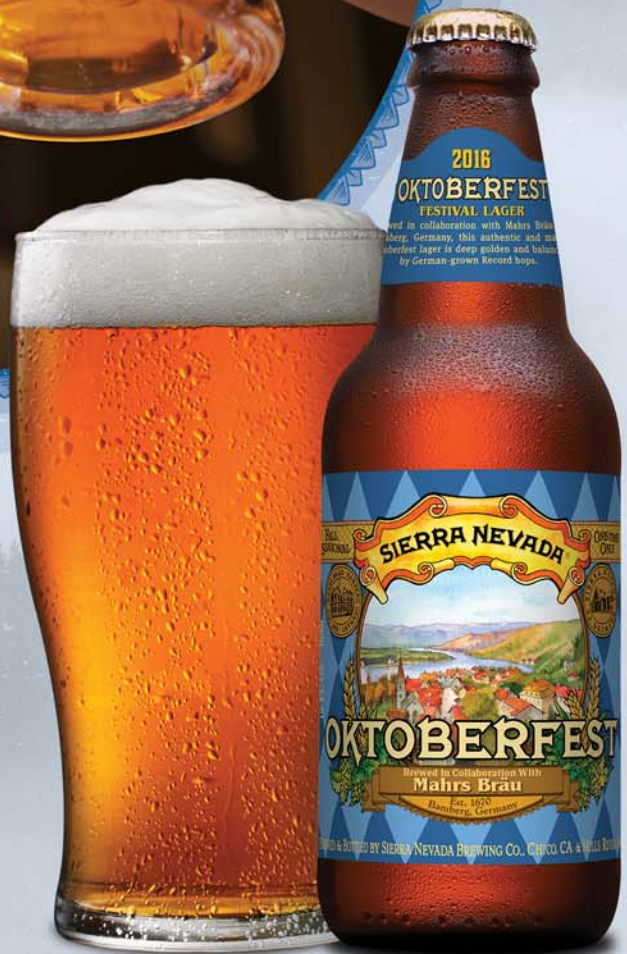


SEASONAL



OKTOBERFEST

Brewed in collaboration with Mahrs Bräu of Bamberg, Germany, this authentic and malty Oktoberfest lager is deep golden and balanced by German-grown Record hops.



SEASONAL OKTOBERFEST

We're exploring the roots of Germany's famous Oktoberfest beers. Each year, we partner with a different German brewer to explore a different approach to the style. This year we're working with Bamberg, Germany's Mahrs Bräu on a new version of the classic style. This authentic version of the festival beer is deep golden in color with a rich malt complexity, but with a noticeable spicy hop character from the use of the nearly forgotten German-grown Record hop varietal.

Alcohol Content: 6.0% by volume
Beginning Gravity: 14.6° Plato
Ending Gravity: 3.5° Plato
Bitterness Units: 30
Color: Dark Golden

Bittering Hops: German Magnum
Finishing Hops: Record, German Select, Tettnanger, Spalter
Malts: Two-row Pale, Steffi, Pilsner, Munich
Yeast: Lager yeast



12 oz. Bottle



6-Pack



12-Pack



Loose Pack



Shipper Case



*All beer specifications and raw materials
subject to change at brewer's discretion.*



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YEAR ROUND



OTRA VEZ®

Otra Vez is a tangy twist on the nearly extinct gose style. It combines the zip of prickly pear cactus with a hint of grapefruit for a bright and refreshing finish.



YEAR ROUND
OTRA VEZ®

On our search for the perfect warm weather beer, we wanted something light bodied and thirst quenching, yet filled with complex and interesting flavors. We stumbled across the fruit of the prickly pear cactus, native to California. This tangy fruit is a great complement to the tart and refreshing traditional gose style beer. Otra Vez combines prickly pear cactus with a hint of grapefruit for a refreshing beer that will have you calling for round after round. Otra Vez!

Alcohol Content: 4.5% by volume
Beginning Gravity: 11.0° Plato
Ending Gravity: 1.8° Plato
Bitterness Units: 5
Color: Golden

Yeast: Ale yeast
Bittering Hops: Experimental variety
Finishing Hops: Experimental variety
Malts: Two-row Pale, Wheat
Other: Cactus, Grapefruit



12 oz. Bottle



6-Pack



Loose Pack



Shipper Case



12 oz. Can



12 oz. Can 12 Pack




Tray



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YEAR ROUND



Climbing in the Sierras
Ken Grossman c. 1976



PALE ALE

Sierra Nevada Pale Ale is a completely natural ale, brewed with the finest malted barley, whole-cone hops, brewer's yeast and pure water. Each bottle is conditioned naturally, creating a unique and flavorful ale.



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YEAR ROUND PALE ALE

Pale Ale began as a homebrewer's dream, grew into an icon, and inspired countless brewers to follow a passion of their own. Its unique piney and grapefruit aromas from the use of whole-cone Cascade hops have fascinated beer drinkers for decades and made this beer a classic, yet it remains new, complex and surprising to thousands of beer drinkers every day. It is—as it always has been—all natural, bottle conditioned, and refreshingly bold.

Alcohol Content: 5.6% by volume
Beginning Gravity: 13.1° Plato
Ending Gravity: 2.8° Plato
Bitterness Units: 38
Color: Amber

Yeast: Ale yeast
Bittering Hops: Magnum, Perle
Finishing Hops: Cascade
Malts: Two-row Pale, Caramel



12 oz. Can



12-Pack
(12 oz. Can)



2 x 12-Pack Tray
(12 oz. Can)



16 oz. Can



4-Pack
(16 oz. Can)



6 x 4-Pack Tray
(16 oz. Can)



12 oz. Bottle



6-Pack



12-Pack
(12 oz. Bottle)



Loose Pack
(12 oz. Bottle)



Shipper Case
(12 oz. Bottle)



24 oz. Bottle



Shipper Case
(24 oz. Bottle)



All beer specifications and raw materials subject to change at brewer's discretion.

YEAR ROUND



TORPEDO®

Torpedo Ale is a big American IPA— perfectly balanced yet full of flavor and aromas that highlight the complex citrus, pine, and herbal character of whole-cone American hops.



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YEAR ROUND TORPEDO®

Sierra Nevada and hops go hand in hand. What began as a crazy idea scribbled in a pub eventually became our year-round hop bomb, Torpedo Extra IPA—the first beer to use our “Hop Torpedo,” a revolutionary dry-hopping device that controls how much hop aroma is imparted into beer without adding additional bitterness. Torpedo Extra IPA is an aggressive yet balanced beer with massive hop aromas of citrus, pine, and tropical fruit.

Alcohol Content: 7.2% by volume
Beginning Gravity: 17.0° Plato
Ending Gravity: 3.7° Plato
Bitterness Units: 65
Color: Amber

Yeast: Ale yeast
Bittering Hops: Magnum
Finishing Hops: Magnum, Crystal, Citra
Torpedo Hops: Magnum, Crystal, Citra
Malts: Two-row Pale, Caramel



12 oz. Can



12-Pack
(12 oz. Can)



2 x 12-Pack Tray
(12 oz. Can)



16 oz. Can



4-Pack
(16 oz. Can)



6 x 4-Pack Tray
(16 oz. Can)



12 oz. Bottle



6-Pack



12-Pack
(12 oz. Bottle)



Loose Pack
(12 oz. Bottle)



Shipper Case
(12 oz. Bottle)



24 oz. Bottle

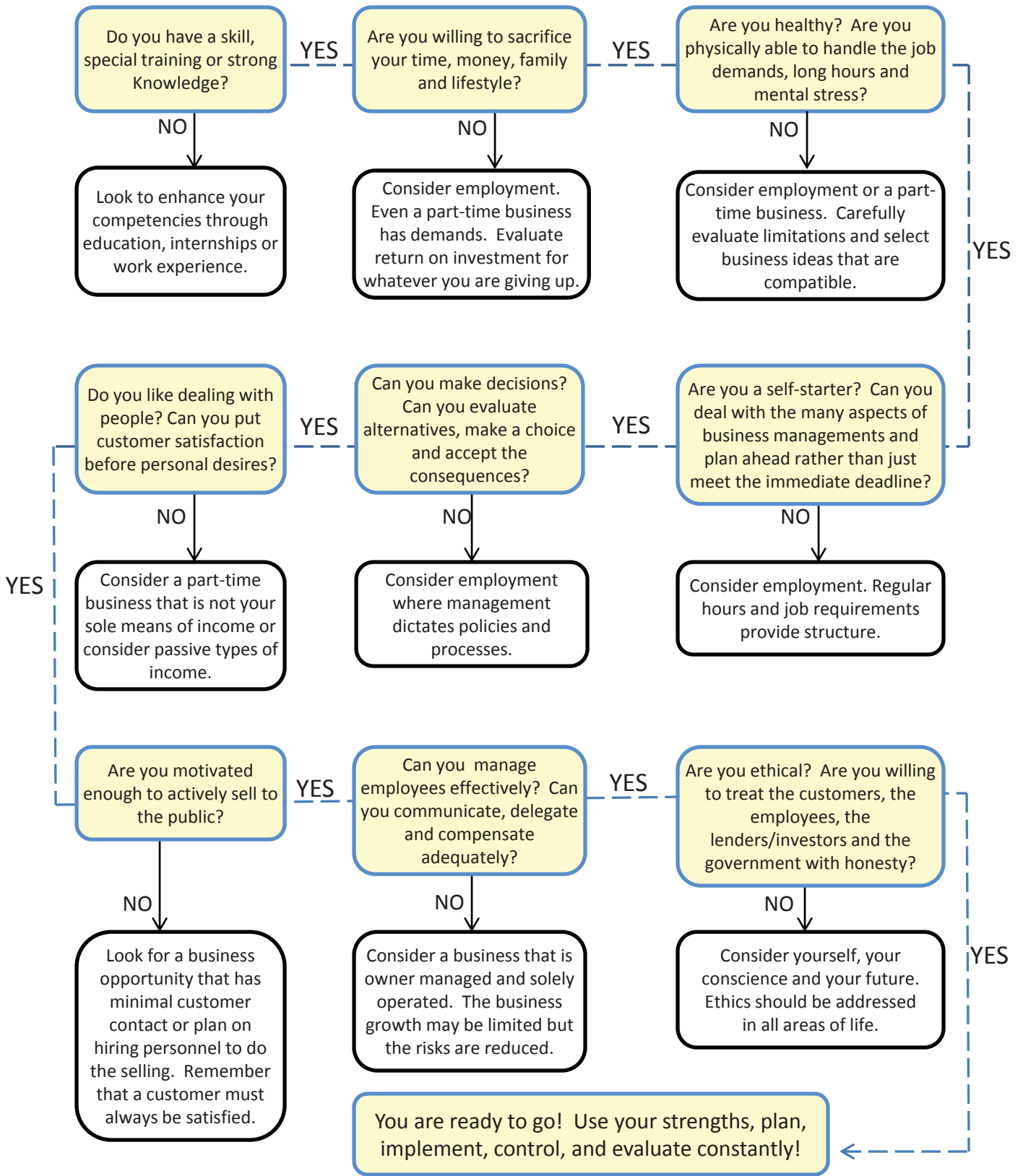


Shipper Case
(24 oz. Bottle)



*All beer specifications and raw materials
subject to change at brewer's discretion.*

Following is a brief road map to help you determine your direction with entrepreneurship. It will not have all the answers; but as you evaluate your honest responses, do not ignore the direction the map appears to take.





Start SMART
Pre-Biz Plan
Sketch Book



Welcome!

This StartSMART Pre-Biz Plan Sketch Book is a tool to help you think through some important components of your business plan. In order to hit the ground running when you meet with your counselor, please fill in the boxes with some of your thoughts up to this time. You will see an explanation of each question and a sample answer to help you with the process. After you have filled in the box, check if you:

- ✓ Have researched this,
- ✓ Think it is true, or
- ✓ You don't know.

It's all right if you haven't completely discovered the answers to the 11 questions in this Sketch Book. Your SBDC experience will help you expand your answers to a complete business plan if that's the direction your ideas take you. So, as in any sketch book – have fun with it. This is the time to start putting your dreams to ink!

The Start SMART Pre-Biz Plan Sketch Book was originally created by the Dixie Business Alliance SBDC at Dixie State College. With permission it has been adapted by the Utah State University Entrepreneurship Best Practice Team.

Please do not reproduce this publication without acknowledgment and permission of the Small Business Development Center or Utah State University Cooperative Extension. Contact Mark Holmes at the Uintah Basin SBDC @435-789-6100 or Marion Bentley, USU Extension Community & Economic Development Specialist @ 435-797-2284 or go to <http://extension.usu.edu/boss>.

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What's Your Big Idea?



Is there something about your idea that is unique? Remember that an idea does not have to be some wildly different product. It does not have to have some “secret sauce.” Your idea can be about how your systems are executed or how your products are sold. But beware of being a “me too” type of business. Read the sample and then write your business idea in the space below. Don’t worry about elegant words and structure. Just get it out.

Sample: Our idea is to open a service business that would cater to the snowbirds of St. George. Whether it would be to clean their condo, procure travel tickets, put up Christmas lights or shuttle them to the airport in Vegas, we can get it done. We would also have a website, “Git'er Done in St. George” that would include a list of “best providers” that people could consult.

My Business Idea Is:

A decorative graphic in the top right corner of the form area, consisting of several white arrows pointing upwards and to the right, set against a light blue gradient background.

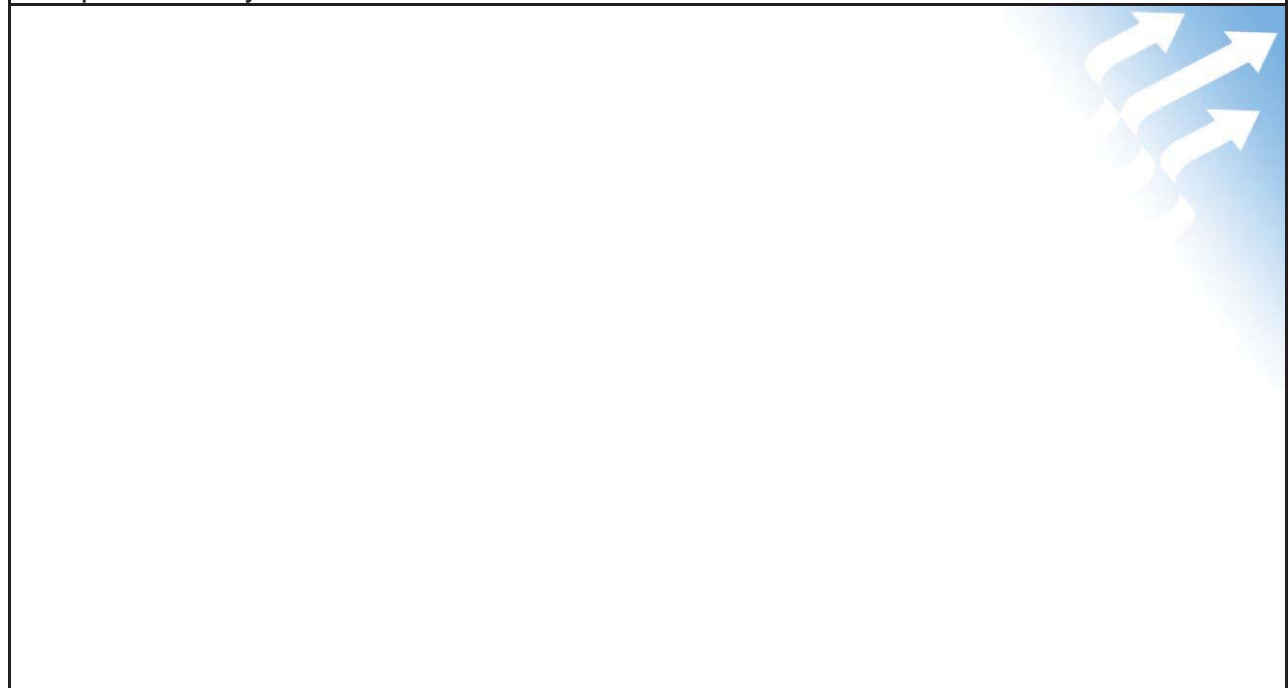
Why Do People “Need” (Want) It?

It is always better to have a need than a want. If you have a want, then you have to spend effort in convincing people that it is a need.

Another way of saying this is: “There is a problem out there and my business has a solution.” After you write about the “need,” fill in the check box below about how you have researched this need, just have a “gut feel” about it, or have no real knowledge about it. If you haven’t researched your answer, it’s all right. That’s why you’re here, to learn more about what you need to know!

Sample: People need this because there are thousands of new people moving to Washington County every year in addition to the thousands of snowbirds that migrate every winter. A sizeable percentage of these pay cash for homes and condos so they have disposable income. They are used to getting good service, but they don’t know who to call. Many of them need someone to open their homes, buy groceries or arrange for repairs. On the other hand, many businesses would like access to this market of receptive customers. Although they might not be able to pay for a good referral, they would like to advertise on the Git’er Done website.

People Need My Business Because:

A large rectangular box with a thin black border, intended for the user to write their response to the question above. The box is mostly empty, with a faint blue and white graphic of arrows in the top right corner.

I’ve researched this

I think it’s true

I don’t know


Who Are Your Top One or Two Groups of Customers?

A group of customers is sometimes called a “market.” Markets have some characteristics in common. Sometimes these are demographic in nature, such as age, sex, and income. Often they are psychographic such as lifestyle, interest or hobbies. If your market is a business or industry group, sometimes they have certain buying patterns or ways of paying, and other characteristics. You always want to promote to your top one or two groups of customers rather than “everybody.” That way you can expend fewer resources and be more effective. That doesn’t mean you won’t sell to everybody who wants to buy.



Sample: *Git'er Done Customers* are: *Retirees and snowbirds that have disposable income. They are active but need help finding someone trustworthy to provide various services in their new or part-time locations. The other group of customers for the website will be businesses who want access to those customers.*

My Top Two Groups of Customers Are:

A decorative graphic in the top right corner of the form area, featuring a blue background with several white arrows pointing upwards and to the right.

I've researched this

I think it's true

I don't know

How Will You Reach These Customers and Convince Them to Buy?

This question is concerned with marketing and selling. Marketing is what you do to reach your customers and create prospects. Selling is actually closing the deal. Sometimes these methods are called tactics or weapons. There is a whole arsenal of weapons that can be used to reach your customers. The biggest challenge here is deciding which will be the most effective. To determine the most effective you will need to look at your customers and their characteristics and needs. You will also be constrained by your budget and the time you have to promote your business. The most effective weapons aim directly at the potential customer who needs the product/service. This is called the rifle approach. For some businesses who want to get the word out to a broad population, the shotgun approach works just fine. But the shotgun approach is usually much more expensive.



Sample: *Git'er Done* will employ the following tactics or weapons:

1. *Work with property managers of "over 50" developments. Give them a \$5 gift certificate for every referral that results in a sale.*
2. *Employ the above tactic at the local golf courses.*
3. *Distribute tasteful flyers in the club houses.*
4. *Keep a data base of contact information of clients. E-mail at appropriate times to offer more service.*
5. *Buy occasional ads in the association newsletters. Keep track of the ones that seem to work.*
6. *Send thank you notes and birthday cards; ask for referrals.*
7. *Wear clean pressed uniform shirts all over town.*
8. *Join the Chamber of Commerce and actively promote to the volunteers there.*
9. *Sponsor or volunteer at the Huntsman World Senior Games.*

The Tactics I Will Employ Are:

I've researched this

I think it's true

I don't know

Who Are Your Competitors and What Do You Think Is Your Competitive Advantage?



These are businesses that do what you do. Another way of asking this is: “When people are buying your product now, where is their dollar going?” There are two major types of competitors. Your direct competitors do exactly (or close to) what you are doing. Your indirect competitors may be doing something similar in the industry but not directly what you are doing. For example, if you have an

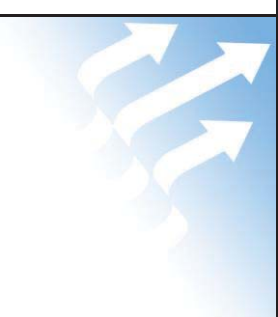
ATV rental business, another business that rents ATVs would be your direct competitor. A business that rents bicycles might be your indirect competitor.

Do not make the mistake of thinking that you have no competitors. The dollar spent for what you offer is most likely going somewhere now. Furthermore, if you are successful, others will soon come into the competitive picture. You also need to be suspicious if you truly see no competitors in the picture. When there is someone making serious money, there is probably a place for someone else to come in. However, you will need to develop your own unique competitive edge.

Sample: *Git'er Done* has the following competitors:

1. *One Call Solution. Is just beginning. Does not have website.*
2. *Other individual service providers such as handymen. Cannot provide a wide spectrum of services.*
3. *Classified ads. Are untested and unproved to new residents. Do not have website reviews or testimonials.*

The Competitors I Have Are:

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I've researched this

I think it's true

I don't know

Who's on Your Business Team?



The people who are on your team are your most important assets. Keep in mind that there are three important functions in a business. The Operations include the actual day to day activities of the business. The Marketing Function includes advertising, selling, customer service. The Financial Function includes the bookkeeping, accounting, paying of taxes. Many times with a start-up business the business owners wears all the hats on a day to day basis. But an advisory team can take away some of the pressure of juggling everything yourself. An advisory team can include paid or unpaid members. Paid team

members might include your bookkeeper that you pay by the hour, or your attorney. Unpaid members might include your MBA Brother-In-Law who provides expert advice, or the key contact who gives you leads. Remember, your advisory team can make your business seem bigger than it really is.

Sample: *The Git'er Done team includes:*

1. *Myself who will be running the business and performing many of the operations.*
2. *Hired Dixie State College Students (as needed.) These will include my children and their friends who need extra money at times. My sister will also help out.*
3. *The Tax Company professionals who will set up the QuickBooks and pay the taxes. The Tax Company will also set up the Limited Liability Company.*
4. *Jane Willis who will design and maintain the website.*
5. *Rachel Ebbons who will design the flyers and advertising pieces.*

My Business Team Includes:

Operations:

Financial:

Marketing:

I've researched this

I think it's true

I don't know


Where Will Your Customers Buy Your Product/Service?



The place or method your customers will buy your product is important. Sometimes you have only one place, such as a retail store. Sometimes you have a number of places such as a retail store and a website. You may have a service business where customers buy your services when they call you on the phone and ask you to come to their homes or offices. The place from which you sell your product or service has all sorts of implications for value and customer service.

Sample: *Git'er Done services will originate from the owner's home office at the beginning. We will also have a website to provide information on products and services. Customers will be able to access the services through the website, e-mail, or phone.*

My Products and Services Will Be Sold From:

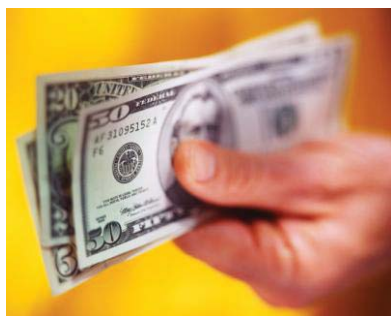
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I've researched this

I think it's true

I don't know

Approximately How Much Will Your Customer Pay for Your Product? How Much Will It Cost You to Purchase It for Resale or Produce It?



How you price your product depends on many factors such as where your business is located, how much your competition is charging, and the perception of value that your potential customer has. Remember that you also must price your product to cover not only the direct costs (how much the product costs you) but your overhead costs. Overhead costs include the costs you will have to be in business. These include such items as location, rent, utilities, insurance, telephone, internet, travel costs, loan payments, basic office supplies and others.

Sample: Git'er Done will charge an average of \$25 per hour for services. At the beginning of the business, much of the work will be performed by the owner's family. If it is necessary to employ college students, they will be paid \$12-14 per hour. Website classified ads for providers will be charged at the going rate for such ads.

My Product's Cost Will Be:

My customers will pay (average transaction or hourly cost):

These products/services will cost me:

I've researched this

I think it's true

I don't know

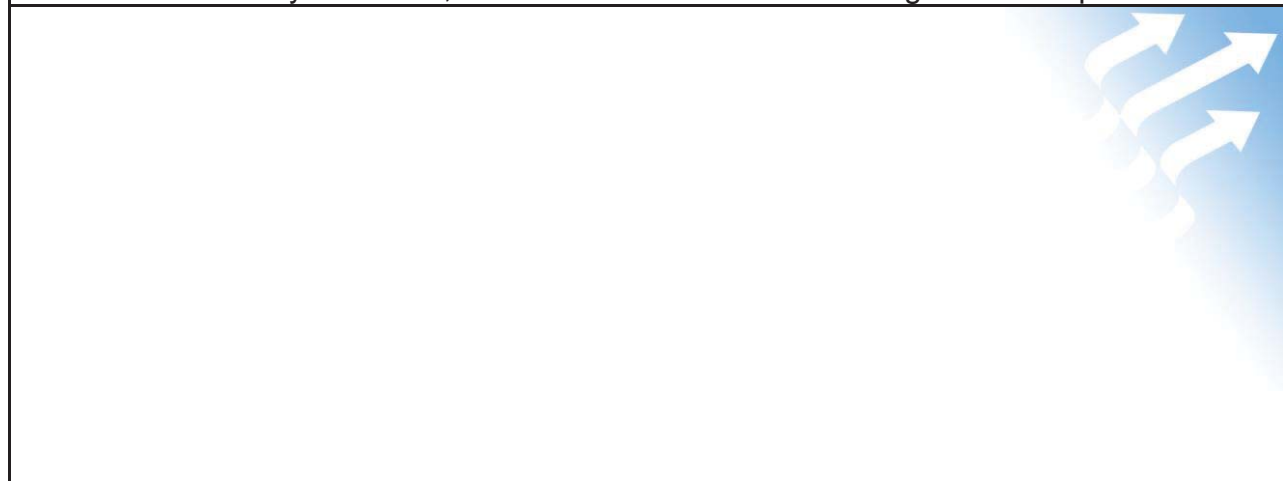
How Much Money Do You Need to Get This Idea to the Point Where You Can Start Selling?

These figures are often called Start-Up Costs. They include the costs for equipment, location, marketing, inventory, legal setup, operating capital, in fact everything you need to start Day 1 of the business. It is better to overestimate this figure rather than underestimate. You can always scale down. Do not neglect to consider marketing costs. If no one knows about your service, you'll be a failure from the start. Surveys from Inc. Magazine say the average Inc. 500 company was started with \$10,000 or less. You do not have to list these needs in detail here, but you should have an idea of how much you'll require.



Sample: *Git'er Done will need about \$3,000 to start the business. We need to have a very professional, colorful logo designed. We will have our son-in-law design and maintain a top notch website. We need to produce some good quality graphics that will allow us to produce some good marketing materials through desk top publishing. We need to be listed in the two top yellow page books. We will order some high quality button down shirts with our logo and produce some decals to place on our vehicles.*

In Order to Start My Business, I Will Need to Plan the Following for Start-Up Costs:

A large, empty rectangular box with a thin black border, intended for the user to list their start-up costs. The box is mostly blank, with a faint, light blue graphic of three upward-pointing arrows visible in the bottom right corner.

I've researched this

I think it's true

I don't know

Where Will the Money Come From?



Start-up funding comes from two sources: Equity, which is money the owners (you and other investors) put in; or Debt which is money that is borrowed and has to be paid back. Consider that lenders and investors will want to see that you have put something into the business yourself. Remember that lenders and investors will want to know that you have carefully thought out your business and documented it with a solid business plan. Hitting up friends and family is the most common way to start a business. But according to Inc. Magazine, it's also the riskiest.

Sample: *Git'er Done start-up costs will be funded through personal savings of the owners. We also have a \$25,000 home equity line of credit that can be tapped in case of cash flow emergency.*

My Business Start-Up Money Will Come From:

I've researched this

I think it's true

I don't know

How Soon Will You Be Able to Start Selling? How Soon Will You Be Able to Make a Profit?


Timing is important. Some businesses are seasonal and need to start at a certain time of year in order to gain some marketing advantages. For example, a retail store would want to start in late July in order to capture back-to-school sales or in October to take advantage of holiday sales. A tourism related business in a summer market should avoid starting in August because end of season sales will not likely be enough to cover costs through the winter.



Sometimes the amount of time required to get zoning and regulations approved, or to get locations prepared make additional funding necessary. Timing is also important from a lender or investor's point of view. How much money will you have to "burn" before you can turn a sale?

Sample: *Git'er Done will kick off in October. We will sponsor an event at the senior games and do a big marketing push as the snowbirds come to town. Because our overhead costs are low and we will not have permanent workers on the payroll, we should turn a profit immediately.*

Our Business Will Begin Sales:

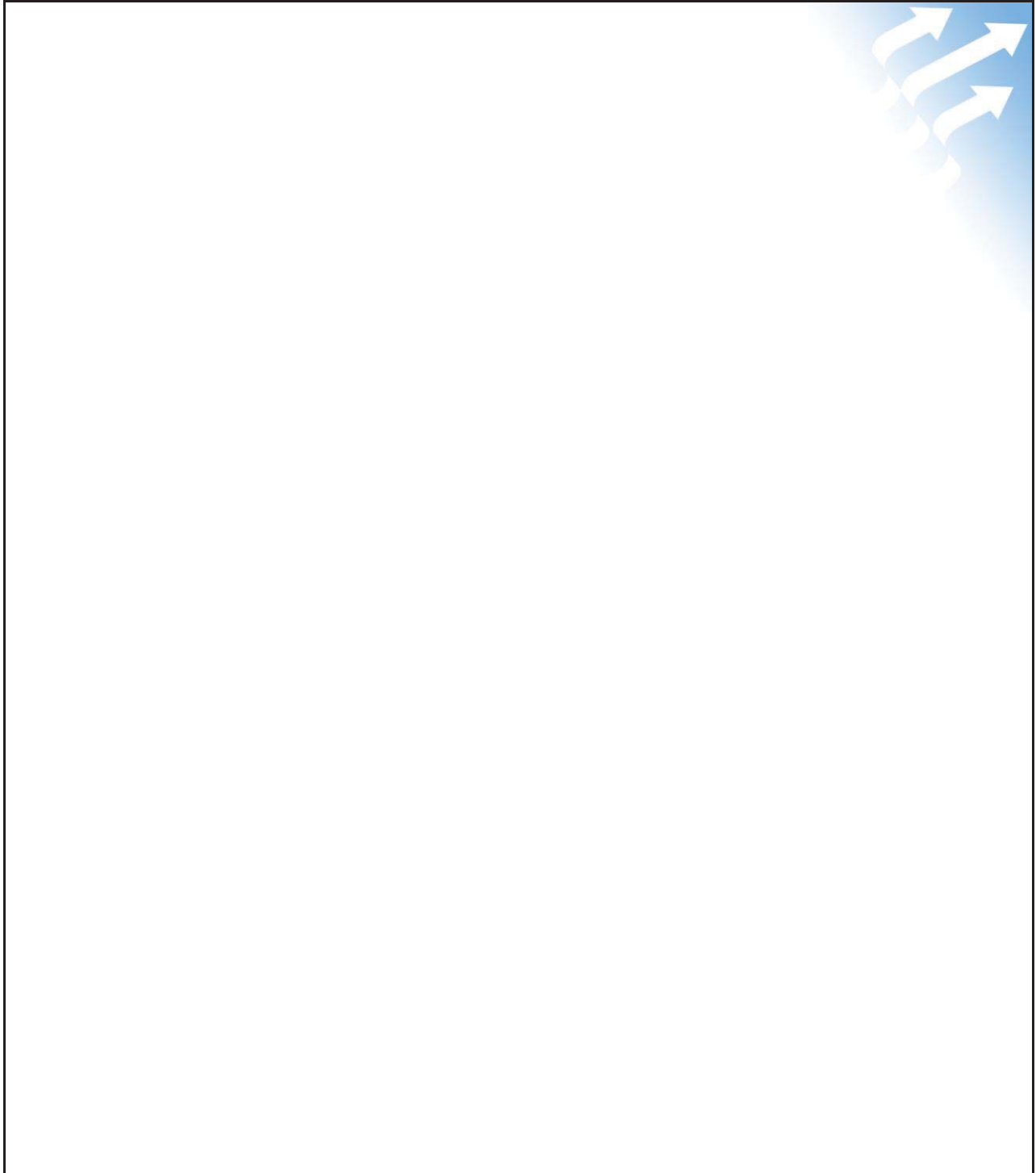


I've researched this

I think it's true

I don't know

Notes:

A large, empty rectangular box with a thin black border, intended for taking notes. In the top right corner of this box, there is a decorative graphic consisting of a blue-to-white gradient with three white arrows pointing up and to the right, similar to the logo above.

5 ACRE HOP YARD (GROW ONLY)

Authors: J Robert Serrine, Michigan State University Extension; Julian Post, University of Vermont. 7-12-2016.

This document is intended to serve as a tool for producers interested in growing hops. Figures below are estimates based on survey data from small-scale growers in multiple states. Your figures will likely vary; you should add figures that accurately represent your operation. While this document has been vetted by several experts within the hop industry, you may need to add additional rows to account for unintended omissions.

Assumptions

1. Figures below represent estimated costs and returns for a 5 acre hopyard where a producer grows hops.
2. Producer pays for custom harvest, drying, baling, and cold storage (\$3.50/lb).
3. Producer pays for custom processing and packaging (\$1.50/lb).
4. Producer pays 10% of purchase price for marketing and sales.
5. Custom harvest and processor are located at the same location.
6. Yield (lbs/ac)=dried hops (10% moisture). 100% yield=1500 lbs/ac. (yr 1=0 yield; yr 2=75%; yr 3=100%). Yield will vary by variety and farm.
7. 5 acres = 5 overall acres (960 plants/acre). Actual acres of hops will depend upon plant spacing and yard setup.
8. Infrastructure (poles, wires, etc.) and associated costs will vary and depend upon hopyard dimensions
9. Price of dried, pelletized, and packaged hops = \$12/lb from a brewer. Actual \$/lb will vary.
10. Capital Purchase, Labor, Annual Input, Loan payment, & Farm Overhead amounts will vary by farm.
11. Build-out Labor (Appendix B.) is hired out to a company -\$20/hour/person
12. Stringing labor hired out @ ~\$340/acre

Item	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)	Year 5 (2020)	
Income						
Dried Hop Pellets (lbs./acre)	0.00	1125.00	1500.00	1500.00	1500.00	
acres	5.00	5.00	5.00	5.00	5.00	
\$/lb.	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	
GROSS INCOME	\$0.00	\$67,500.00	\$90,000.00	\$90,000.00	\$90,000.00	\$337,500.00
Expenses						
Capital Purchase/Labor						
Hopyard Infrastructure (Appendix A)	\$81,487.57					
Buildout Labor (Appendix B)	\$22,880.00					
Equipment (Appendix C)	\$46,000.00					
TOTAL CAPITAL PURCHASE & LABOR	\$150,367.57	\$0.00	\$0.00	\$0.00	\$0.00	
Expenses - Annual Inputs						
Twine (pre-cut coir; \$0.54/string)	\$518.40	\$1,036.80	\$1,036.80	\$1,036.80	\$1,036.80	
Stringing Labor (7 workers x 8 hrs x \$30/hr)	\$1680.00	\$1,680.00	\$1,680.00	\$1,680.00	\$1,680.00	-\$340/acre
Training Labor (\$150/acre) *variety dependent	\$1500.00	\$750.00	\$750.00	\$750.00	\$750.00	yr 1. \$300/acre, yr 2. \$150/acre
Chemical Expenses (Fertilizer/Pesticide)	\$1400.00	\$600.00	\$2,800.00	\$2,800.00	\$2,800.00	
Spraying Labor	\$400.00	\$800.00	\$800.00	\$800.00	\$800.00	
Field Harvest Labor	\$3000.00	\$6,000.00	\$6,000.00	\$6,000.00	\$6,000.00	
Tractor Fuel & Oil	\$80.00	\$80.00	\$160.00	\$160.00	\$160.00	
Harvest-Post Harvest						
Hop Quality Analysis \$125/sample		\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$5,000.00
Harvest/Drying/Baling \$3/lb		\$16875.00	\$30000.00	\$30000.00	\$30000.00	\$106,875.00
Processing \$1.50/lb.		\$8437.50	\$11250.00	\$11250.00	\$11250.00	\$42,187.50
Transport to custom harvest & processing facility		\$2000.00	\$2500.00	\$2500.00	\$2500.00	\$9,500.00
Marketing & Sales (10% of purchase price)		\$6750.00	\$9000.00	\$9000.00	\$9000.00	\$33,750.00
Loan (annual payment)						
Loan Detail (Appendix D)	\$11908.31	\$11908.31	\$11908.31	\$11908.31	\$11908.31	\$59541.57
TOTAL DIRECT COSTS	\$20486.71	\$58167.61	\$79135.11	\$79135.11	\$79135.11	\$316059.67
Expenses - Farm Overhead						
Farm Supervisory Cost (\$20/hr)	\$10,000.00	\$6,000.00	\$6,000.00	\$6,000.00	\$6,000.00	
Utilities	\$400.00	\$800.00	\$800.00	\$800.00	\$800.00	
Land (5 acres) lease rate \$200/ac	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	
Property Taxes	\$1,400.00	\$1,400.00	\$1,400.00	\$1,400.00	\$1,400.00	
TOTAL FARM OVERHEAD	\$12,800.00	\$9,200.00	\$9,200.00	\$9,200.00	\$9,200.00	\$49,600.00
TOTAL EXPENSES	\$183,654.29	\$67,367.61	\$88,335.11	\$88,335.11	\$88,335.11	\$516,027.24
Income-Expenses						
NET INCOME	-\$183,654.29	\$132.39	\$1,664.89	\$1,664.89	\$1,664.89	-\$178,527.24

5 ACRE HOP YARD (GROW, HARVEST, DRY, BALE, STORE)

Authors: J Robert Sirrine, Michigan State University Extension; Julian Post, University of Vermont. 7-12-2016.

This document is intended to serve as a tool for producers interested in growing hops. Figures below are estimates based on survey data from small-scale growers in multiple states. Your figures will likely vary; you should add figures that accurately represent your operation. While this document has been vetted by several experts within the hop industry, you may need to add additional rows to account for unintended omissions.

Assumptions

1. Figures below represent estimated costs and returns for a 5 acre hopyard where a producer grows, harvests, dries, bales, and stores whole cone hops.
2. Producer pays custom processor to pelletize & package hops (\$1.50/lb).
3. Producer pays 10% of gross proceeds for marketing and sales.
4. Yield (lbs/ac)=dried hops (10% moisture). 100% yield=1500 lbs/ac. (yr 1=0 yield; yr 2=75%; yr 3=100%). Yield will vary by variety and farm.
5. 5 acres = 5 overall acres (960 plants/acre). Actual acres of hops will depend upon plant spacing and yard setup.
6. Infrastructure (poles, wires, etc.) and associated costs will vary and depend upon hopyard dimensions.
7. Price of dried, pelletized, and packaged hops = \$12/lb from a brewer. Actual \$/lb will vary.
8. Capital Purchase, Labor, Annual Input, Loan payment, & Farm Overhead amounts will vary by farm.
9. Dryer & harvester are "optimized" to enable the most efficient picking and drying
10. Build-out Labor (Appendix B.) is \$20/hour/person
11. Stringing labor hired out @ ~\$340/acre

Item	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)	Year 5 (2020)	
Income						
Dried Hop Pellets (lbs./acre)	0.00	1125.00	1500.00	1500.00	1500.00	
acres	5.00	5.00	5.00	5.00	5.00	
\$/lb.	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	
GROSS INCOME	\$0.00	\$67,500.00	\$90,000.00	\$90,000.00	\$90,000.00	\$337,500.00
Expenses						
Capital Purchase/Labor						
Hopyard Infrastructure (Appendix A)	\$81,487.57					
Buildout Labor (Appendix B)	\$22,880.00					
Equipment (Appendix C)	\$91,000.00					
TOTAL CAPITAL PURCHASE & LABOR	\$195,367.57	\$0.00	\$0.00	\$0.00	\$0.00	
Expenses - Annual Inputs						
Twine	\$520.00	\$1,040.00	\$1,040.00	\$1,040.00	\$1,040.00	
Stringing Labor (7 workers x 8 hrs x \$30/hr)	\$1680.00	\$1,680.00	\$1,680.00	\$1,680.00	\$1,680.00	~\$340/acre
Training Labor (\$150/acre) *variety dependent	\$1500.00	\$750.00	\$750.00	\$750.00	\$750.00	yr 1. \$300/ac, yr 2. \$150/ac
Chemical Expenses (Fertilizer/Pesticide)	\$1400.00	\$600.00	\$2,800.00	\$2,800.00	\$2,800.00	
Spraying Labor	\$400.00	\$800.00	\$800.00	\$800.00	\$800.00	
Mowing/Discing Labor	\$400.00	\$400.00	\$400.00	\$400.00	\$400.00	
Field Harvest Labor	\$3000.00	\$6,000.00	\$6,000.00	\$6,000.00	\$6,000.00	
Tractor Fuel & Oil	\$80.00	\$80.00	\$160.00	\$160.00	\$160.00	
Picking Machine Operation Labor (\$12/hr x 4 people=\$48/hr; 960 bines/ac x 2 strings/bine=1920 bines; 1920 bines/ac @ 120 bines/hr =16 hrs)		\$3840.00	\$3840.00	\$3840.00	\$3840.00	
Picking machine electricity		\$0.00	\$0.00	\$0.00	\$0.00	PTO driven
Oast Fuel (boiler/oil)		\$1000.00	\$1250.00	\$1250.00	\$1250.00	
Oast Labor (10 hrs/acre; \$12 x 50 hrs)		\$450.00	\$600.00	\$600.00	\$600.00	
Baling Labor (\$12 x 50hrs)		\$450.00	\$600.00	\$600.00	\$600.00	
Transport to custom pellet facility		\$1000.00	\$1500.00	\$1500.00	\$1500.00	\$5,500.00
Custom Processing (pelletize, package) \$1.50/lb.		\$8437.50	\$11250.00	\$11250.00	\$11250.00	\$42,187.50
Hop Quality Analysis \$125/sample		\$1,250.00	\$1,250.00	\$1,250.00	\$1,250.00	\$5,000.00
Marketing & Sales (10% of purchase price)		\$6,750.00	\$9,000.00	\$9,000.00	\$9,000.00	\$33,750.00
Loan (annual payment)						
Loan Detail (Appendix D)	\$15,472.07	\$15,472.07	\$15,472.07	\$15,472.07	\$15,472.07	\$77,360.37
TOTAL DIRECT COSTS	\$24452.07	\$49999.57	\$58392.07	\$58392.07	\$58392.07	\$249627.87
Expenses - Farm Overhead						
Farm Supervisory Cost (\$20/hr)	\$10,000.00	\$6,000.00	\$6,000.00	\$6,000.00	\$6,000.00	
Utilities	\$400.00	\$800.00	\$800.00	\$800.00	\$800.00	
Land (5 acres) lease rate \$200/ac	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	
Property Taxes	\$1,400.00	\$1,400.00	\$1,400.00	\$1,400.00	\$1,400.00	
TOTAL FARM OVERHEAD	\$12,800.00	\$9,200.00	\$9,200.00	\$9,200.00	\$9,200.00	\$49,600.00
TOTAL EXPENSES	\$232,619.65	\$59,199.57	\$67,592.07	\$67,592.07	\$67,592.07	\$494,595.44
Income-Expenses						
NET INCOME	-\$232,619.65	\$8,300.43	\$22,407.93	\$22,407.93	\$22,407.93	-\$157,095.44

Appendix A - Hop Yard Infrastructure (5 acres)

Item	# Units	Cost/Unit	Total Cost	Description
Trellis				
Poles	245	\$45.00	\$11025.00	Red Pine 5"
Anchor Poles	120	\$68.00	\$8160.00	Yellow Pine 6-8"
5/16" Cable	20000	\$0.23	\$4600.00	7x19 Galvanized
1/4" Cable	40000	\$0.17	\$6800.00	7x19 Galvanized
5/16" Clips	1360	\$0.37	\$503.20	Malleable
1/4" Clips	400	\$0.33	\$132.00	Malleable
Fence Staples 1 3/4"	8	\$20.00	\$160.00	
Fence Staples 3"	4	\$105.00	\$420.00	
6" Spikes	4	\$50.00	\$200.00	
Anchor Pins	184	\$11.00	\$2024.00	6 ft.
Concrete	10	\$110.00	\$1100.00	
SUBTOTAL			\$35124.20	
Irrigation				
Drip Line	12	\$110.00	\$1320.00	Toro PCS1853-24
Manual Irrigation Valve - Brass	4	\$50.00	\$200.00	
Check Valve - Brass	4	\$30.00	\$120.00	
PVC Submain	40	\$16.99	\$679.60	Schedule 40 2"x20'
Filter	1	\$247.00	\$247.00	Toro XD 2" Disc Filter IT-ABF5012-3X-N
Air Vent	1	\$18.80	\$18.80	Toro ARV-BBK1-S
Misc. Fittings	4	\$300.00	\$1200.00	PVC
Take Off Adapters	80	\$0.90	\$72.00	Toro XP-16x16
Grommets	80	\$0.68	\$54.40	Toro CAP-16
Figure 8 End Clamp	80	\$0.18	\$14.40	Toro FJQ16
Well -digging	1 variable		\$20000.00	Could be higher or lower \$
	TAX		\$137.17	variable
SUBTOTAL			\$24063.37	
Equipment Rental				
Ditch Witch & Ditching	1	\$1600.00	\$1600.00	
Telehandler	2	\$1000.00	\$2000.00	
GPS Unit	1	\$600.00	\$600.00	1 week rental, RTK base kit
Skidsteer/Bobcat w auger	1 \$2500/wk		\$2500.00	drilling post/anchor holes-40h
Excavating	variable			variable
SUBTOTAL			\$6700.00	
Plants				
	4800	\$3.25	\$15600.00	
SUBTOTAL			\$15600.00	
GRAND TOTAL			\$81487.57	

Appendix B. Build-Out Labor (5 Acres)

Item	# Persons	Hours/Person	# of Hours	Cost / Hour*	Total Cost
Unloading Deliveries	1	8	8	\$20.00	\$160.00
Discing	1	4	4	\$20.00	\$80.00
Marking	4	16	64	\$20.00	\$1280.00
Drilling	2	40	80	\$20.00	\$1600.00
Pole Layout	2	8	16	\$20.00	\$320.00
Raising Poles	2	16	32	\$20.00	\$640.00
Tamping Poles	4	24	96	\$20.00	\$1920.00
Drilling Anchors	2	24	48	\$20.00	\$960.00
Pitching/Locking in anchors	4	32	128	\$20.00	\$2560.00
Concrete	4	8	32	\$20.00	\$640.00
Layout Cable	2	20	40	\$20.00	\$800.00
Stretching Cable	6	50	300	\$20.00	\$6000.00
Planting	7	24	168	\$20.00	\$3360.00
Irrigation	4	32	128	\$20.00	\$2560.00
*contracted out					
TOTAL LABOR					\$22880.00

Appendix C. Equipment Costs (5 acres)

Item	# of Units	Cost / Unit	Total Cost
Airblast Sprayer	1	\$10,000	\$10,000.00
Weed Sprayer	1	\$1,500	\$1,500.00
Tractor	1	\$30,000	\$30,000.00
Disc	1	\$1,000	\$1,000.00
Weed Badger	1	\$1,000	\$1,000.00
Mower	1	\$2,500	\$2,500.00
Walk in Cooler (11' x 17' x 8')	1	\$6,000	\$6,000.00
Harvester, Hopster5P (PTO-powered), ~120-140	1	25,000	\$25,000.00
Oast (??)	1	\$7,500	\$7,500.00
Baler (RB60)	1	\$6,500	\$6,500.00
Twining Sled? \$15,000			
Total Equipment Cost			\$91,000.00

Appendix D. Loan Detail (5 Acres)

Business loan payment (5 acre) GROW ONLY

Loan Amount	\$	150,367.57
Interest rate		5%
Life of loan (years)		20
Payments per year		12
Total number of payments		240
Payment per period (month)		\$992.36
Sum of payments per year		\$11,908.31
Sum of payments (total cost of loan)		\$238,166.26
Total interest paid		\$87,798.69

Business loan payment (5 acre) GROW HARVEST DRY BALE STORE

Loan Amount	\$	195,367.57
Interest rate		5%
Life of loan (years)		20
Payments per year		12
Total number of payments		240
Payment per period (month)		\$1,289.34
Sum of payments per year		\$15,472.07
Sum of payments (total cost of loan)		\$309,441.48
Total interest paid		\$114,073.91