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You have made the decision to put in a commercial orchard, start a flower farm, or market vegetable operation. Congratulations, you are about to become a small-scale grower! But where do you start?

As a new grower, you have numerous decisions to make before you even plant a crop: how much time, money, and property to invest in your enterprise; what to grow, how much to grow, how, where, and to whom you will market your crops, what kind of cropping management techniques you will use, among others. If you are a newcomer to the agricultural world, it can be difficult to navigate the maze of organizations and regulations that you need to understand in order to succeed as a commercial grower. This publication is intended to help you find your way through the process.

First Steps - Planning & Market Research

One of the most common mistakes new growers make is to view themselves as producers and not as marketers and business people. In the current American agricultural environment, most small-scale growers cannot

survive selling their produce on the wholesale market. Land and production costs are too great to make wholesale prices economically feasible. In order to succeed, your primary markets need to be at or close to retail prices. This generally means direct marketing - from the farm, through farmers' markets, the internet, or directly to institutions or independent stores willing to pay close to retail prices for quality product.



Market Research

Given this reality, before you plant anything, you must know who is going to buy it, where they are, and what they want. You need to find out what your target clientele is looking for and you need to plan your farming operation to grow what they want.

You will need to target a particular clientele, and find out what they want to buy. Growing what you like can be a good thing, but only if you also have clientele who like it and are willing to pay a fair price.

Just as in any business, market research is essential. You will need to find or develop your own market niche. A niche is

about targeting a particular consumer community. You need to identify who your target clientele is and then work on developing the awareness of that clientele for your product and the service you provide.

Before you plant anything you need to answer these questions:

- Who are your customers?
- Where are they?
- How will they find out about you and your product?
- What is your product?
- How is your product different than others of the same type?
- Why should a customer want to buy your product instead of someone else's?

If you don't know who is going to buy your product, you will not succeed at selling it.

Planning

Often, the best strategy is to find out what will sell in the particular market you have targeted and then sell to that market. How do you accomplish that?

Start planning early, at least a year before you want to sell. Visit the local farmers' markets (see resource section) and make a list of what is and isn't

there in different seasons. Concentrate on what isn't there, but also note products that sell well and seem to be in short supply. Talk to the growers. Go to market early, observe what sells quickly and what customers buy. Collect ideas and take notes.

After visiting local farmers' markets, go to the Davis Farmers' market and/or the Sacramento market under the freeway. Compare what is sold there to what is in local farmers' markets. Talk to growers and keep track of your observations.

Visit local produce stores such as Newcastle Produce or Briar Patch and note what is and isn't there. Use the annual market wish list as a guide for researching potential crops. The wish list is intended to help growers diversify production and fill gaps in local markets. Talk to managers of the local farmers' market associations (Foothill Farmers' Markets and Nevada County Certified Growers' Markets) for ideas. Contact information may be found in the resources section at the end of this document.

Do your homework on which crops might work for you. Make a short list of possibilities, then go to the markets again and see how your choices would fit.



Assessing your Resources

In addition to researching market demand for specific crops, You will need to assess the resources of your property and decide whether your preferred crop is suitable for your particular microclimate and soil. What do you need to know about your property? You need to find out about your soil, water availability, and microclimate.

Soils

You will need to find out what kind of soil you have, whether it is clay or sandy, how well it holds water, its native fertility, and for which crops it is suitable. You also need to know what underlies the topsoil – the subsoil and parent materials.

Your local Natural Resources Conservation Service (NRCS) office, a US Department of Agriculture (USDA) agency, can help. If you're web savvy and know soil terminology, use the NRCS Web Soil Survey at websoilsurvey.nrcs.usda.gov/

If not, the NRCS offices have copies of the soil survey and can help you. They can explain what your soil descriptions mean and print out topographical and soil maps of your property from your assessor's parcel number. Call your county NRCS office to make an appointment.

Nevada County NRCS and RCD

113 Presley Way, Grass Valley
530.272.3417

NRCS Placer County

11661 Blocker Dr #115, Auburn
530.217.6259

Placer County Resource Conservation District (RCD)

11661 Blocker Dr #115, Auburn
530.217.6257

Soil testing

In addition to finding out the basic characteristics of your soil, you need to have your soil tested for its chemical properties. Many foothill soils are clay or decomposed granite and fairly acidic. At lower elevations, there are neutral and slightly alkaline soils. For most crops, a slightly acidic soil is fine, but some crops may require amendments to alter the pH.

You should have your soil tested by a commercial lab that will give you accurate information for a baseline. Your amendment and fertilizer program will be based on the results of your soil tests. In order to avoid costly errors, use a commercial lab rather than home soil test kits. UC Cooperative Extension does not do soil testing.

Nearby labs include:

A & L Western Ag Labs, Inc.

1311 Woodland Avenue Suite 1
Modesto, CA 95351
Phone: 209.529.4080
<http://www.al-labs-west.com/>

Fruit Growers' Lab

563 E. Lindo
Chico CA 95926
530.343.5818
<http://www.fglinc.com/>



Sunland Analytical Lab

11419 Sunrise Gold Cir #10, Rancho Cordova, CA 95742
916.852.8557
<http://sunland-analytical.com/>

Labs often have a specific protocol they want you to use for sampling your soil, so call and ask before mailing off samples. Focus on sampling the areas that you intend to plant. Generally you will sample an area several times and mix the samples. If some areas of your property have visibly different soil or vegetation, you may need to do separate soil samples. If so, do not mix the samples, it may give you misleading information.

You will need a number of soil tests to provide a baseline for managing your soil. Most labs have a basic package, which is fine to start with. Have your soil analyzed for pH (acidity or alkalinity), and soil nutrient status (N,P, K at a minimum). You will also want to know CEC (Cation Exchange Capacity), a measure of native fertility, organic matter, ppm of Ca, Mg, K, and Na (base saturation %), and the Ca:Mg ratio.

Use a California lab to get accurate information. Pay the extra fees for a graphical analysis and recommendations. If you tell the lab what crops you intend to grow, they will provide specific recommendations on appropriate nutrients or amendments. Most labs will also give guidance on organic amendments, if you

specify that it is an organic farm. For more information on organic amendments, look for the UCCE information sheet 72C on Using Organic Amendments. You can find it on the Foothill Farming website at <http://ucanr.edu/sites/placernevadasmallfarms/files/142585.pdf>

Beyond a general soils map and soil testing, you need to find out how deep your soil is and whether you have a hard pan or not. This can only be done by digging some backhoe pits in the proposed planting area and examining the soil. This is especially important for perennial crops such as trees or vines.

Land Preparation

Before you put in an orchard or vineyard you will need to do extensive land preparation, such as ripping, especially on heavy clay or if you have a hardpan which is very common. If possible, add amendments such as lime or compost before ripping so as to incorporate them all at once.

Some growers have not done adequate soil preparation, which might be considered "penny wise and pound foolish". Your orchard or vineyard and the quality of your fruit is likely to suffer in the long run from the lack of soil preparation. You need to give your plants the best possible opportunity to establish themselves and have a long productive life.

Once your soil is prepared, establish a cover crop, especially if you are not planting immediately. A cover crop will protect your soil from erosion in winter rains and can significantly increase soil organic matter and/or soil nitrogen, depending upon what is planted. A cover crop may also facilitate rainy season work in an orchard or vineyard. Cover crops are essential to maintaining the limited soil resource we have.

**Water and irrigation**

Water availability is critical to foothill agriculture. Our soils are generally too shallow to store much rainfall, and slopes mean that much of it runs off, so dry farming is rarely possible. Perennial crops require water throughout the year. If winter rainfall is delayed or inadequate, they may require irrigation in the winter.

Ground water from wells is available in a few areas. Most agriculture relies on "ditch water", delivered through a series of canals and ditches that are remnants of our mining heritage. Water delivery is measured in miner's inches, a flow rate of 11.22 gallons per minute or 1.5 cubic feet per minute or 0.0248 (approx. 1/40) acre-inch per hour. You will need ½ to 1 miner's inch per acre of crops, depending on the intensity and type of crop.

The irrigation canals and ditches

are managed by a number of irrigation districts. In Placer and Nevada Counties, these are

- **NID**, Nevada Irrigation District serves Nevada County and Placer County west of I-80 and east of Highway 65
- **PCWA**, Placer County Water Agency serves most of Placer County
- **San Juan Water District** serves Granite Bay and Roseville
- **Camp Far West/South Sutter Irrigation District** serves a small portion of western Placer County

Most agricultural users buy raw, untreated water, which costs less than treated water. For new users, water availability is uncertain. If your property does not have an existing allotment, and you are lucky enough to get water, you will have to pay for the infrastructure to deliver water to your farm.

Most irrigation water users buy water seasonally, from April 15th to October 15th. In some areas, winter water is available. If it is available, buy ½ to 1 miner's inch, as many winters may have long dry spells, so you will need winter water for perennial crops.

Nevada Irrigation District

1036 W Main St.
Grass Valley, CA 95945
530.273.6185
Placer County 1.800.222.4102

Placer County Water Agency

144 Ferguson Road
Auburn, CA 95604
530.823.4850

San Juan Water District

9935 Auburn-Folsom Road
Granite Bay, CA 95746
916.791.0115

Once you have water, you will need to decide what kind of irrigation system you need. As a result of the cost and availability of water, most growers use microirrigation systems, delivering water in small amounts. These systems include a variety of drip, microsprinkler, and other low volume irrigation systems. You will need a filtration system for most of these systems.

Overhead sprinklers are not efficient and contribute to runoff. Frost protection from microsprinklers causes much less tree damage than overheads. With decreasing availability of water and regulations regarding runoff from agricultural land, overheads are a poor choice for foothill agriculture.

Work with a commercial farm irrigation supplier to design and install your irrigation system. Free assistance with agricultural irrigation is also available from your local NRCS and Resource Conservation District (RCD) offices. They can determine water needs for your crop and soil, and assist with irrigation design.

Microclimate

Microclimate is influenced by elevation, slope, aspect (direction the property faces) and exposure. As a result of the varied topography of the foothills, you may have a very different microclimate than your neighbor a quarter mile down the road. In addition to figuring out direction and elevation, you need to start collecting weather data on your property.



Temperatures

A good start is to place maximum-minimum thermometers around your property, at different elevations, and record the max and minimum temperatures on at least a weekly basis. Max-min thermometers are available in low-tech versions – a simple thermometer with two columns of alcohol and a peg on each side that will stop at the high and low temperatures recorded since you last reset it. These cost about \$10 each and are available at most hardware stores and nurseries.

A higher tech version is digital with a memory, cost \$15-30 and are also widely available. Simple data loggers, which allow you to download information to a computer cost \$100-150 each, and the necessary shuttles and software range from \$200-400. A full weather station will provide you with all the data you could possibly want for \$800 to \$3,500.

You will need to record temperatures throughout the year if you are considering a perennial crop. Knowledge of winter lows is critical if the potential crop is cold sensitive. Keeping track of chilling hours can be important if you are in a borderline area for crops which require winter chilling for fruit or flower production. Records of spring temperatures will help you determine when to plant or transplant annual crops. Summer temperatures may be important as well, if your crop is sensitive to heat. Keeping records of the weather on your property is important for many other aspects of growing including pest management, irrigation scheduling, and the timing of other operations. The sooner you start, the better.

Cold Air Drainage

Slope can be an important factor in microclimate as it may affect cold air drainage, and the amount of sunlight your property receives. Cold air runs downhill like water, so lower areas will be colder, often significantly colder, if there is a barrier to air movement such as a blackberry patch or another hill. Roads and ponds or other bodies of water will moderate low temperatures to some extent, but you need to know how much. If you are planting a crop that may be sensitive to cold, you need to know how far the cold air backs up the hill, and avoid planting in

the areas where cold air sits. If you are planting in a canyon or area shaded by other topography, you may not get sunlight until mid-morning and it may disappear by mid-afternoon. The number of hours of sunlight can be critical for many crops. Most fruiting and flowering crops require at least 6 to 8 hours of sunlight per day for production.

Aspect and exposure determine how much sun your crop will receive and ambient temperatures as well. Sub-tropical and warm season crops require warm soils and higher ambient temperatures than many temperate crops.



If you are considering a cold-sensitive crop such as citrus, a south- SW exposure is critical. Most fruit crops do best on south or southwest-facing slopes so they get adequate sunlight for good fruit quality and frost or freeze damage is minimized. A few crops such as blueberries and apples do well planted on north-facing slopes, but most need the warmth of the south- SW exposure.

Crop Selection

There are a wide variety of crops, from temperate to sub-tropical, that grow well in Placer and Nevada Counties, including citrus, apples, blueberries and caneberries, stone fruit, warm

and cool season vegetables, annual and perennial cut flowers, Christmas trees, and herbs.



Factors to consider in crop selection

Selecting crops for a small scale enterprise can be a time consuming educational process. You need to take a number of factors into consideration in your decision. Environmental factors include:

- Farm Location
- Elevation
- Exposure
- Soil depth
- Slope and frost potential
- Distance to market for highly perishable crops

Your farm location has a great impact on what you can grow. Each crop has a set of ecological requirements that must be met for optimum crop production. These include factors such as temperature, relative humidity, amount of sunlight, etc. You need to know the needs of the crop and whether or not it suits your microclimate. Also, consider carefully transportation costs and how far your farm is from priority markets.

Costs & Business Planning

Before you plant any crop you need to evaluate the costs involved. Initial capital costs may include:

- Infrastructure such as fencing, trellising, irrigation, etc.
- Soil preparation & amendments
- Plants or seeds

Ongoing costs may include:

- Water
- Fuel and electricity
- Inputs such as amendments, fertilizers, and pesticides
- Labor
- Taxes, etc.

The University of California, Davis publishes cost of production studies for a number of crops grown in California. Look at the studies for information on costs to establish a crop, the operations and equipment involved, and potential yield and profits. The studies are available at <http://coststudies.ucdavis.edu/>.

Farming is an economic endeavor, and like any other business, you should develop a business plan. Lack of business planning is why many new farming operations fail. There are many different resources, but one of the best, tailored to farming is *Building a Sustainable Business*, a workbook guide developed by the Minnesota Institute for Sustainable Agriculture. It is available online for purchase or download at: <https://www.sare.org/resources/building-a-sustainable-business/>

Other Considerations

Other factors to consider in choosing your crop include the availability of labor. Placer and

Counties Nevada have very limited labor pools and skilled labor can be very difficult to find.

Time to production for perennial crops is a critical factor because it means that the return on your investment comes a long time after your initial capital costs. You may consider starting out with a mix of annual and perennial crops to allow some income during the non-bearing period of your perennial crops.

The availability of planting stock may also factor into your planning. Some plants or seeds may only be available in certain seasons. For many fruit trees, planting stock may need to be ordered 1-2 years ahead of time. New or patented varieties may be costly.

For small scale growers, finding planting stock at reasonable prices may be difficult because many nurseries have minimum orders and may not be willing to sell small numbers of plants. Network with other growers to see if you can share an order.

Regulatory Requirements

There are some regulations with which all farmers must comply. UCCE Placer/Nevada publication 145C *Farm and Ranch Rules & Regulations Checklist* is available on the Foothill farming website to help you navigate the regulations.

Commercial farming is defined by the act of selling the produce of your farm. If you sell anything

produced on your farm, you are subject to regulations. Produce is defined as articles produced from or grown in the soil, usually sold fresh. This includes fruits, nuts, vegetables, herbs, cut flowers, and nursery stock, among others.

You do not need a license to grow and sell agricultural produce from your farm, unless you are selling rooted live plants or Christmas trees. If you are selling live plants, you need a nursery license from the State of California, which is applied for through your county ag commissioner's office. The license fee is based on sales, and it is fee exempt for the first \$1000 dollars of sales, if sold in the county where they are grown. You will need a business license to sell Christmas trees.

If you use any pesticides on produce for sale, you must obtain a pesticide identification number and report pesticide use on a monthly basis to the Agricultural Commissioner. Pesticides include any material that is intended to kill, repel, or check the development of an insect, weed, disease, or other organism damaging your crops. Pesticides include herbicides such as Round-up®, horticultural soaps and oils, insecticides, and fungicides such as sulfur, among other materials. If the product has an EPA number on the label, any use must be reported.

Certified Farmers' Markets

A Certified Farmers' Market (CFM)

is a market authorized by the county's ag commissioner to sell produce directly to consumers. The market certifies that the products in the market are produced by the growers selling them. This is assured by the requirement that each grower display his or her Producer's Certificate.

If you intend to sell produce in a Certified Farmers' Market (CFM) or through Community Supported Agriculture (CSA), you will need to obtain a Producer's Certificate and have your farm inspected. Apply for the certificate through your County Ag Department office. You will need to fill out an application listing each type and variety of crop grown, approximate acreage or number of plants, and estimated production. Ag department staff will inspect your farm in order to certify that you are producing what you intend to sell. Allow several weeks for this process.

The Producer's Certificate gives you the right to sell fresh fruits, nuts, vegetables, shell eggs, honey, flowers, and nursery stock directly to consumers at CFMs or through your CSA. It exempts you from size, standard pack, and some container and labeling requirements. However, all produce must comply with California regulations on quality and maturity. Seconds, or cull fruit may not be sold.

If requested, the grower should

be able to demonstrate that fruit and vegetables meet the state's maturity standards, usually determined by % Brix or sugar concentration. This is particularly important for fruit. Growers may try to push the season, and end up selling green fruit. This is not good for either the grower or the customer. Repeat customers are the backbone of grower clientele. If you sell poor quality or unripe fruit, customers will not buy from you again. Especially as a new grower, it is important to establish a reputation for quality produce.

Get Started!

Do your research before you plant any crop. Be sure you understand who your clientele is and what they want to buy. If possible, test the crop a year before you intend to sell it.

Resources for getting started

University of California Cooperative Extension (UCCE) (Farm Advisor's Office) Provides producer information and advise, referrals to other resources, and training on crop selection, production practices, pest management, marketing, farm business, and other topics.

Placer County office

11477 E Avenue, Auburn
530.889.7385

Nevada County office

255 So. Auburn Street, Grass

Valley 530.273.4563

Nevada County Ag Department

530.470.2690

Placer County Ag Department

530. 889.7372.

Contact your county ag department for assistance with:

- Certified Grower's Certificate
- Pesticide Identification Number
- Pesticide Use Reporting
- Organic Certification

Local Farmers Markets

PlacerGrown Farmers' Markets

Markets in Auburn, Granite Bay, Rocklin, Roseville.

P.O. Box 3343

Auburn, CA 95604

530.823.6183

<http://www.placergrown.org/farmers-markets/>

Nevada City Farmers' Market

<http://ncfarmersmarket.org/>

Saturdays, 8:30 AM to 12:30 PM

The Market at Grass Valley

Markets in several locations in Grass Valley.

P.O. Box 2477

Grass Valley, CA 95945

530.265.5551

<https://themarketatgrassvalley.com/>

For other farmers' market locations in California, go to

[http://](http://www.farmersmarketonline.com/fm/California.htm)

www.farmersmarketonline.com/fm/California.htm

Grower Associations

Mountain Mandarin Growers Association

mountainmandarins.com

Placer County Vintners Association

placerwine.com

Placer County Wine & Grape Association pcwga.org

Sierra Wine & Grape Growers Association swgga.org

Information Resources

UCCE Placer/Nevada Foothill Farming Website ucanr.edu/sites/placernevadasmallfarms

University of California Publications and Resources

UCCE Placer/Nevada information sheets are available online at the Foothill Farming Website <http://ucanr.edu/sites/placernevadasmallfarms/Resources/OSA/>

UC Division of Agriculture and Natural Resources Publications anrcatalog.ucanr.edu

UC Davis Extension ag classes cpe.ucdavis.edu

Small Farm Information sfp.ucdavis.edu

Resources from Other Agencies and Universities

NCAT Appropriate Technology Transfer for Rural Areas – sustainable ag attra.ncat.org

Oregon State University Small Farms program extension.oregonstate.edu/smallfarms

Cornell Small Farms Program smallfarms.cornell.edu

Penn State Alternative Crop Publications extension.psu.edu/business-and-operations/getting-started/ag-alternatives

National Organic Program Information ams.usda.gov/about-ams/programs-offices/national-organic-program