Evaluating the Potential of an Alternative Crop

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Introduction

Because over 90% of Nevada’s cropland is devoted to alfalfa or grass hay production, alternative crops are of special importance to Nevada agricultural producers. In nearly every recent agricultural related needs assessment conducted by Cooperative Extension faculty alternative crops ranked very high. Other measures support the importance of alternative crops to Nevada producers. In a recent (spring 2001) Nevada Department of Agriculture specialty crops grant program, over 40 Nevada producers submitted grant applications totaling approximately $1.7 million. There was $120,000 in grant funds available and a total of 16 grants were funded.

Being successful in growing and marketing an alternative crop is not easy. If it were, Nevada agriculture would be much more diverse. However, it can be done. To increase the chances of success, a producer needs to complete a thorough investigation of the potential crop and markets before any alternative crop is planted. The time and money required to do a thorough investigation will be well spent and greatly reduce the chance of failure. This fact sheet provides guidance concerning the most critical questions that must be answered by a producer before an alternative crop is planted. The two major areas of concern are: 1) environmental limitations, and, 2) marketing possibilities.

Environmental limitations

When a new crop is being considered the most important question to answer is, “Will it grow in my area without major modifications to the local soils or climatic conditions?” In other words, is it relatively well adapted to the potential production location?

The first step is to compare the local climate to that where the plant is now being produced commercially. Fortunately, climatic information is readily available on the World Wide Web. In Nevada, an excellent web site that displays all of the local climate summaries and those of the other western states is maintained by the Western Regional Climate Center at the Desert Research Institute. The web address is: www.wrcc.dri.edu/index.html. To access the weather summaries click on: “Historical climate information”. The summaries are available for every station in the western United States. Similar information is available for other regions of the United States from the National Oceanic and Atmospheric Administration. The web address is: www.noaa.gov/climate.html. Click on “climate-at-a-glance” to access 107 years worth of climate information from across the United States.
The primary information that is necessary to evaluate a crop is: 1) minimum winter temperatures expected, 2) frost free period or growing degree days (GDD) with an appropriate base temperature for the crop being considered, 3) chilling hours, 4) solar radiation or “sunshine days” in the season. Other factors such as the average humidity, wind speed, precipitation, and probability of frost by month will also assist in making a production decision.

Growing degree-days is defined as the average daily temperature minus a base temperature. That number is the growing degree-day for the day selected. The total for each day is added together to determine the total GDD’s for a season, i.e. 71 degree average – 50 degree base temperature = 21 growing degree days for that day. If the value is a negative number no GDD’s are recorded for that day.

The chilling hours are defined as the number of hours between freezing and 45 degrees during the dormant season. This number is important for fruit crops that require a set number of chilling hours to produce successfully.

Precipitation and humidity are less important in Nevada as almost all crops will need supplemental irrigation to produce successfully.

A second critical component to determine for the production site is soil quality. General information on soil quality is available from local Natural Resources Conservation Service (NRCS) and University of Nevada, Cooperative Extension (UNCE) offices. However, collection of site-specific information will normally be required. This information is collected using proper soil sampling techniques and sending the soil to commercial soil analysis laboratories. Again local UNCE and NRCS offices can assist producers with soil sample design and interpretation of the results.

The information needed from the soil tests includes: 1) pH, 2) organic matter content, 3) nutrient status for macro and micro-nutrients, 3) sodium and soluble salt levels, 4) texture, 5) cation exchange capacity, and 6) the level of free lime present.

Additional information such as depth to restrictive layers, past pest control materials applied, and past crop production history is also helpful.

Finally, information on irrigation water quality, quantity and type is needed. The most important quality factors needed to evaluate water for irrigation are: 1) electrical conductivity (EC), 2) pH, 3) cat ions (sodium, calcium, and magnesium), 4) anions (chloride, sulfate, carbonate, and bicarbonate), and 5) boron. This information is used to determine the suitability of the water for irrigation. Local Cooperative Extension and NRCS offices can assist in evaluating water test results. Water quantity is normally expressed in gallons/minute or gpm. The irrigation type would be sprinkler, flood, drip etc.

Once all the environmental information is gathered for the site in question it should be compared to the requirements of the crop, being considered. The more closely the crop matches the environment the greater the chances of successful production. As an example, crops requiring acid soils with low salt levels would be difficult to grow in most of Nevada as Nevada soils are generally alkaline in pH and contain relatively high amounts of soluble salts and/or sodium. Although the soils can be amended, major changes are not usually economically feasible.

**Crop requirements**

Information on potential crops can be found in several locations. One of the best sources is from the National Agricultural Library. The Alternative Farming Systems Information Center [www.nal.usda.gov/afsic](http://www.nal.usda.gov/afsic) has compiled information on alternative crops from all over the world. After accessing the web site click on “search” and type in “alternative crops”. The site provides a wealth of publications and links to other sites about this subject.

**Testing a New Crop**

All new crops that are being considered as an alternative enterprise need to be tested on farm or at least in the local where they will be produced. The test crops should be planted and grown for at least
two years before any larger scale production is attempted. An excellent resource for farmers and ranchers who want to test alternative crops is: “On-Farm Testing: A Growers Guide”. It is available from Cooperative Extension, College of Agriculture and Home Economics, Washington State University, Pullman, WA. 99164-6420. Another excellent resource can be found on the Western Sustainable Agriculture, Research and Education website. The website address is www.wsare.usu.edu and an excellent link is “Farmer, Rancher Highlights”.

**Market considerations**

After determining if a crop has good potential for production the second step is determining how the crop will be sold and for what price. This step is as important as selecting an alternative crop because without a market the crop is worthless. Normally, that means establishing a new market for the crop produced and pricing it competitively with similar crops that are produced elsewhere. Unfortunately, information related to marketing and budgets is harder to develop than production information. It will often have to be developed over time during the early testing/production phase.

Marketing of the crop can range from offering it wholesale on open markets to selling it directly to a consumer market that the producer has developed. The price received is often directly tied to the amount of time spent marketing it.

Direct marketing means that the producer must contact customers directly and convince them that the product he/she is offering is of superior quality to that available elsewhere. A producer must know what his/her customers want and then meet or exceed those needs. The Missouri Alternatives Center is a resource that provides a wealth of information about marketing alternatives as well as individual enterprises. While it is aimed at producers in Missouri the site has the latest information available from top researchers and Extension specialists from all over the United States. The web site address is: www.agebb.missouri.edu/mac and the link to the resources mentioned above is “Extension Information on Alternatives.” The section on marketing is very useful in evaluating marketing alternatives for new crops in Nevada.

Another opportunity that is less risky is to develop a different market for an established crop. This can mean finding a new use for a proven crop or developing a small or niche market for the crop. An example might be raising and selling “Gourmet” popcorn in a location that has a long history of raising field or sweet corn. Several ideas are available on the websites presented in this fact sheet.

**Financial Planning**

Because most alternative crop enterprises will be new to Nevada, little information is available to develop realistic budgets. One technique available is to complete gross profit analysis (GPA). In GPA a producer will first estimate all new costs associated with growing the alternative crop. These costs are normally those above and beyond all existing costs associated with the current enterprise. These are costs that would only be incurred when the producer actually plants the alternative crop. They would then subtract those costs from the expected income from the new enterprise.

A producer can also access existing budgets from states where the crop is currently grown and adapt that information to their situation. The Missouri Alternatives Center web site previously mentioned is an excellent source for budgets on alternative crops.

Regardless of the method used, a producer is advised to start on small acreages with any alternative crop. They must develop skills related to production, pest control, harvesting, and marketing of the crop. Keeping good records on associated costs and selling prices are also a must. As the skill level and knowledge base increases the chance of commercial success also increases.
Resources used to prepare this publication:


