

The Comida Buena Project



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Growers 101: Starting a Farm Business in Southwest New Mexico

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Table of Contents

I.	THE COMIDA BUENA PROJECT	2
II.	STARTING A FARM: PREREQUISITES	9
III.	CONSIDER THE LAND	14
IV.	PLANNING YOUR AGRICULTURAL BUSINESS	27
V.	COMPLIANCE AND SAFETY	52
VI.	WATER	58
VII.	SELLING YOUR PRODUCT	63
VIII.	SOUND BUSINESS PRACTICES	69
IX.	USING COMIDA BUENA	85

The Comida Buena Project

INTRODUCTION

The Comida Buena Project was designed by the National Center for Frontier Communities after completing an in-depth feasibility study that explored a food hub business in Southwest New Mexico.

Food hubs have been springing up around the country and are receiving a great deal of attention for their ability to aggregate, market and distribute produce from local farms and offer increased economic opportunities for producers of local food.

However, at the time of our study, the region was not able to support such a business due to several factors. Mostly because, though we have a great deal of agricultural production and output, the vast majority of this production is not fit for aggregation and sales either due to the size of the operation (much too big or much too small) or the product itself being unfit for local markets.

In addition, while the local food phenomenon continues to grow nation-wide many of our local markets are either not able to or not interested in purchasing local foods. We know that there is a nearly \$10 million local market for retail fruits and vegetables in addition to institutional and restaurant markets.

Finally, the region faces significant geographical and logistical challenges being so far from large market centers and the growers themselves being far enough away from each other that it makes cooperative efforts very difficult to coordinate.

This local market opportunity, combined with increased statewide interest means that producers in Southwest New Mexico have huge opportunities to ramp up production and generate more sales than ever before.

To help generate and encourage these sales, we outlined three primary areas where our region needs further development. The Comida Buena Project received a three-year grant from the USDA's Local Food Promotion Program with the stated goal of increasing local production and sales by 10% over the project period.

Together, we want to help Southwest New Mexico reap the benefits of an increased local food economy. We want to equip growers with the skills necessary to manage and grow a successful food business, and we want to develop a streamlined framework that other frontier communities can use to grow their own.

- 1) **Buyer Education** - To maximize the amount of potential sales within the region, we need to increase interest among schools, institutions and other intermediary markets. Buying local foods is often not something that is seen as affordable or beneficial and many markets we have talked to have had less than ideal experiences purchasing from local growers in the past. However, we believe that we can greatly increase local market potential through some concentrated outreach and education.
 - a. **Education** - Why buy local? Why would a business or school want to buy local products? By outlining the benefits of local foods such as increased economic activity in the region, a fresher, tastier product and more practical consideration such as a centralized point of contact and our product standards we can slowly gain trust and accounts.
 - b. **Outreach** - One reason the more mainstream food system is so dominant is their customer service. They are available and responsive via phone nearly every day of the week. Busy food service professionals often do not have the time to call several different farmers, coordinate different delivery times and deal with different product standards. To compete, we must have regular contact with our customers and pivot as much as needed to earn their loyalty.
 - c. **Marketing** - While good products practically sell themselves, they also need help getting in front of new buyers. Local food has a story nearly every customer can get behind and want to support. Marketing local foods is as much about telling the story as presenting clean, beautiful produce and having professional communication. From the initial visit through continued purchase we offer prompt, professional service.

Additionally, buyer outreach and education will be a continuous component of Comida Buena. Until local foods become the “mainstream” option, it needs continual champions and advocates to help guide people through the process.

- 2) **Grower Education** - Many of our growers have gotten so used to the limited market access in the region that they have stopped pursuing growth or have seen plateaued sales. While we will not be focusing on production education, we will offer food business planning services, marketing and food safety training and other, specifically tailored events and one on one services to help anyone interested in growing food for local markets.
- 3) **Logistics and Aggregation** - While it makes sense for growers to sell directly to consumers wherever possible, the large distance between markets even within our four-county region can make marketing and transportation heavy burdens to bare. Additionally, getting product to markets elsewhere in the state can cut too heavily into profits for the small grower that it becomes a bad business decision. For these reasons we will be digitally aggregating food products and developing innovative logistical solutions to get product to market as cheaply and efficiently as possible.

This guide is a compilation of many resources from a wide variety of contributors. Full credit is given to these authors and organizations.

A NOTE ON THIS GUIDE AND ADDITIONAL RESOURCES

The need to educate and equip regional growers with the professional skills necessary to make sound agricultural business decisions and see success in their operation is one of the main focuses of the project. This guide addresses all major agricultural business components other than the actual production of food that one would need to start, grow or simply improve a food business operation.

This is a resource guide. We have done an extensive literature review on all of the topics that were important to include with links to these resources which are included in this guide.

In addition, there are numerous other guides available for free on the web. Many of these guides have interactive worksheets, guides, webinars and trainings. An abbreviated list of these resources is located below:

Beginning Farmer 'Plan Your Farm' Hub

Find tutorials & worksheets to help guide you through writing a business plan, videos of experiences farmers giving advice and up-close production techniques, and many other useful resources! <http://smallfarms.cornell.edu/plan-your-farm/>

The Farm School's Learn to Farm Program

Now in its 14th year, the Learn to Farm Program is a state licensed, full time, five day/week, live-in, tuition-based training program that packs a tremendous amount of training and experience into a year and turns out graduates who go on to farm successfully. Forestry, animal husbandry, carpentry, mechanics, business planning, marketing and organic vegetable production are among the practical skills that are introduced then practiced over all four seasons in the context of a commercial operation that includes a working forest, a 200-member veggie Community Supported Agriculture (CSA) and a 50-member meat CSA. <http://farmschool.org/learntofarm/>

The Greenhorns' Guide for Beginning Farmers

The Greenhorn's Guide is a unique resource for young, beginning farmers. The goal of the publication is to help young people make the transition into a career of farming. It is a clearly

organized compilation of references about farming, providing information about anything from where to find an apprenticeship, to how to preserve food and how to repair a tractor. One important aspect of the guide is that it seeks to forge a connection between young farmers and older farmers who are more experienced who can act as mentors. <http://www.thegreenhorns.net>.

USDA's New Website for New Farmers

The U.S. Department of Agriculture (USDA) has unveiled the New Farmers website, including in-depth information for new farmers and ranchers on how to increase access to land and capital, build new market opportunities, participate in conservation opportunities, select and use risk management tools, and access USDA education and technical-support programs. The website also features case studies about beginning farmers who have successfully utilized USDA resources to start or expand their business operations. <https://newfarmers.usda.gov/>

Cultivating the Next Generation: Resources and Policies to Help Beginning Farmers Succeed in Agriculture

This American Farmland Trust publication reports on state programs and federally funded programs for beginning farmers and profiles 12 beginning farmers. Finding, affording, and negotiating appropriate farmland to lease or own was the greatest overall challenge beginners reported, and the publication suggests ways to address this challenge. http://www.thegreenhorns.net/wp-content/files_mf/1408037155cultivating.pdf

Cultivating the Next Generation: Resources and Policies to Help Beginning Farmers Succeed in Agriculture

Interested in starting your own, economically successful small-scale farm? Calypso Farm and Ecology Center offers a fun, intensive Farmer Training Program that includes all aspects of ecological agriculture as well as farm business planning and hand skills such as blacksmithing, wool processing, mechanics, building, food preservation, natural alignment and injury prevention and more. Click here for more information: <http://www.calypsofarm.org/education/calypso-farmer-training-program/>

New Farmer Webinars

The University of Vermont's New Farmer Project is holding a series of monthly webinars based on suggestions from beginning farmers like you. Each webinar combines a presentation from an expert with lots of opportunities to ask questions and interact with the presenter and other participants. They are free and are held on the second Thursday of the month from 7 to 8 p.m. Additionally, the webinars are recorded and posted on the website, so you can also view it

later when it's convenient for you. To participate in this series all you need is an internet connection and a computer you can hear sound through. The type of computer or operating system you use doesn't matter. A broadband connection to the internet is helpful, but not required. Just click on the webinar title to join to the session. It's good idea to visit the webinar site a few days before the scheduled session to make sure you have the appropriate software and web connection. Then, just click the link to the webinar's virtual room about 15 minutes before the start time. <http://www.uvm.edu/newfarmer/?Page=webinars/index.html&SM=webinars/sub-menu.html>

Farm Financing Webinar: Organizing and Understanding Your Numbers

This ATTRA (National Sustainable Agriculture Information Service) webinar is aimed at helping beginning farmers become familiar with basic accounting techniques and organizational strategies. Topics include: understanding financial statements, assessing profitability and financial viability, record keeping, and more. To view the video and other ATTRA webinars visit: <https://attra.ncat.org/video/>

Beginning Farmer Progress Tracking: NOFA-NY Core Competency Tracking Tool

This new NOFA-NY tool is part of NOFA's initiative to support the skills and development of beginning farmers. The tool is a way for beginning farmers to reflect on their current farm learning activities and how to seek out future opportunities. For more information about the tool, visit: <http://www.nofany.org/progress>

Farm Hack: A Community for Farm Innovation

The site, Farm Hack seeks to encourage farmers to "learn, innovate and collaborate better" by providing an online forum and blog, as well through events that bring farmers together. The organization is focused on farm innovation and facilitating the sharing of ideas between farmers, especially geared toward new farmers. <http://www.youngfarmers.org/practical/farm-hack/>

Online Blog for Young Farmers

A new blog, called *Freshman Farmer – New Organic Farms Set Roots* features posts that document the lives of beginning organic farmers from New York to California. Many posts include specific, transparent information about crop plans, revenues, nuts and bolts of starting a CSA, and many other important tips. You will also get a multi-media look at these bloggers farms through instructional videos and photo albums. <http://www.freshmanfarmer.com/>

National Incubator Farm Training Initiative (NIFTI) Materials

From sample curricula, to farmer leases and manuals, to site management protocols, NIFTI's library contains a wide range of tools related to best practices for beginning farmers. Explore the brand new [Farm Incubator Toolkit](#), a comprehensive guide to starting and operating land-based beginning farmer training programs. <http://nesfp.nutrition.tufts.edu/food-systems/national-incubator-farm-training-initiative/training-materials>

Roots Memphis Farm Academy is a NIFTI affiliated training and incubator program that focuses on sustainable growing practices for new farmers. Roots Memphis Farm Academy supports beginning farmers in the South Midwest region. Learn more at <http://www.rootsmemphis.org/>

A Resource Guide for Beginning Farmers

The Leopold Center for Sustainable Agriculture and Iowa State University Extension and Outreach have released “A Resource Guide for Beginning Farmers”, a new publication that compiles existing training resources on everything from soil and composting to small farm equipment and whole-farm planning, including information on food safety and seed saving. The 48-page guide is divided into three parts: production practices, post-harvest handling, and business planning and basic farm finances. www.leopold.iastate.edu/pubs-and-papers/2015-07-resource-guide-beginning-farmers

NSAC Guide to Federal Farm and Food Programs

The National Sustainable Agriculture Coalition (NSAC) has released its 2014 Grassroots Guide to Federal Farm and Food Programs. This free, digital guide offers plain-language explanations of the dozens of federal programs and policies most important to sustainable agriculture and how farmers, ranchers, and grassroots organizations nationwide can access them. Check out the guide at <http://sustainableagriculture.net/publications/grassrootsguide/>

Free Sustainable Farming Tutorials from ATTRA

The free, self-guided tutorials on Scaling Up for Regional Markets and Pest Management contain multiple lessons with ATTRA specialists and other well-known experts in sustainable agriculture. They are designed for you to delve deeply into the subject while working at your own pace and include calculators, worksheets, resource lists, and other downloadable tools. The tutorials also include “case study” conversations with successful producers who know what it takes to make a go of farming. The tutorials are available at <https://attra.ncat.org/tutorials/>

Building Sustainable Farms, Ranches and Communities

This guide is written for anyone seeking help from federal programs to foster innovative enterprises in agriculture and forestry in the United States. Specifically, the guide addresses program resources in community development; sustainable land management; and value-added and diversified agriculture and forestry. Thus, it can help farmers, entrepreneurs, community developers, conservationists, and many other individuals, as well as private and public organizations, both for-profit and not-for-profit. Visit <https://attra.ncat.org/attra-pub/summaries/summary.php?pub=279> to download the PDF for free.

Starting a Farm: Prerequisites

So, you want to start farm or ranch. Congratulations. While becoming a farmer or rancher takes a lot of hard work, ingenuity and persistence, we truly believe that anyone who wants it bad enough can achieve their goals by using the resources available. The first step in any agricultural operation is making sure you know what you are getting yourself into. Just as you wouldn't begin work at NASA without the proper training and experience, one shouldn't try to start their own farm without at least a solid grasp on the basic growing, troubleshooting and business principles specific to their desired operation.

In general, most farmers or ranchers will have a career trajectory similar to this:

- 1) Gaining Knowledge
- 2) Planning a business
- 3) Acquiring Land
- 4) Production
- 5) Record Keeping and Maintenance
- 6) Risk Management

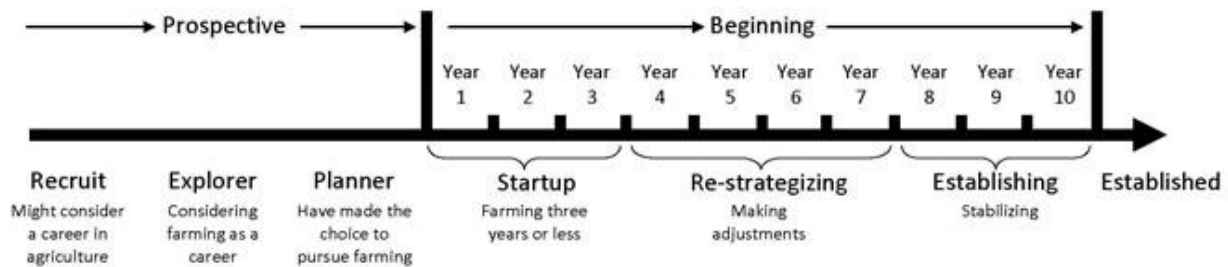


FIGURE 1: THE ABOVE DIAGRAM HAS BEEN ADAPTED FROM CATHY SHELLS AND MARCIA DESCARTES, WORKING WITH NEW FARMERS (NEW ENGLAND SMALL FARM INSTITUTE, 2004). COMPLETE ARTICLE AND OTHER RESOURCES AVAILABLE AT [HTTP://WWW.SMALLFARM.ORG/MAIN/FOR_SERVICE_PROVIDERS/](http://www.smallfarm.org/main/for_service_providers/)

To be a good farmer, one must develop certain qualities and habits. While there are many resources available on just about every topic and subject that may come up during your farming career, one needs to know where to look, be patient and be persistent.

Building a solid foundation is the most important step. Having your own operation is challenging and different from most other types of work. Many farmers who have hosted apprentices remark that a great deal of those seeking experience before starting their own farm will quickly realize that becoming a farmer is not actually what they want. It is a messy and demanding job that does not run on a typical schedule, farmers may need to tend to urgent problems at 3 a.m., Sunday mornings or Christmas Eve. However, with all the challenges, there is nothing quite as rewarding as tending a flock, raising a crop and working with the natural elements to provide a basic necessity.

GAINING KNOWLEDGE AND EXPERIENCE

The best way to gain knowledge about farming is to work or volunteer on a farm and to round out your knowledge base a combination of real life experience and research is advised. Some publications recommend at least three seasons before starting your own operation in order to get the full spectrum of farm experience. In addition to doing the hands-on work, you will get to know the farmer and their experience is more valuable, comprehensive and accessible than all of the guides in the world.

Chances are you have an idea of the kind of operation you want- best thing to do is start there. Find a farmer doing something similar and find a way to volunteer or work. It may also be a good idea to get experience on other types of farms.

You can find farms using Google, or another search engine but going to your local farmers market or talking to your local coop or extension agent might be a more personal connection. If these don't turn up anything satisfactory, there are also several services and websites designed to help connect you with farmers.

World Wide Opportunities on Organic Farms

WWOO is a service that connects eager volunteers with experienced farmers in a work trade exchange. The WWOOFer will connect with a farm and live on the farm and usually exchange room and board for a set number of hours per week of labor on the farm. This can be a great way to see different parts of the world and meet some of the most interesting people in the world, farmers!

<http://www.woof.net>

ATTRA's Sustainable Farming Internship Directory

This is a directory of on-site on-the-job learning opportunities in mostly organic operations across North America.

<http://attra.ncat.org/attra-pub/internships/>

Sustainable Food Jobs Listserv: COMFOODSJOB E-List

This list serve was designed to help connect young farmers to job opportunities in sustainable agriculture. Created by Tufts University.

<https://elist.tufts.edu/wws/subscribe/comfoodjobs>.

Good Food Jobs Website

This is a job search tool designed to connect people with jobs in various aspects of the food industry.

<http://goodfoodjobs.com/>

Veteran Careers in Agriculture Resource Guide

There are many unique opportunities for learning and accessing funding available for veterans. This guide was put together by the Veteran Farmer Coalition. You can access the guide at

http://www.farmvetco.org/wp-content/uploads/2014/01/RG_FINAL_WEB_compressed.pdf

In addition to seeking out experiential learning opportunities, building a base of knowledge of theory and application of your desired type of operation is very beneficial. There are many great books, periodicals and articles to read about all aspects of learning to farm. Chances are if you encounter an issue, there is a book written about the subject.

Check out [this](#) resource to get started.

Publishers

ACRES USA: <https://www.acresusa.com/>

Chelsea Green Publishing: <http://www.chelseagreen.com/farm-garden>

Storey Publishing LLC: <http://www.storey.com/>

Authors

Joel Salatin: <http://www.polyfacefarms.com/>

Elliot Coleman: <http://fourseasonfarm.com/>

Sarah Beth Aubrey: [Starting and Running Your Own Small Farm Business](#)

Ann Larkin Hansen: http://www.storey.com/author/ann_larkin_hansen

Book Titles

[The Organic Farming Manual: A Comprehensive Guide to Starting and Running a Certified Organic Farm](#) - Ann Hanson Larkin

[Starting a Farm: Making Your Hobby a Lifestyle](#) - TL Jenkins

[Farms with a Future: Creating and Growing a Sustainable Farm Business](#) - Rebecca Thistlewaite

[The Farmer's Office: Tools, Tips and Templates to Successfully Manage a Growing Farm Business](#) - Julia Shanks

[Farm Business Management: The Fundamentals of Good Practice](#) - Peter L Nuthall

[Making Your Small Farm Profitable: Apply 25 Guiding Principles/Develop New Crops & New Markets/Maximize Net Profits Per Acre](#) - Ron Macher

[Home Dairy: Keeping a House Cow, Goat or Sheep & How to make Cheese, Yoghurt and other dairy products](#) - Ann Cliff

[The Year Round Vegetable Gardner](#) - Nikki Jabour

[The Practical Bee Keeper](#) - Butler Press

[Keeping Chickens, The Essential Guide to Enjoying and Getting the best from your chickens](#) - Jeremy Hobson

[The Beekeepers Bible](#) - Richard Jones

[Bee Keeping for Dummies](#) - Howland Blackson

[Gaia's Garden, A guide to home scale permaculture](#) - Toby Hemingway

[Modern Dairy Goats, Goat Keeping](#) - Mary Gordon

[Choosing and Keeping Chickens](#) - Chris Graham

Video and Webinar Archives

Cornell Small Farms has dozens of videos on just about every subject a small farmer will encounter. <https://www.youtube.com/cornellsmallfarms>

ATTRA has video aimed at farmers of all levels of experience. <https://attra.ncat.org/video/>

Practical Farmers of Iowa offers over a hundred “Farminars” on subjects such as Growing in High Tunnels and Starting Seeds. <http://www.practicalfarmers.org/farmer-knowledge/farminar-archive/>

EOrganic has a series of webinars available for free by dozens of different presenters. <http://articles.extension.org/pages/25242/webinars-by-eorganic>

Consider the Land

Now that you have gained the necessary experience, you are ready to start looking for land. We included this section before the business planning section, because you need to have an idea of what your land situation will look like before you try and break down the financial reality of the operation.

Land is the biggest expense when it comes to starting an agriculture business and, arguably, the most important variable. It is important to think about how you will acquire land. Will you buy or lease? Both options have their benefits and drawbacks. The publication [Affording OURLAND](#) is a great place to start when considering how you will procure the land you will need for your operation.

The basic considerations for acquiring farmland are:

- 1) **Location** - Are you able to live at or near the farm? Are you close to markets or to town? Are you in a floodplain? These are some of the questions you will want to answer, and because this is such a big decision, don't settle for anything less than your ideal.
- 2) **Water** - What are your water requirements for the operation, and what water is available on the land? Just because it is adjacent to a river or has a nice well, doesn't mean you can use it for commercial production.
- 3) **Infrastructure** - What buildings, barns, irrigation lines, etc. are already on the land? Buying raw land can be cheap, but building all the necessary infrastructure can be incredibly expensive and take time.
- 4) **Soil** - What is the history of the soil? Get a soil test, is it conducive to what you want to do? What are the neighbors growing? Talk to those who live around the land and ask them what they think of it.

To get a good satellite view of the land in question check out [terra server](#) or for soil maps and information check out [NRCS's soil survey](#).

There are several creative and innovative approaches to acquiring land for agricultural operations that fall outside the traditional method of purchasing a plot such as [SPIN \(Small Plot Intensive\) Farming](#) method, which aims to lease/use nearby land most often in urban or suburban areas or [No Risk Ranching](#), which outlines a method of raising beef cattle for profit with very little overhead.

Cornell University put together a great tutorial for selecting farm land, you can view it [here](#).

These methods are worth exploring for anyone who may have difficulty accessing start-up capital or is unsure if they want to own the land just yet, however finding the ideal scenario to make these arrangements work can be difficult and have their own set of challenges and risks such as the land owner deciding to sell the land or that they don't like it being used for production. Both can result in lost investments in the soil and the time spent on the operation.

Another important consideration is taxes. If you own the property or buy the property, you will be responsible for paying taxes on it and the income that you receive from that property. If you lease you can bypass the taxation part, but you will still be responsible for holding up your commitments for retaining the lease.

Understanding the property boundaries is extremely important. Does the property come with easements? The best way to know your property boundaries is to have the property surveyed by a professional surveyor. You can also go to the county assessor's office to pull the records on the property to help you better understand the property and its boundaries. Depending on the location of the property, it may have zoning restrictions that restrict certain agricultural practices.

What is the land worth? Having the property appraised is extremely important when considering its worth. A few other considerations are what are the properties of the land? Understanding and identifying the plants, weeds, trees and possible animal pests is important when considering the property. Will these attributes help or hinder your operation? Also understanding the condition of the property is significant. Soil type, drainage issues, erosion and drought can all impact the operation. Set yourself up for success by initially understanding the condition of the property you are considering.

The location of the property is also very important for having a profitable operation. Depending on your operation is the distance from your property to potential customers going to be significant? Are you in a location conducive to sell what you are producing? Does the property have what you need on it, or will you have to build or enhance the property to sell your product? Finding property that already has what you need is an initial expense that you won't have to worry about. You might have to pay for it up front but in the long run having what you already need will save you time and money later. Is the property located in a growing zone favorable for your crop? New Mexico is a very diverse state in terms of growing zones. In one county there can be several different growing zones. Understanding where your property is located and the growing zone(s) of your property is tremendously important when producing an agricultural product.

Considering what rights come with the property in question is also important. One of the most important rights needed to produce agricultural products is water. Having property with water rights is extremely important. However, does the property come with any other rights that you need to be aware of? Some other property rights such as hunting rights is an alternative way to make a profit on the land that you own.

Protecting your land and your crop is something else to bear in mind when considering your agriculture operation. How will you protect your crop from pests or intruders? How will you protect yourself from crop damage caused by natural disasters? Will you secure your property physically and monetarily through building fencing or purchasing property insurance and crop insurance?

When starting an agricultural business land is one of the biggest expenses and one of the largest considerations to make when considering what kind of property you will be using, and what type

of crop you will be producing for this reason, for this we included information on soil types, testing and amendments.

Included in this section are several publications that were chosen to give the prospective buyer interested in agricultural production a good background on how to choose the right land.

When you begin searching for land, you can check with your local [farm bureau](#) and county extension offices. In addition, there are online resources designed to connect sellers and buyers:

- [MLS Residential Search](#) - The largest multiple listing service for residential real estate. Often contains small and medium farms.
- [Farm Credit East](#) - Agricultural lender with an appraisal services, they are likely to know of farms for sale.
- [Farm Service Agency Real Estate for Sale](#) - Listing of homes and farms for sale by the Farm Service Agency, many available with low interest financing.
- [Landandfarm.com](#) - Rural property listing service.
- [Landdirectory.com](#) - Rural property listing service.
- [United Country Real Estate](#) - Rural real estate brokerage.

PAYING FOR LAND

Buying or leasing? (Affording OURLAND)

Access to farmland, even in a nation as vast as ours, persists as the top challenge faced by new farmers in this country. The purpose of this little book is to interpret the landscape of options available to young and beginning farmers who wish to access land and credit for starting farm businesses. We wish it were easier, in America, for those with a dogged determination to succeed and strong experience in farming - either as a family member on a farm or as a new farmer with four to six years of farming experience - to start a farm business. This opportunity has long been associated with the tenet of “life, liberty and the pursuit of happiness”, and though it takes serious effort it is still possible to achieve this goal if you go about it in the right way. Our hope is that we get this book into your hands before you have a credit problem, or a debt problem. We think it can help you begin your business capitalization research in a proactive and responsible manner, and consider your best options for accessing capital for land purchase. This book cannot claim to be comprehensive, and though it’s a start, in all likelihood you have at least a few dozen hours of unglamorous research and paperwork in your future. Consider this a primer on ways to approach finance for your farm, and an invitation to do more research on your own time once you have an

idea of what trajectory makes sense for your business. Congratulations on making it this far in your agricultural career, for being serious and thoughtful and doing your homework. We wish you success, and if you want it, hope that you find secure, successful tenure on the land that you farm and steward.

http://www.thegreenhorns.net/wp-content/files_mf/1397167611affordingbookFINAL.pdf

Taxes (Publications: Taxation and Livestock Production in New Mexico)

Livestock production in New Mexico is certainly not an easy proposition from either a financial or a production perspective. Many factors, including climatic conditions, price cycles, governmental policy and input costs, produce fluctuations in financial performance annually. The certainty of death and the opportunity to pay taxes are the only two assurances found in ranching today. Progressive tax management can facilitate successful management and reduce the overall stress associated with livestock management. This paper's goal is to provide a basic understanding of the tax liability of a typical ranching unit in New Mexico for the 2006 tax year.

http://aces.nmsu.edu/pubs/_circulars/CR-635.pdf

What is the land worth?

(Publications: The Market Value of Ranches and Grazing Permits in New Mexico, 1996 to 2010)

The objectives of this study were to describe recent trends in the market value of New Mexico ranches and grazing permits, and to explore the key factors that influence the value of New Mexico ranches using a hedonic pricing model. The study updates a long history of New Mexico ranch value studies. These earlier studies provided hedonic models that could be used to estimate the value of particular ranches of interest (Torell et al., 2000; Torell et al., 2003), and this study updates the RANVAL model (Torell, 2011). The hedonic regression models were estimated from statistical analyses of ranch sales data provided by Farm Credit Services (FCS) of New Mexico. The model was used to estimate the trend in value for ranches in different areas of the state and with differing amounts of leased public and state trust land included. We first review the history of ranch value studies done in New Mexico and in other states and review what is known about the changing motives for ranch purchase. The data and hedonic models for this most recent analysis are then described.

<http://aces.nmsu.edu/pubs/research/economics/RR779.pdf>

TESTING AND AMENDING SOIL

It is vital to get an accurate, comprehensive portrait of the type and quality of the soil you will be using. Soil that is too acidic or sandy may work against you depending on what you want to grow. All farm operations require some sort of soil amendment, whether it is cover crop, conventional fertilizer or organic fish emulsion, building and maintaining the health and integrity of your soils is key to sustained production.

Test Your Garden Soil

Soil tests provide a scientific basis for regulating available plant nutrients. Recommendations on the kinds and amounts of fertilizer to apply and soil management practices are based on test results. Tests on a sample that does not accurately represent your garden or field's soil are likely to be misleading. This should be done well before purchasing any land, as the soil may be completely unsuited to what you want to grow.

http://aces.nmsu.edu/pubs/_a/A114.pdf

Calculating Fertilizer Costs

The guaranteed analysis of a fertilizer includes the percentages of nitrogen, phosphorus, potassium, and other plant nutrients present in quantities large enough to conform to state law. Guaranteed analysis must be given for every fertilizer material sold in New Mexico. The cost per pound of nitrogen (N), phosphorus (as P₂O₅), or potassium (as K₂O) is calculated using the total cost and the nutrient percentage in the fertilizer. Cost per pound of nutrient should be the major criterion in determining which fertilizer source to use.

http://aces.nmsu.edu/pubs/_a/A133.pdf

Calculating Fertilizer Costs (Organic)

Nick Andrews and Dan Sullivan of Oregon State University developed the OSU Organic Fertilizer and Cover Crop calculator to help farms estimate nitrogen mineralization from organic fertilizers and cover crops. The calculator is available at <http://smallfarms.oregonstate.edu/calculator> and an eOrganic webinar about it can be found at

<http://www.extension.org/pages/26919/estimating-plant-available-nitrogen-contribution-from-cover-crops-webinar>.

Selecting Fertilizers in New Mexico

All soils should be tested for available plant nutrients before adding fertilizer. Be sure to follow New Mexico State University (NMSU) Extension Guide A-109, Test Determine Soil Needs, when sampling to assure an accurate representation of your soil conditions. A fertilizer is any organic or inorganic material (or combination) that is added to the soil to supply sufficient amounts of one or more elements essential to the growth of plants. A profitable harvest will depend upon choosing how, when, where and what kind of fertilizer to apply.

[Here](#) is a basic guide for organic production, and [here](#) is another.

http://aces.nmsu.edu/pubs/_a/A134.pdf

Soil Analysis: A Key to Soil Nutrient Management

High yields of top-quality crops require an abundant supply of 16 essential nutrient elements. In addition to providing a place for crops to grow, soil is the source for most of the essential nutrients required by the crop. Our soil resource can be compared to a bank where continued withdrawal without repayment cannot continue indefinitely. As nutrients are removed by one crop and not replaced for subsequent crop production, yields will decrease accordingly. Accurate accounting of nutrient removal and replacement, crop production statistics, and soil analysis results will help the producer manage fertilizer applications.

http://aces.nmsu.edu/pubs/_a/A137.pdf

Appropriate Analyses for New Mexico Soils

Soil testing helps us understand the soil environment in which our plants must survive. A complete understanding of the soil would include its physical, chemical, and biological properties. Physical properties relevant to plant production include soil texture, permeability, compaction, and water-holding capacity. Chemical properties include soil pH, salinity, and plant nutrients. Soil biology determines how efficiently nutrients are released from organic matter, how well organic matter is decomposed, and a host of other properties conducive to plant growth. Management practices affect all three of these categories. Soil testing provides a “snapshot” of what conditions were like at the time of sampling, and this allows farmers and homeowners to plan their management

practices for the coming growing season. Common questions like “How much manure should I add?” or “What fertilizer should I use this year?” or “Do I need to lower my soil pH?” can be answered with a soil test. It is most common to focus on the chemical and physical properties of soil, but the biological aspects are gaining more attention. Several tests have been developed to assess some of these properties. The USDA NRCS’s Soil Quality Assessment webpage (<http://soils.usda.gov/SQI/assessment/assessment.html>) offers some insight into measuring certain biological properties. The focus of this publication is to provide guidance for people interested in knowing more about their New Mexico soil from a chemical and physical perspective.

http://aces.nmsu.edu/pubs/_a/A146.pdf

Understanding Soil Health for Production Agriculture in New Mexico

Soil health is the capacity of the soil to function effectively and provide ecosystem services on a sustainable basis (Doran and Parkin, 1994). An important ecosystem service that the soil provides is to support crop production, upon which humans and many animals depend for subsistence. A healthy soil will be able to support crop production on a sustained basis and be less prone to erosion. Since soil is such an important component of the natural ecosystem, careful management of the soil is essential to sustain its utility. Conventional commercial farming depends heavily on the careful management of soil nutrients to promote adequate crop yields of food, feed, and fiber. This has resulted in the development of precise nutrient analytical methods with accompanying recommendations to address nutrient deficiencies in different soils that are used for farming. While this strategy has improved productivity over a long period of time, scientists are now finding that managing soil for nutrients alone may not lead to sustainable crop production in the long term. Other aspects of the soil, including aggregate stability, infiltration rate, salinity, acidity, and mineralization potential, need to be addressed to attain the goal of sustainable crop production (Idowu et al., 2008).

http://aces.nmsu.edu/pubs/_a/A148.pdf

Interpreting Soil Tests: Unlock the Secrets of Your Soil

A soil test is an important management tool for developing an efficient soil fertility program, as well as monitoring a field for potential soil and water management problems. A soil test provides basic information on the nutrient supplying capacity of the soil. However, a test is not reliable if the soil sample is taken incorrectly or improperly handled after collection. Please refer to NMSU Extension Guide A-114, Test Your Garden Soil (http://aces.nmsu.edu/pubs/_a/A114.pdf), for information on how to properly sample soil. County Extension agents (<http://aces.nmsu.edu/county/>) can assist you with soil sample collection, submission, and interpretation of test results. Because analytical techniques vary among laboratories, the values

reported may vary from lab to lab. The numbers used by each lab have specific meanings for the lab and for the region in which the lab is located. The interpretations discussed here are for those methods reported in NMSU Extension Guide A-146, *Appropriate Analyses for New Mexico Soils* (<http://aces.nmsu.edu/pubs/a/A146.pdf>), as well as other tests that might be requested.

Appropriate analyses are summarized in this publication, and the interpretation is presented for New Mexico soils.

<http://aces.nmsu.edu/pubs/circulars/CR676.pdf>

Determining Amounts of Fertilizer for Small Areas

Fertilizers can promote vigorous growth of plants and good production. However, fertilizing will not correct problems with pH, salinity, or sodium in soils. Successful gardening begins with soil testing to get the most out of your dollar for fertilizer. Soil testing can tell you what to do before fertilizing in order to have a successful garden (such as salinity control or managing sodium). Prescription fertilizer recommendations can be made for your specific conditions if your soil is tested.

Timing fertilizer applications will be important once a recommended fertilizer rate is determined from the soil test. Plants vary in their requirements, and soils can contain different amounts of plant-available nutrients based on their history. Fertilizer packaging is required by law to state clearly the percentage nitrogen (N), phosphorus (P_2O_5), and potash (K_2O) by weight. For example, if a container or package reads "16-4-8", this means that for every hundred pounds of this fertilizer there would be 16 pounds of nitrogen, 4 pounds of P_2O_5 and 8 pounds of K_2O . The rest of the weight, all 72 pounds worth, is a carrier of the N, P_2O_5 , or K_2O . For example, K_2O is often present as potassium chloride (KCl) or potassium sulfate (K_2SO_4). The chloride or sulfate helps carry the nutrient of interest, in this case, potassium (K).

NMSU soil test interpretations report fertilizer application rates on a per-acre basis, pounds per 1,000 square feet, or the pounds needed for the size of the garden or lawn specified on the form submitted with the sample. Other labs may provide recommendations in pounds of fertilizer per acre. Tables 1 through 6 can help estimate how much material is needed for those managing small areas.

<http://aces.nmsu.edu/pubs/h/H119/>

Home and Market Garden Fertilization

Vegetable gardening has become so popular in recent years that about half the nation's homeowners now grow some vegetables. In particular, New Mexico has experienced a tremendous upsurge in vegetable gardening. Success in gardening depends much upon soil

fertility. If soil lacks fertility, gardeners must add plant nutrients in the form of fertilizer. This guide will help gardeners select and use fertilizers to obtain high yields of good quality vegetables.

http://aces.nmsu.edu/pubs/_h/H120.pdf

Backyard Composting

Yard waste makes up 20 to 30% of the solid waste of most municipalities throughout the United States, while food waste makes up another 8 to 9%. The cost of collecting, hauling and handling yard waste is often a large part of the budget associated with many municipal solid waste management programs, averaging 20% of the budget and increasing to as much as 50% when grass clippings and leaves are handled. Yard and food wastes are also major factors in the production of methane gas and acid-liquid drainage in landfills. Incinerating yard wastes is a major source of air pollution. Although municipal composting is an environmentally preferable alternative for handling yard and food wastes, processing these wastes at the source reduces the major costs of collecting and has a positive effect on the environment. Backyard composting is one of the easiest ways to process yard wastes at the source.

http://aces.nmsu.edu/pubs/_h/H110.pdf

COMMON PROBLEMS WITH FARMLAND IN SOUTHWEST NEW MEXICO

Agronomic Principles to Help with Farming During Drought Periods

Drought is defined as “a period of abnormally dry weather, sufficiently prolonged for the lack of water to cause serious hydrologic imbalance in the affected area” (Huschke, 1959, p. 180). Agriculturally, this means that the amount of water available can no longer meet the needs of the crops that are being grown. Without enough water, there will be reduced yield or even total yield loss. Water allocations and usage will continue to be important issues that will likely hinder agricultural production in many regions of the Southwest in the short- and long-term future. In regions of New Mexico that depend solely upon underground water for irrigation (e.g., eastern plains), water resources are declining at an alarming rate and well capacity is becoming more and more restricted and limiting for crop production. Drought situations can be made worse by high temperatures like those experienced during the 2011 growing season. During 2011, New Mexico experienced an unusual number of days with high temperatures and no rain. High temperatures will lead to high amounts of evapotranspiration, requiring the need for more irrigation for crop use. If enough moisture is not available during such hot days, the crop becomes more stressed, and this can lead to severe yield reductions. Incidences of drought have become

more recurrent in the Southwest over the past decades. Therefore, farmers across New Mexico need to be prepared to effectively cope with drought in order to remain productive and profitable. This publication offers some suggestions that can help farmers develop strategies to cope with drought.

http://aces.nmsu.edu/pubs/_a/A147.pdf

Defining Drought on New Mexico Rangelands

Drought is a frequent concern and challenge for people living in the Southwest, particularly for agricultural producers who rely on natural resources for their livelihoods. In relation to our food supply, it remains the one “unconquered ill” (H.E. Landsberg forward in Palmer, 1965). It may be argued that drought has a greater economic impact on humans than all other natural phenomena, including wildfires, tornadoes, and hurricanes. Drought, and its influence on the availability of rangeland forage and water, have shaped the livestock industry in the Southwest since the late 1500s (Schickedanz, 1980). It has shaped how New Mexicans rely on the land and what they produce from it.

http://aces.nmsu.edu/pubs/_b/B825.pdf

Principles of Cover Cropping for Arid and Semi-Arid Farming Systems

Cover crops are crops grown in between cash crop cycles, intercropped with cash crops, or planted in the absence of a normal crop (Reeves, 1994). They are grown to protect the land from soil erosion and loss of nutrients (Reeves, 1994) and to add organic matter to the soil, which can lead to increased soil microbial populations and diversity (Drinkwater et al., 1995). Cover cropping is an important component of sustainable agricultural systems, because it helps build soil health, and makes the soil more resilient to drought and other extreme environmental factors (Doran and Zeiss, 2000). This publication summarizes cover crop options along with benefits and challenges to their adoption in arid and semi-arid environments, including New Mexico.

http://aces.nmsu.edu/pubs/_a/A150.pdf

Juniper Control: Individual Plant Treatments

Juniper (cedar) occurs throughout New Mexico, occupying 23 million acres. Five species are common: one-seed juniper (*Juniperus monosperma*), Utah juniper (*J. osteosperma*), Rocky Mountain juniper (*J. scopulorum*), alligator juniper (*J. deppeana*), and redberry juniper (*J. pinchotii*). Juniper

grows in association with piñon pine (*Pinus edulis*, *P. monophylla*, and *P. cembroides*), but also grows in pure stands. Juniper is dominant at lower elevations, and at higher elevations is found in mixed stands with piñon. Many wildlife species rely heavily on juniper berries. Juniper control efforts will not produce long-lasting results without a commitment to sound grazing management. Juniper control will not compensate for mismanagement. Under improper management, juniper or other undesirable vegetation will return to dominate the site. When selecting a juniper control method, consider the presence of other undesirable plants. Removal of one species can result in the rapid increase of another. As a result, soil moisture does not become available for desirable species. Follow-up treatments on other undesirable species may be necessary after juniper control.

http://aces.nmsu.edu/pubs/_b/B817.pdf

Mesquite Control: Aerial Application

Honey mesquite (*Prosopis glandulosa* Torr.) is a shrub or small tree 3 to 12 feet tall. Mesquite has always been a part of the plant community in New Mexico, but historically mesquite was confined primarily to watercourses and other moist sites. The introduction of domestic livestock, increased control of wildfire, and droughts all gave woody plants a competitive advantage and resulted in changes in rangeland plant composition.

Efforts to control mesquite will not produce lasting results without a commitment to sound grazing management. If overgrazing occurs, mesquite or other undesirable vegetation will return to dominate the site. When selecting a mesquite control method, consider the presence of other undesirable plants. Removal of one species can result in the rapid increase of another. As a result, soil moisture does not become available for desirable species. Follow-up treatments on the other undesirable plants may be necessary after mesquite control.

http://aces.nmsu.edu/pubs/_b/B819.pdf

Mesquite Control: Individual Treatments

Honey mesquite (*Prosopis glandulosa* Torr.) is a shrub or small tree 3 to 12 feet tall. Mesquite has always been a part of the plant community in New Mexico, but was historically confined primarily to water courses and other moist sites. The introduction of domestic livestock, increased control of wildfire, and droughts all gave woody plants a competitive advantage and resulted in changes in rangeland plant composition. Efforts to control mesquite will not produce lasting results without a commitment to sound grazing management. If overgrazing occurs, mesquite or other undesirable vegetation will return to dominate the site. When selecting a mesquite control method, consider the presence of other undesirable plants. Removal of one species can result in the rapid increase

of another. As a result, soil moisture does not become available for desirable species. Follow-up treatments on the other undesirable plants may be necessary after mesquite control.

http://aces.nmsu.edu/pubs/_b/B822.pdf

Defining Drought on New Mexico Rangelands

Drought is a frequent concern and challenge for people living in the Southwest, particularly for agricultural producers who rely on natural resources for their livelihoods. In relation to our food supply, it remains the one “unconquered ill” (H.E. Landsberg forward in Palmer, 1965). It may be argued that drought has a greater economic impact on humans than all other natural phenomena, including wildfires, tornadoes and hurricanes. Drought, and its influence on the availability of rangeland forage, and water have shaped the livestock industry in the Southwest since the late 1500s (Schickedanz, 1980). It has shaped how New Mexicans rely on the land and what they produce from it.

http://aces.nmsu.edu/pubs/_b/B825.pdf

Considerations for Prescribed Burning

Grasslands evolved under the influence of fire. In pristine times, natural periodic prairie burns resulted in fire-modified vegetation types dominated by grasses. Fire is considered the primary agent that maintained grasslands before the middle 1800s. As the fire incidence began to decline in the mid-1800s, the brush problem began to increase. A reduction in fires, along with fencing, periodic droughts, overgrazing and increased cattle numbers, is considered the cause of the increase in brush density and stature. These factors allowed woody plants to spread from draws and waterways to the uplands.

In the past two decades, however, man has rediscovered fire and its benefits—particularly the benefit of prescribed burning. There are several reasons for the resurgence of fire. These include the rising cost of chemical and mechanical brush control alternatives; advantages of fire in controlling various pests; realization that fires can benefit wildlife; and better overall understanding of the benefits, control and use of fire in the ecosystem.

http://aces.nmsu.edu/pubs/_circulars/CR522/

Chemical Weed and Brush Control for New Mexico Rangelands

Noxious woody and weedy plants inhabit much of New Mexico's rangelands. Dense stands of brush and weeds use vast quantities of water, reduce forage production and contribute to erosion. If rangelands are to reach their productive potential, noxious plants need to be managed effectively. Herbicides can be effective, economical and efficient methods for controlling brush and weeds and improving and maintaining rangelands. The circular lists current suggestions for herbicides to control woody and herbaceous weeds on rangeland. Some herbicides provide a high degree of control of certain species and a reduced degree of control of other species. However, seldom is a species eradicated. When developing a woody and herbaceous weed management program, consider all possible rangeland uses. Many woody plants and forbs are valuable sources of food and cover for wildlife and can also be important to livestock operations. A woody and herbaceous weed management program should use control methods that provide optimum benefits to both livestock and wildlife.

http://aces.nmsu.edu/pubs/_circulars/CR597

Integrated Weed Management in Irrigated Permanent Grass Pastures and Hayfields in New Mexico

Weeds can reduce the quality and stand life of desirable plants in pastures and hayfields. Certain weed species can also be poisonous to livestock. Therefore, weed management is an imperative component of pasture management. Well-designed weed management begins with site preparation since, after planting the desired pasture species, weed control options can be limited depending on the species that are planted. Good pasture management throughout the life of the pasture is critical for the prevention and control of weed infestations.

Unless proper weed management has been employed during site preparation, weed problems during establishment or in established pastures are likely the result of poor management of the pasture species. Problems can result from forage species selection, fertilization, irrigation, and harvest or grazing methods. Well-managed pastures require fewer direct actions to manage weeds because healthy, well-established forage plants are more likely to prevent weed invasions. In some situations, however, herbicides are needed for weed control despite a producer's best pasture management efforts. In those situations, the quality of pastures can be substantially improved with a well-planned herbicide program. Therefore, weed management in permanent grass pastures requires a combination of cultural, mechanical, biological, and chemical tools that begins with site preparation and continues throughout the life of the pasture.

http://aces.nmsu.edu/pubs/_a/A340/welcome.html

Planning Your Agricultural Business

Business planning is an essential part of creating a successful agricultural operation. Agriculture is no different than any other business entity. Agriculture is a volatile business venture that is highly dependent on the market. If no one is buying what you are selling you are out of business quick. The good part about agriculture is that people must eat to survive. Operating a business that has been carefully planned out to receive optimum profit is essential. Profit can be a word that is not used frequently in agriculture as it is an extremely unstable type of business that can be wiped out by things that you cannot control such as natural disasters.

Understanding the basics of business is essential in operating a successful agricultural operation. Budgeting and economic planning are tremendously important when considering an agricultural business. Understanding how the markets work and how to make money will aid in your success. Having a solid business plan will also help you in obtaining loans that will be needed to get your business started.

The single most important thing that banks want to know is if they will get the money they loan you plus the interest back? In your business plan, banks want to know how you will pay the money back. They will evaluate your history of paying off debts and your credit score. These are all very good indicators of whether you are a good candidate to give a loan to. They also want to know what they can get from you if you do not pay back the loan to recover their losses associated with that loan.

Visiting with the New Mexico Small Business Development Center is a great way to get started putting a plan together and getting your business started. Another way to get off to a good start is by educating yourself as much as you can by attending conferences, classes, workshops and seminars related to your business that can give you contact with professionals that can offer advice and knowledge that you otherwise may not have gotten. Enroll in classes at a research institution such as NMSU that are aimed at helping you understand the different aspects of your agricultural business better.

Knowing what crop(s) you will be producing is going to be a vital part of your business plan. This is also a vital piece of the puzzle when applying for loans. Will you be producing livestock, dairy, forage fruit or vegetable crops? Can you viably produce that crop where you are and make money with it? This is what the bank wants to know when it comes to your agriculture business.

Also, how will you be producing this crop? Organically? Conventionally? When planning your business, it is important to understand the many ways that agriculture products can be produced, packaged and sold, and the certifications required for doing so. It's also worth planning out how you will manage the crop. Will you be hiring labor to help you? If so, understanding the issues with compliance in hiring farm labor is a major part of your business plan.

Getting a business plan started and tailoring your business can seem cumbersome at first but it will ultimately be the deciding factors as to whether your business is successful or not. Don't be afraid to get started, going through the process will help you to see things that may need to be re-evaluated and get you started in the right direction rather than learning from mistakes that don't pencil out later.

BUSINESS PLANNING RESOURCES

There are many different types of business plan templates available online. It is important to select one that will cover all aspects of financing and running your farm business. While the idea of spending a considerable amount of time in front of a computer drafting a business document may seem far removed from a farm lifestyle, it is often the difference between bankruptcy and solvency. A good plan will also take a lot of the uncertainties out of running your business.

AGPlan

AGPlan is the service we would recommend using because was designed specifically for agricultural businesses. AGPlan is a free online service offered by the University of Minnesota. The service allows you to draft a business plan section by section and access example plans to guide you.

<https://agplan.umn.edu/>

Cornell Template

This is a more minimal template that covers the basics. For those who feel threatened by creating such a large document, this would be a good place to start.

<http://smallfarms.cornell.edu/plan-your-farm/worksheets/farm-start-up-plan/>

Producing a Business Plan for Value Added Agriculture: Deborah Streeter

A comprehensive guide for starting a value added agriculture business, though it is aimed at value added businesses it contains information that is relevant to all farm operations.

<https://blogs.cornell.edu/smallfarmsprogram/files/2017/04/Producing-a-Business-Plan-for-Value-Added-Ag-17mn8mk-11dp6sk.pdf>

First Pioneer Farm Credit

These are business planning templates and guides from an organization that helps develop agricultural businesses. They range from simple to complex.

- [Type A Business Plan and Type A Instructional Guide](#)
- [Type B Business Plan and Type B Instructional Guide](#)
- [Type C Business Plan and Type C Instructional Guide](#)

CHOOSING WHICH CROPS TO GROW

Choosing the type of operation you wish to develop is a mixture of what you want to be doing and what will be profitable. Any type of agricultural crop can be grown profitably, however some crops are more difficult than others. Combining experience, proper planning and the right location is key to setting yourself up for success.

Comida Buena is here to help with the marketing and sales aspect of your growing operation. One of the main challenges of being in remote Southwest New Mexico is our distance from major markets. While there is no substitution for hands on experience, this section will help provide resources to help you determine if certain crops are right for you.

When considering what to grow make sure to consider:

1) What you like to grow

While farming is an economic venture, lifestyle plays a big role in many people decision to begin a farm. Choose something you have grown before and find enjoyable. Your passion for the crop will translate into a better product.

2) What the land can support

After determining the soil quality, water capacities and growing zone make a list of all the crops that can be supported on the land. Growing cool weather crops in the heat of the desert may require additional layers of planning and infrastructure. Work with the land, rather than against it.

3) Distance to market

If you are many miles out from a market and lack proper cooling storage, then growing berries or lettuce may not be right for you. Do you plan to go to market once a week, once a month?

4) What sells

While growing pygmy Peruvian spider lettuce is unique and fun, there is likely not much of a market for it. It can be difficult to determine what will sell. Talk to your potential markets, look at what they serve or sell to get an idea. In addition, talk to us here at Comida Buena. We keep an up-to-date handle on what products are likely to sell. While outside of having a growing contract, it is never 100% guaranteed you will sell all of your products, getting to know your buyers' preferences and time frames can make a big difference.

5) Overhead Cost and Return Time

Some products, like annual vegetables require relatively little overhead compared to things like beef, orchards and poultry. Additionally, planting a pecan orchard can take many years to return profits.

HOW WILL YOU GROW IT?

To Be or Not to Be: Should I Go Organic?

Most crops grown in our nation are grown by conventional methods, that is, using fertilizers and pesticides that contain inorganic chemicals. When deciding to start an agricultural operation one must decide what methods of production they will use. Being certified organic is different from simply growing using organic or natural practices. Obtaining an organic certification is a lengthy, involved and somewhat costly undertaking.

There is a difference between being a certified organic farmer and a farmer that uses natural and organic practices.

Certified Organic Production

Choosing to go organic requires a commitment to biodiversity, soil building and using organically derived fertilizers and pesticides. In general, organic operations demonstrate:

- Avoidance of synthetic chemical inputs (e.g. fertilizer, pesticides, antibiotics, food additives), irradiation, and the use of sewage sludge;^[1]
- Avoidance of genetically modified seed;
- Use of farmland that has been free from prohibited chemical inputs for a number of years (often, three or more);
- For livestock, adhering to specific requirements for feed, housing, and breeding;
- Keeping detailed written production and sales records (audit trail);
- Maintaining strict physical separation of organic products from non-certified products;
- Undergoing periodic on-site inspections.

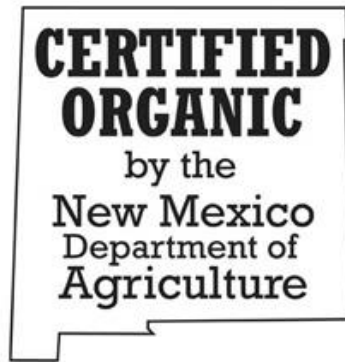
While organic or natural production requires a greater degree of care, oversight, paperwork and attention than conventional production, the results can be well worth the efforts.

For local foods, which Comida Buena focuses on, organic products or products that adhere to such practices without being certified are easier to sell at many of our larger markets and command a premium price.

Becoming certified organic is a big decision that often requires several years to complete the process and additional audits on a regular basis thereafter. For many growers, the additional price the command from the certification makes it a smart business decision.

Accredited Organic Certifiers in New Mexico

There are nearly a dozen accredited organic certifiers operating in New Mexico. Your choice will likely depend on a few things: cost, reputation and personal preference. Here is a list of a few of your choices



New Mexico Department of Agriculture

The local choice, NMDA has many years of experience working with local growers and their cost are often cheaper than nationally focused organizations due to a cost sharing program sponsorship by the state. Application fee is around \$225 for a small grower. Comida Buena recommends making NMDA your first option.

Producers, processors, and handlers whose annual organic gross sales are *less than \$1 million* are charged three fourths of one percent (3/4 of 1 percent) of the annual gross sales of organically produced agricultural products.

<http://www.nmda.nmsu.edu/marketing/organic-program/>



Oregon Tilth

A well respected national outfit. Oregon Tilth will be more expensive than NMDA, but they offer discounts for veteran farmers, expedited service and additional certification if needed.

<https://tilth.org/certification/>



Quality Assurance International

QAI has been certifying organic farms perhaps the longest of all the other certifiers.

<http://www.qai-inc.com/certification-services/organic/>

Organic System Plans: Market Farms & Greenhouses

Here is an excellent sample organic system plan. Provides explanations and examples for the type of information certifiers are looking for on an application and why it is important.

<https://attra.ncat.org/attra-pub/summaries/summary.php?pub=168>

Guide for Organic Crop Producers (Nov 2012) National Center for Appropriate Technology (NCAT) Agriculture Specialist

This guidance consists of 15 chapters that touch on all aspects of organic crop production with related questions for producers to consider as well as resources that align with the subject matter. Topics range from the certification process, crop rotation and post-harvest and labeling and many more.

<https://www.ams.usda.gov/sites/default/files/media/GuideForOrganicCropProducers.pdf>

Non Certified Organic Production

Often called sustainable agriculture, non-certified organic production is production that generally adheres to organic standards but does not seek to obtain certification. This method is very suitable for small farms and farms whose customers does not require the certifications.

The term "Organic" is heavily regulated, and any farm that markets their product as organic and sells more than \$5,000/year in products, but is not certified is in violation of the National Organic Standard. Other terms such as: "sustainable", "beyond organic" and "natural" are not regulated

and can be used. Many local buyers feel comfortable buying from reputable growers locally if they are not certified.

Additionally, there are many growers who believe that the organic standards do not go far enough and review the OMRI (Organic Materials Review Institute) approved substances can solidify this view as many of the approved substances are very toxic.

The Kerr Center offers a great guide on how to navigate the economic and legal challenges of operating on non-certified organic operation.

<http://kerrcenter.com/wp-content/uploads/2014/10/small-scale-organics.pdf>

Conventional Production

On the other side of the debate, many conventional producers fail to see the value in organic production over conventional production. Indeed, most producers we encounter on either side of the debate have deeply held, longstanding beliefs about their choice of production. While we will not go into all of the different variables at play, we have noticed a few trends with local foods.

Either way, a farmer should be aware of both sides of the debate and decide which method he or she is comfortable.

While conventional production has far less oversight and contributes a great deal to soil degradation, pollution run-off and farm worker illness, it can be done safely and correctly gains many conventional farmers praise:

- 1) **Increased yields** - powerful fertilizer and enhanced pest management means greater yields per acre and often more consistent rates than organic production.
- 2) **Consistency** - using GMO seeds, pesticides, herbicides and other fertilizers can inoculate a crop against many natural crop threats. This not only means better harvest for the grower, but conventional production is responsible for Americas abundant and cheap food supply, which has helped feed billions around the world.

However, along with these positives come a number of problems associate from large, conventional farms. This information is taken from www.leafcertified.org

- 1) Decline in soil productivity can be due to wind and water erosion of exposed topsoil; soil compaction; loss of soil organic matter, water holding capacity, and biological activity; and salinization of soils and irrigation water in irrigated farming areas. Desertification due to overgrazing is a growing problem, especially in parts of Africa.

- 2) Agriculture is the largest single non-point source of water pollutants including sediments, salts, fertilizers (nitrates and phosphorus), pesticides, and manures. Pesticides from every chemical class have been detected in groundwater and are commonly found in groundwater beneath agricultural areas; they are widespread in the nation's surface waters. Eutrophication and "dead zones" due to nutrient runoff affect many rivers, lakes, and oceans. Reduced water quality impacts agricultural production, drinking water supplies, and fishery production.
- 3) Water scarcity in many places is due to overuse of surface and ground water for irrigation with little concern for the natural cycle that maintains stable water availability.
- 4) Other environmental ills include over 400 insects and mite pests and more than 70 fungal pathogens that have become resistant to one or more pesticides; stresses on pollinator and other beneficial species through pesticide use; loss of wetlands and wildlife habitat; and reduced genetic diversity due to reliance on genetic uniformity in most crops and livestock breeds.
- 5) Agriculture's link to global climate change is just beginning to be appreciated. Destruction of tropical forests and other native vegetation for agricultural production has a role in elevated levels of carbon dioxide and other greenhouse gases. Recent studies have found that soils may be sources or sinks for greenhouse gases.
http://www.nal.usda.gov/afsic/AFSIC_pubs/srb9902.htm#toc3

Indeed, Comida Buena recommends either organic or sustainable farming for locally based markets. The trend is greatly rising and most of our market prefer it. Moreover, small farms can greatly benefit from increased prices that organics can command.

If going conventional is how you want to farm, Comida Buena recommends checking with your local extension office for more details.

PLANNING GUIDE

PRIMER for Selecting New Enterprises for Your Farm - University of Kentucky

Primer stands for Profitability, Resources, Information, Marketing, Enthusiasm and Risk. It includes a set of worksheets to help the farmer evaluate different farm enterprises. This is not a substitute for a business plan, but a worksheet that asks the right questions to get the farmer thinking about what they are likely to succeed with.

<http://www.uky.edu/Ag/AgEcon/pubs/ext2000-13.pdf>

Evaluating a Farm Enterprise- National Sustainable Agriculture Information Service

This resource functions as a good starting place to help a new or existing farmer decide what first steps to take in deciding what kind of land based farm business to pursue. It walks you through important questions about starting resources and how to make the operation profitable.

<https://attra.ncat.org/attra-pub/summaries/summary.php?pub=277>

VEGETABLE CROPS

Market Gardening in New Mexico

This publication provides general information for growing vegetables in gardens in New Mexico. Use this publication with its companion, Circular 457-B, *Growing Zones, Recommended Crop Varieties, and Planting and Harvesting Information for Home Vegetable Gardens in New Mexico* (<http://aces.nmsu.edu/pubs/circulars/CR457B.pdf>). Circular 457-B includes a map showing New Mexico growing zones, as well as a table providing crop variety recommendations, recommended planting dates, days to harvest, planting instructions and yield information.

http://aces.nmsu.edu/pubs/_circulars/CR457.pdf

Growing Zones, Recommended Crop Varieties, and Planting and Harvesting Information for Home Vegetable Gardens in New Mexico

New Mexico can be divided into three growing zones, which are based on the average number of frost-free days and the average date for the last frost in the spring. Growing periods for individual gardens can vary as much as 20 days from the zone's average. This variance may be due to elevation, site exposure, or air drainage. For example, gardens with northern slope exposures are cooler than those with southern slope exposures. Also, cooler air is heavier than warmer air, so gardens in valleys are more prone to frost than gardens overlooking the valley. Therefore, consider your garden's unique needs as you determine planting dates. This publication provides recommended planting dates for New Mexico's three growing zones.

http://aces.nmsu.edu/pubs/_circulars/CR457B.pdf

Vegetable Variety Recommendations for New Mexico Backyard and Market Gardens

In 2000, a commercial and backyard vegetable variety survey was distributed to various market garden growers, Master Gardeners, seed companies, NMSU Cooperative Extension Service agents and agricultural science center superintendents throughout New Mexico to determine what vegetable varieties they recommend for New Mexico. The results of these surveys were tabulated into frequency tables for each vegetable type. The following is a list of the most popular varieties listed alphabetically.

http://aces.nmsu.edu/pubs/_circulars/CR572.pdf

Growing Chiles in New Mexico

Chiles (*Capsicum annum*) have been grown in New Mexico for at least four centuries. Chile is an important cash crop for farmers, with approximately 8,000 to 10,000 acres harvested annually in New Mexico. Most chiles are grown under contract and sold to processors. Several different and distinct processors operate in New Mexico, depending on the type of chile handled. For example, New Mexican-type green chile is peeled then canned or frozen, and is packed whole or diced. Red chile is usually harvested in the red, ripe, partially dried stage, and is further dehydrated at the processor before finally being packaged as dried whole pods, flakes or powder. Paprika is no-heat (nonpungent) or low-heat red chile that is usually highly pigmented. More than 50% of the paprika crop is processed to produce a red oleoresin colorant through extraction of the colored pigments. Cayenne peppers are a highly pungent type that are picked in the red succulent stage and undergo a salt fermentation at processing plants as the primary step in conversion to hot sauce. Jalapeños are usually pickled and packed whole or sliced, but a small percentage is dehydrated. Chiles for local sale are a relatively small part of total commercial chile acreage, but chile is a good cash crop for small-scale growers. Dried red chiles can be strung on ristras for ornamental and culinary use.

http://aces.nmsu.edu/pubs/_h/H230.pdf

Growing Peppers in New Mexico Gardens

Peppers (*Capsicum sp.*) exhibit a wide variety of shapes, sizes, colors, and tastes. The term “pepper” should not be confused with “black pepper” (*Piper nigrum*) produced from the dried unripe fruit of a vine grown in India and Ceylon. Peppers can generally be classified into two groups: mild- or sweet-tasting fruit (bell, pimento, sweet wax) and fruit with hot or pungent flesh (long green and jalapeño). Pepper pungency is determined by the amount and types of capsaicinoids found in the fruit. These chemicals are produced by glands associated with the placenta in the center of the pod where the seeds are produced. Seeds are not sources of pungency, although they may absorb some of these capsaicinoids when cooked. Environmental factors that can affect pungency include water stress (increases pungency) and cool growing conditions (decreases pungency).

http://aces.nmsu.edu/pubs/_h/H240.pdf

Home and Market Garden Sweet Corn Production

Five hundred years ago, Columbus became one of the first Europeans to set eyes on maize or corn (*Zea mays*), the foundation of most great New World civilizations, including those of the Incas, Mayans, and Aztecs. In 1540, Coronado found pueblo Indians growing corn under irrigation in the American Southwest. The Jamestown Colony learned how to grow corn from the Indians in 1608, and corn helped keep the Pilgrims alive during the winter of 1620. The inability of corn to survive in the wild on its own makes its ancestry a puzzle. Probably the oldest known remains of corn are cobs dating back 7,000 years found in Tehucan, Mexico. Most corn historians feel that a wild grass called Teosinte is probably one of its primary ancestors. An eight-row race called Harinoso de Ocho was known to have been grown in the Southwest about 700 A.D.

http://aces.nmsu.edu/pubs/_h/H232.pdf

Asparagus Production in New Mexico

Asparagus is a perennial crop that can remain productive for 10 to 15 years. The plant is composed of ferns, a crown, and the root system. The fern is a photosynthetically active modified stem. The crown is a series of rhizomes (underground root-like stems) attached to the base of the main plant. New crown buds, from which spears (immature ferns) arise, are formed the previous year. Larger buds generally result in larger spears, while smaller buds yield small spears. Bud size is most influenced by the plant's overall vigor the previous year. Growing conditions that favor healthy fern development and the accumulation of carbohydrates (food reserves) in the crown and root system thus enhance size and vigor of buds and subsequent spears.

Asparagus has an extensive root system composed of fleshy storage roots and finer feeder roots. The mature asparagus plant's root system can reach five to 10 feet deep and 10 to 12 feet wide. Storage roots attached to the crown that store carbohydrates are the diameter of a pencil. Fibrous feeder roots develop from storage roots to accumulate nutrients and absorb moisture.

Asparagus has separate male and female plants. Open-pollinated varieties (non-hybrid varieties allowed to cross-pollinate freely) produce almost equal numbers of male and female plants. The plant's sex has a pronounced effect on the quality and quantity of spears and on crop management practices. Female plants produce larger diameter spears, but lower yields. They also produce seed that can become a serious weed problem for the established stand if allowed to germinate and establish. Lower yields for females are probably caused by energy used for seed production at the expense of carbohydrate accumulation that could be used for subsequent spear production. Male plants have higher yields, live longer, begin to produce earlier in the spring, and do not produce seed.

http://aces.nmsu.edu/pubs/_h/H227/welcome.html

Commercial Pumpkin Production for New Mexico

All species of pumpkin are native to the western hemisphere, with most originating in tropical America. The plants have large leaves and sprawling vines with coiled, modified leaves called tendrils, although these may be absent on some bush varieties. The pumpkin's taproot can grow as deep as five feet. Lateral roots, however, are near the surface and are generally longer and more extensive. Pumpkins are monoecious, which means male and female flowers occur on the same plant. Bees are usually required for effective pollen transfer. Like other cucurbits (plants in the Cucurbitaceae, or gourd, family), the appearance of male and female flowers is affected by day length. The first flowers of the season are usually males, followed later by females that produce the fruit. Pumpkins will cross with other plants of the same species, but will not cross with cucumbers, watermelons, or cantaloupes.

http://aces.nmsu.edu/pubs/_h/H231.pdf

Garlic Production in New Mexico

Cultivated garlic, *Allium sativum*, is a hardy, cool-season perennial, although in some areas of extreme cold it may not survive the winter. A relative of onions, chives, and leeks, garlic produces bulbs with flat, solid leaves. As the garlic bulb matures, it becomes segmented into a cluster of fleshy cloves enclosed in a white or purplish parchment-like outer sheath. Bulbs may contain five to 16 cloves, depending on variety.

http://aces.nmsu.edu/pubs/_h/H234.pdf

New Mexico Onion Varieties

During the months of June and July, New Mexico supplies more than 50% of onions consumed in the United States (USDA 2000). Each year, New Mexico grows 7,000 to 8,000 acres of onions, producing 160,000 to 180,000 tons at a value of \$40 million to \$55 million. The per acre yield averages 920 50-pound sacks per acre. Acreage, per acre yield, total production, and total value for the New Mexico onion crop have increased over the last 20 years. This increase can be attributed in part to improved varieties and improved cultural practices. The continued growth of the New Mexico onion industry requires well-adapted, high yielding, high quality varieties and the proper cultural practices to grow those varieties. The current cultural practices for growing onions in New Mexico have been presented by Corgan and his coworkers (2000). This guide will review the current onion varieties being grown in New Mexico. It will be revised as new varieties are evaluated.

http://aces.nmsu.edu/pubs/_circulars/CR567.pdf

LIVESTOCK (BEEF CATTLE)

Early Weaning Beef Calves

In the Southwest, precipitation is highly variable, and drought situations are common. Cow-calf producers in this region undoubtedly have to manage cattle and pastures through drought periodically. Times of below average precipitation challenge producers to: 1) maintain appropriate stocking rates and levels of forage utilization to avoid overstocking, and 2) maintain acceptable reproductive performance of the cow herd. Early weaning of calves is a management tool that producers can implement to reduce the forage needs of the cow-calf enterprise and improve cow condition and reproductive performance. “Early weaning” is weaning calves anytime earlier than “normal.” Calves in the Southwest are typically weaned when they are six to eight months old; however, calves can be weaned as early as six weeks of age. Early weaning can reduce the forage needed by the cow herd when implemented in response to a forage shortage. The magnitude of the shortage and extent of other management changes required dictates when calves should be weaned in order to balance forage supply and forage demand. When calves are weaned early to improve reproductive performance, they may be weaned just prior to the breeding season to impact reproduction in the breeding season that immediately follows. Or they may be weaned 30 to 90 days earlier than normal in attempt to reduce the postpartum interval during the breeding season that follows six to eight months later.

http://aces.nmsu.edu/pubs/_b/B126.pdf

Beef Cow Efficiency in the Southwest

In general, efficiency is the optimum use of resources toward a sustainable level of production. In beef production, production efficiency can be expressed as the ratio of pounds of calf weaned per unit of forage consumed. However, rainfall and forage production can be highly variable in the Southwest, so cows generally are required to be highly productive on a limited forage supply. Therefore, it is more practical to measure production efficiency as total pounds of calf weaned per pound of female exposed to a bull (or, if scales are not available, simply per female exposed to a bull). This measure combines both the reproductive performance of the cow herd and the growth characteristics of the calf relative to the total weight (or number) of cows in the breeding herd. In the Southwest, pasture forage (that is, payment on purchased or leased land) is generally one of the largest fixed costs. Thus, it is important to match cow type to the forage supply to achieve maximum efficiency in harvesting the forage and converting it to a cash commodity—the calf. Many factors can affect production efficiency in the cow herd. Major factors include cow size, milking ability, and reproductive performance. The purpose of this guide is to address the relationship between these factors and beef production efficiency in the Southwest.

http://aces.nmsu.edu/pubs/_b/B217.pdf

Value Added Calf Programs for New Mexico Livestock Producers

New Mexico livestock producers often evaluate opportunities to market their calves in a more aggressive manner. Due to the thin margin associated with range livestock production throughout New Mexico, any additional revenue generated may be essential. Projections for the 2008 production year estimate that the average return on a per-animal unit in New Mexico will be less than \$13 (Hawkes and Libbin, 2008). This net profit value is not an effective level of sustainability in the industry as costs continue to rise. One way to potentially increase the value of each calf marketed annually is the Value Added Calf Program (VAC), available from Superior Livestock. Other programs are available for livestock producers as well. This program, in addition to providing genetic information for each lot of calves sold, provides information that dictates which of the VAC programs the producers participated in, if they indeed did. The VAC programs are defined as follows:

http://aces.nmsu.edu/pubs/_b/B220.pdf

LIVESTOCK (DAIRY CATTLE)

Management Considerations in Holstein Heifer Development

The purpose of the heifer herd is to provide replacements for cows leaving the herd and to improve genetic progress. First-lactation cows significantly contribute to herd production and profit. A recommended goal for dairy replacement heifers is to calve at 24 months of age with a targeted post calving body weight of 1,250 pounds. A common misconception is that this goal is either unattainable or uneconomical. Feeding heifers for rapid gains costs more per day than feeding for low gains, but development of replacement heifers is an investment in the future. The replacement heifer program should rear heifers to reach a desired age and body weight at a minimum cost.

http://aces.nmsu.edu/pubs/_b/B118.pdf

LIVESTOCK (GOATS)

Housing and Working Facilities

Dairy goats do not require elaborate housing. Old buildings can be remodeled to reduce costs. The essential requirement is a dry building that is well ventilated and free from drafts, especially

in the winter months when the does are kidding. Dairy goats can withstand a considerable amount of dry cold if they are kept free from drafts. Despite their hardiness, however, goats are vulnerable to respiratory infection and hypothermia in wet and drafty conditions. The two principle housing designs for goats are open housing and confinement housing.

http://aces.nmsu.edu/pubs/_d/D703.pdf

FORAGE CROPS

Selecting Alfalfa Varieties for New Mexico

New Mexico alfalfa growers may wonder why some of their recently planted or replanted alfalfa fields have patchy, sparse stands and poor yields despite their best corrective efforts. The answer may be infestation by whitefringed beetle [*Coleoptera, Curculionidae, Naupactus sp.* (formerly *Graphognathus sp.*)]. Roosevelt (2011) and Quay (2009) have recently joined Lea, Chaves, Eddy, and Doña Ana Counties with confirmed infestations of these difficult-to-detect invasive pests. Some of these recorded infestations date back to the 1980s.

http://aces.nmsu.edu/pubs/_circulars/CR659.pdf

Reducing Harvest and Post-Harvest Losses of Alfalfa and Other Hay

Alfalfa and other types of hay are important commodity crops in New Mexico agriculture. Growers strive for high yields of good-quality hay to serve as animal feed. High quality forage is important to sustain and increase productivity of beef and dairy cattle and other livestock, including horses. Monetary value of losses during harvest, storage and feeding of alfalfa hay can be considerable. Yield and leaf losses during mowing and conditioning have been estimated at about 2% and 3%, respectively (Orloff and Mueller, 2008). Yield and leaf losses occurring during other harvest operations, such as raking, baling, pickup and chamber compression, are moisture-dependent and could be as high as 21% (Orloff and Mueller, 2008). A 21% yield loss of alfalfa at a price of \$250/ton corresponds to a loss of over \$50/ton. For effective productivity of alfalfa forage, these losses must be minimized as much as possible since they can affect the amount and price of the marketable end product. Dry matter losses are associated with virtually all alfalfa harvest and storage processes. Post-harvest losses from alfalfa and other hay can be divided into 1) the time period from cutting through baling and 2) the storage period from after baling to feeding, which includes transportation. The objective of this publication is to provide information for reducing losses in hay yield and nutritive value during and after harvest, which will lead to greater profitability.

http://aces.nmsu.edu/pubs/_circulars/CR668.pdf

ORCHARDS AND FRUITS

Tree Pruning Techniques

Pruning is both art and science. Topiary, the art of pruning plants to achieve unusual shapes, and bonsai are good examples of "plant art" requiring special pruning techniques. However, even these unusual plant forms use the same basic scientific principles of pruning. This publication will provide you with the knowledge to begin pruning properly. With this knowledge, you can develop a more artistic pruning style based upon your personal preferences and experience.

Orchard pruning differs from landscape tree pruning. The purpose of pruning in an orchard is to maximize economic return and stimulate early fruit production. Landscape tree pruning is usually intended to maintain a tree's natural form, health and longevity and to minimize hazards that develop from improper pruning and unrestricted branch growth. Pruning to reduce a tree's size is sometimes necessary but often indicates that the wrong tree was selected for the specific landscape site. If size-reduction pruning is needed in landscape trees, follow the proper pruning information provided in this publication to minimize reduction in tree health and prevent development of hazardous branches and poor branch attachment that can result in property damage or personal injury.

http://aces.nmsu.edu/pubs/_h/H156/

Training Young Apple Trees to the Central Leader System

Training is the practice of directing tree growth to a desired shape and form; it is usually performed on young trees. Pruning is the removal of a terminal portion of a branch or a whole branch to adjust or maintain tree structure. Pruning is part of the training process, but training also uses other techniques like clothespins, branch spreaders, tying, etc. Mature trees need to be pruned regularly.

http://aces.nmsu.edu/pubs/_h/H333.pdf

Fruits and Nuts for New Mexico Orchards

Fruit trees normally begin to bear fruit when they are old enough to flower. Nevertheless, the health of the tree, its environment, its fruiting habits, and the cultural practices you use all influence its ability to produce fruit. Adequate pollination is essential to fruit yield. One unfavorable

condition can reduce yield or prevent the tree from bearing any fruit. You can, however, control some of the factors contributing to fruit production.

http://aces.nmsu.edu/pubs/_h/H308.pdf

VINEYARDS

Growing Grapes in NM

Early American settlers found grapes growing wild along the East Coast and assumed that higher quality European varieties would also grow well where the wild grapes grew. But severe winters, disease, and insects caused the imported *Vitis vinifera* to fail. *Vinifera* grapes require mild, dry climates like those in California, Arizona, southern New Mexico, and west Texas. They may be injured by temperatures below 0°F (-18°C), and their susceptibility to certain diseases and insects restricts their culture to dry climates.

http://aces.nmsu.edu/pubs/_circulars/CR483.pdf

Raspberries for the Home Garden

Raspberries are one of the most delicate and delicious small fruits grown in New Mexico. Although red raspberries prefer cooler areas, everbearing varieties have successfully produced fall crops in warmer areas. Black raspberries (blackcaps) prefer moderate winters and may need to be protected in colder areas of the state.

http://aces.nmsu.edu/pubs/_h/H320.pdf

Home Garden Strawberry Production in New Mexico

Strawberries are many people's favorite fruit and are always popular at local farmers' markets and roadside stands. They are one of the most common small fruits grown in home gardens and are an easy fruit to grow. Strawberries are not only attractive and flavorful, but also nutritious. A cup of strawberries has only 55 calories, but will supply more than the daily recommended requirement of vitamin C. A bed of 25 to 50 strawberry plants will produce enough berries for an average-sized family for fresh eating and some preserves.

http://aces.nmsu.edu/pubs/_h/H324.pdf

Blackberry Production in New Mexico

Blackberries (*Rubus spp.*) are grown for their edible fruit, for medicinal purposes and as hedges to keep out intruders. Though more popular in New Mexico as a backyard small-fruit crop, commercial plantings can yield as much as 6,000 pounds per acre under good management. A planting can produce fruit for 15 years or more, but optimum production occurs between the third and eighth years.

http://aces.nmsu.edu/pubs/_h/H325.pdf

Minor Small Fruit Crops for New Mexico Gardens

The majority of small fruit crops—such as grape, raspberry, blackberry and strawberry—are classified as “berry”-bearing plants. For the purposes of this publication, the term “small fruit crop” has been expanded to include some of the bush cherries. Many areas of the United States offer a great variety of small fruit crops for backyard production. Some, like blueberries, are not adapted to the alkaline soils that characterize most New Mexico gardens. For an uncommon small fruit, New Mexico gardeners can try tayberries, currants, gooseberries, elderberries, bush cherries and sea buckthorn (sea berry). Improve your chance of success by planting in heavily composted soils in areas with good water quality (low salt levels).

http://aces.nmsu.edu/pubs/_h/H326.pdf

AQUACULTURE

New Mexico Aquaculture

Aquaculture is a broad term that refers to the breeding, rearing and harvesting of fish, shellfish and plants in all types of aquatic environments, including tanks, ponds, rivers, lakes and the ocean. Aquaculture is used to produce seafood for human consumption, to enhance wild fish and plant stocks for harvest, to help restore threatened or endangered aquatic species and to culture fish for aquariums. Among these, seafood production is of greatest importance for many reasons.

http://aces.nmsu.edu/pubs/_circulars/CR543.pdf

Growing Trout in New Mexico Ponds

People have been raising trout in captivity for more than 150 years in the United States. Initially, trout were reared to replace wild stocks that were declining due to a variety of reasons. Today, trout are reared in captivity to supply stock for public and private lakes, ponds and streams. In

addition, trout are cultured and sold as food items through restaurant and grocery markets. This guide provides prospective aquaculturalists with recommendations for culturing trout in ponds in New Mexico. Specifically, guidelines on site selection, pond size, species selection, stocking and feeding, and harvesting are given. While site-specific issues should be considered on a case-by-case basis, the following recommendations provide a general overview.

http://aces.nmsu.edu/pubs/_1/L108.pdf

B E E S

Honey Bees in New Mexico

Honey bees have been in New Mexico since the 1500s when the earliest Spanish missionaries and settlers imported them along with other livestock. English, French, German and Dutch settlers also brought what we now call European honey bees. In Europe, these honey bees had been selectively bred for hundreds—if not thousands—of years to be relatively docile, productive livestock. Through the years, honey bees were valued not only for honey and wax production, but also, most importantly, for the pollination services they provide. Serious problems resulting from bee stings were rare and primarily related to allergic reactions. However, since 1993 serious stinging incidents have become much more common with the introduction of a subspecies of honey bee that originated in Africa.

http://aces.nmsu.edu/pubs/_1/L110.pdf

Hoop House Construction for New Mexico: 12-ft. x 40-ft. Hoop House

The hoop house, cold frame and high tunnel can be basically the same structure with minor changes to the design. The hoop house gets its name from its shape, although houses can be constructed with straight lines using elbows to get the desired shape for a building. The shape of a hoop house causes water and snow to be shed from its exterior while permitting sunrays to provide heat.

Houses of this category are made with aluminum pipes or plastic PVC pipes as hoops that are covered with a single layer of polymer plastic covering. A second layer may be added for better insulation.

http://aces.nmsu.edu/pubs/_circulars/CR606/

Integrated Pest Management (IPM) for Home Gardeners

Integrated Pest Management (IPM) is an approach to managing pests that seeks to limit or suppress pest populations by using a variety of compatible tactics that minimize potential harmful effects on human health and the environment. Chemical controls (insecticides) are used only as a last resort. The concept of IPM was first developed in the late 1950s to address various issues that had arisen from the overuse of chemical controls for insect pests, including widespread environmental problems and resistance to insecticides (with consequent control failures). While IPM was originally developed in relation to insect problems, the basic approach is equally applicable to pests in the broader sense, such as weeds, nematodes, plant pathogens (i.e., disease causing organisms), and vertebrate pests.

<http://aces.nmsu.edu/ipm/documents/ipm-for-home-gardeners-final.pdf>

Guide to the Biological Control of Some Common Yard and Garden Pest Insects in New Mexico

Sometimes insects, mites or their relatives limit enjoyment of our landscape and garden plants. We are familiar with pests that infest fruit, vegetables, flowers and foliage or make plants wither, change colors, develop spots or streaks or even die. But just as pests damage some plants, those same pests probably have one or more natural enemies that limit their numbers and their damage. “Biological control” of pests involves either natural or human-assisted control of certain pest species by predators, parasites (parasitoids, as defined below) or pathogens. The circular outlines important definitions, concepts and examples of biological control of some common yard and garden pests in New Mexico. Home gardeners should note that biological control is complex, and they should assess the pros and cons of adopting these techniques as part of an overall IPM strategy for their properties.

http://aces.nmsu.edu/pubs/_circulars/CR607.pdf

GMO Crops in New Mexico Agriculture

People have been extensively modifying and improving crops since plants were first domesticated from wild relatives thousands of years ago. Traditionally, genetic traits in crops have been altered through a variety of means, including artificial selection, controlled cross-pollination and hybridization, and mutation breeding. The advent of genetic engineering in the 1970s gave plant breeders an additional tool for introducing specific desirable traits or removing specific undesirable traits from crop plant varieties. By removing or adding genes—sometimes from different, unrelated species—scientists can make targeted changes to plant genomes. Crops developed through genetic engineering are sometimes called transgenic organisms or Genetically Modified Organisms (GMOs).

http://aces.nmsu.edu/pubs/_circulars/CR682.pdf

Vermicomposting

Yard and food waste make up a major component of solid waste in most cities and towns throughout the United States. Although much of this organic waste can be recycled in the backyard using traditional aerobic backyard composting techniques, these techniques are not appropriate for apartment dwellers and are often inconvenient, particularly during bad weather in the winter.

http://aces.nmsu.edu/pubs/_h/H164/welcome.html

Selection and Use of Insecticides for Organic Production

Organic farming and gardening place a strong emphasis on non-chemical methods of insect control, chiefly through measures designed to mimic natural ecosystems. These include growing a diversity of crops, using only plants that are well-adapted to the site, practicing crop rotation, building soil health, and encouraging natural predators and parasitic insects. Many of these tactics are also used by conventional growers practicing integrated pest management (IPM).

Well-established organic farms and gardens often have very few insect problems. However, pest issues can still arise. Along with native pests, new invasive species can pose fresh challenges. Additionally, growers transitioning from conventional systems may experience difficulties in the first few years of organic production. Under these circumstances, they may be forced to consider using a pesticide. There is a common misconception that because organically approved insecticides are derived from natural sources they are safer for non-pest insects. In fact, many of them are toxic to a broad spectrum of insects, including beneficial predators and parasitic species. Only a very few materials are highly selective, i.e., harmful to the pest but relatively safe for beneficials. Furthermore, since the range of chemical controls available to organic growers is much more limited than those available to conventional farmers, it is particularly important to use these products judiciously to prevent or delay the development of insecticide resistance.

http://aces.nmsu.edu/pubs/_h/H168/

Using Insectary Plants to Attract and Sustain Beneficial Insects for Biological Pest Control.

There are many naturally occurring predatory and parasitic insects (and related species) that can help reduce pest populations on farms and in gardens. These biological control agents include various parasitic wasps and flies, minute pirate bugs, hoverflies, green lacewings, ambush bugs, ladybird beetles, crab spiders, and predatory mites. To maximize the impact of these beneficial species, they should be protected from exposure to pesticides by practicing integrated pest management (IPM). They can also be encouraged by growing flowering plants that provide nectar and pollen, since such resources can help sustain them when prey is scarce and can increase their lifespan and level of egg production.

http://aces.nmsu.edu/pubs/_h/H169.pdf

Row Cover Vegetable Production Techniques

Protected agriculture is any technique used to modify a plant's natural environment in order to optimize plant growth (Jensen and Malter, 1995). Such techniques are often used to protect plants from frost to extend the growing season of a crop. Through earlier crop production, growers can capitalize on early markets and higher prices. One of the more popular techniques used by commercial growers to extend the growing season of a crop is the use of row covers. Row covers are generally made of flexible transparent to semitransparent materials and are used to enclose one or more rows of plants in order to enhance crop growth and production by increasing both air and soil temperatures and reducing wind damage (Hochmuth, Kostewicz, and Stall, 2000).

http://aces.nmsu.edu/pubs/_h/H251.pdf

Is Aquaponics Right For You?

There is a growing interest in aquaponics in New Mexico, and elsewhere in the United States, as more people turn to locally grown food produced in an environmentally friendly and sustainable way. Many hobbyists take up aquaponics as an enjoyable way of growing their own food in simple backyard operations. Others pursue aquaponics on the commercial scale as a primary or supplementary source of income. For anyone who has been curious about aquaponics or who is considering taking it up as a hobby or business, the following guide is the first step to learning more on the subject. This guide is not comprehensive, but it will serve as a basic introduction and will help point you to the wealth of readily available information on the subject, including reading material, web resources and classroom and online courses.

http://aces.nmsu.edu/pubs/_h/H170/welcome.html

Greenhouse Vegetable Production

Greenhouse vegetable production has traditionally been located near population centers, primarily in the northeastern United States. Improved transportation and high energy costs have forced the industry south. With light being one of the most important factors in greenhouse vegetable production, the Southwest has become an ideal area for future development of this industry, particularly in the winter months when tomato and cucumber prices are at a premium.

http://aces.nmsu.edu/pubs/_circulars/CR556/

MANAGING THE CROP

How to Collect and Send Plant Specimens for Disease Diagnosis

Successful plant disease diagnosis is a team effort. Proper diagnosis begins with the submission of a good-quality specimen accompanied by accurate and complete information. It is difficult, if not impossible, to determine the cause of death from a single leaf, dried or old specimen, or (especially) a dead plant. Healthy plants from the same area are also helpful to a diagnostician. It is also important to include the margin of the disease (where healthy and diseased tissue come together) in the sample, especially with stem and branch disorders.

http://aces.nmsu.edu/pubs/_h/H158/

Developing and Managing a Certification Program as an Agricultural Marketing Tool

Traditionally, agricultural crops have been considered commodity goods; that is, once crops from multiple farms were combined, they became indistinguishable. Today, however, some producers are exploring the possibility of branding their agricultural products. Branding is a popular marketing technique that allows consumers to identify—and build a demand for—a good based on perceived or real differences that make it “stand out” from the competition. Consumers in the United States are often willing to pay more for a product that contains attributes that may not be available in the generic commodity version of the product. For example, traceability and certification of the product’s origin or quality have become selling points for many foods (“Real California Cheese” and “Certified Angus Beef” marketing campaigns both imply quality and traceability claims).

<http://aces.nmsu.edu/pubs/research/economics/RR780/welcome.html>

Strategies for Livestock Management in Riparian Areas in New Mexico

Riparian areas are the transition zones between aquatic and upland habitats. Their proximity to water in arid states like New Mexico means they are important both ecologically and economically. Riparian areas serve numerous important ecological functions such as filtering sediments and pollutants, slowing the velocity of water during high flow events, recharging groundwater, maintaining the stability of stream banks and reducing erosion, and providing valuable habitat for wildlife. Economically, riparian areas are important to livestock producers not only because they are often associated with sources of water for livestock, but also because the quantity and quality of forage tends to be greater than in adjacent upland areas.

http://aces.nmsu.edu/pubs/_b/B119/

Managing Rangelands and Cattle in Drought-Prone Areas of the Southwest

One of the largest management challenges faced on a ranch in arid regions is balancing between grass supply and demand. Grass supply is influenced by the timing and amount of precipitation during the growing season and the grazing management implemented by the ranch manager. Many ranch managers find themselves worrying more about the weather than about implementing a grazing management plan that will focus on maintaining sustainable grazing resources during both normal and dry conditions. Therefore, this publication will focus on developing a better understanding of the impacts of drought on native rangelands and cattle performance, and how to manage rangelands and cattle during and between droughts in arid regions.

http://aces.nmsu.edu/pubs/_b/B816.pdf

<http://aces.nmsu.edu/pubs/research/horticulture/CTF7.pdf>

Compliance and Safety

The world of agricultural production was recently changed by the passing of the Food Safety Modernization Act (FSMA). This sweeping act will impact just about every producer in the nation, with some exemptions based on size and income.

In general, this act was made to ensure all producers, manufacturers and distributors are practicing proper food safety techniques to prevent spreading contaminated food. Navigating the language of the act is somewhat difficult and many are confused by what exactly they need to be doing and when they need to be doing it by.

Very small farms, those that sell under \$250k/year must comply by December 31, 2019, and *most* farms that sell under \$25k/year are likely to be exempt all together.

However, even if your farm is exempt from having to comply by FSMA rules, practicing food safety is extremely important and obtaining food safety certifications will even be required by some buyers.



FIGURE 2: WATT GLOBAL MEDIA 2017

COMPLIANCE

Good Agricultural Practices: What Growers Should Know

Today's agricultural producers may feel like that rookie umpire. Every day on the farm they have to make judgment calls in response to changes and challenges that they may not have seen or anticipated. In the area of food safety, changes in acceptable on-farm practices are occurring very rapidly. Many new standards have been proposed to alleviate health and safety risks before serious or widespread problems occur. The Good Agricultural Practices (GAPs), summarized at the end of this report, address daily on-farm activities and alert growers to procedures that promote safe handling of produce. While the occurrence of foodborne illnesses resulting from on-farm handling of produce are still relatively rare, a single outbreak where death occurs is a tragedy for the victim and his family. A single outbreak also can devastate a

business and adversely affect an entire produce sector. The information presented in this report will help growers understand the changing environment and health risks inherent in on-farm handling of produce and in other on-farm activities. Careful attention to GAPs will help growers make good calls to ensure the safety of employees and consumers.

<http://aces.nmsu.edu/pubs/research/horticulture/CTF26.pdf>

Organic Good Agriculture Practices

In response to the increase in fruit and vegetable associated food borne illnesses, the goal of this project is to provide educational materials to food producers and educational professionals associated with agriculture in order to reduce microbial risks in fruits and vegetables through good agricultural practices (GAPs) education. Seminars and display presentation have been done throughout the state.

<http://aces.nmsu.edu/ces/foodtech/gap-nm.html>

Guidance for Industry: Standards for the Growing, Harvesting, Packing & Holding of Produce for Human Consumption: What You Need to Know About the FDA Regulation –Small Entity Compliance Guide.

https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/ucm574281.htm?utm_source=PSA+September+2017+Newsletter&utm_campaign=PSA+September+2017+Newsletter&utm_medium=email

Produce Safety Rule Compliance Dates & Timelines

<https://producesafetyalliance.cornell.edu/food-safety-modernization-act/produce-safety-rule-compliance-dates-timeline>

The Intersection of the Food Safety Modernization Act (FSMA) & the National Organic Program (NOP). March 2017

<http://farmtotable.colostate.edu/docs/fsma-paper.pdf>

Key Requirements: Final rule on Produce Safety (fact sheet)

<https://www.fda.gov/downloads/Food/GuidanceRegulation/FSMA/UCM472887.pdf>

Farm Food Safety Plan Writing Resources

<https://producesafetyalliance.cornell.edu/resources/farm-food-safety-plan-writing-resources>

Records Required by the FSMA Produce Safety Rule

<https://producesafetyalliance.cornell.edu/sites/producesafetyalliance.cornell.edu/files/shared/documents/Records-Required-by-the-FSMA-PSR.pdf>

PROTECTING YOUR CROPS AND YOUR BUSINESS

Worker's Compensation

New Mexico state law requires anyone who employs three or more workers to have workers' compensation insurance coverage—unless the employees are household servants, real estate salespeople, farm or ranch laborers. For farm and ranch laborers, however, the exclusion from coverage is job specific. Coverage is required if nonfarm labor is done on a farm. Employers may have to cover some, but not all, of their employees, depending on specific job duties.

<http://aces.nmsu.edu/pubs/research/horticulture/CTF7.pdf>

Farm Labor Employers' Handbook

On May 7, 2002, the New Mexico Chile Task Force sponsored an all-day workshop to provide labor regulation information to farm labor contractors and area farmers. Representatives from state and federal regulatory agencies, including the U.S. Department of Labor (USDOL), the New Mexico Department of Labor, the U.S. Internal Revenue Service, the New Mexico Department of Agriculture, the U.S. Immigration and Naturalization Service (INS) and the Occupational Health and Safety Administration (OSHA), provided a step-by-step review of labor laws, INS requirements, farm worker protection regulations and OSHA regulations.

Agriculture Insurance

Crop insurance is purchased by agricultural producers, including farmers, ranchers, and others to protect themselves against either the loss of their crops due to natural disasters, such as hail, drought and floods, or the loss of revenue due to declines in the price of agricultural commodities.

<https://cropinsuranceinamerica.org/just-the-facts/>

9 Tools to Fight Farm Crime

Once, farm heists had no name. But as rural crime worsened in many states, a category emerged just for agriculture, taking into consideration its unique security issues. Now, if a computer stolen from a California farmer's house is used for farm data, it's not classified as just any burglary; the offense is a rural crime. But though many sheriff departments have added rural crime units, staff is often limited. When prices soar on certain commodities, so do thefts.

<http://modernfarmer.com/2015/01/9-tools-fight-farm-crime/>

Rural Security Planning

There are various approaches that you can take to protect people, property and other assets; and whether you ultimately choose a high-tech electronic system or just locks and lights, you must plan your approach and adopt the procedures necessary to implement it. Study your situation and identify any assets that might be threatened, establish the measures that you feel are adequate to protect those assets (such as installing equipment), and implement your system by training and assigning personnel to manage it. Your strategy and security design should be commensurate with perceived security risks and the assets to be protected.

<https://www.extension.purdue.edu/eden/ruralsecurity/security.html>

How To Keep Your Farm Safe And Secure

Every farmer will understand the difficulty of keeping their land secure. As a rancher, it's not uncommon to own thousands of acres of land. It's very hard to patrol and secure every section and keep trespassers out. More often than not, trespassers have no malicious intent at all. It's easy to stumble onto farmland without realizing it. However, occasionally, thieves or even protestors will find their way onto your property. Here's some good advice to help eliminate this.

<http://agriculturegoods.com/how-to-keep-your-farm-safe-and-secure/>

Integrated Pest Management (IPM) for Home Gardeners

Integrated pest management (IPM) is an approach to managing pests that seeks to limit or suppress pest populations by using a variety of compatible tactics that minimize potential harmful effects on human health and the environment. Chemical controls (insecticides) are used only as a last resort. The concept of IPM was first developed in the late 1950s to address various issues that had arisen from the overuse of chemical controls for insect pests, including widespread environmental problems and resistance to insecticides (with consequent control failures). While IPM

was originally developed in relation to insect problems, the basic approach is equally applicable to pests in the broader sense, such as weeds, nematodes, plant pathogens (i.e., disease causing organisms), and vertebrate pests.

<http://aces.nmsu.edu/ipm/documents/ipm-for-home-gardeners-final.pdf>

PESTS

Guide to the Biological Control of Some Common Yard and Garden Pest Insects in New Mexico

Sometimes insects, mites or their relatives limit enjoyment of our landscape and garden plants. We are familiar with pests that infest fruit, vegetables, flowers and foliage or make plants wither, change colors, develop spots or streaks or even die. But just as pests damage some plants, those same pests probably have one or more natural enemies that limit their numbers and their damage. “Biological control” of pests involves either natural or human-assisted control of certain pest species by predators, parasites (parasitoids, as defined below) or pathogens. The circular outlines important definitions, concepts and examples of biological control of some common yard and garden pests in New Mexico. Home gardeners should note that biological control is complex, and they should assess the pros and cons of adopting these techniques as part of an overall Integrated Pest Management (IPM) strategy for their properties. Not all insects and their relatives are harmful to landscapes. Relatively few species cause most of the damage to plants. The diversity of plants in most home landscapes tends to limit the damage done by any particular pest. Through observation, reading and short courses on the subject, gardeners can learn to recognize those species that are landscape pests and, perhaps, even some species that are considered beneficial. Some of the less common and smaller pest species and their natural enemies may offer special challenges for identification and management. But further study, experience and observation can help in manipulating them. In IPM, a variety of pest control measures are used to reduce pest populations below damaging levels. Many tools are available, but some will

http://aces.nmsu.edu/pubs/_circulars/CR607.pdf

Groundsels and Livestock Poisoning

Groundsels are woody-stemmed, native, perennial plants that often cause livestock poisoning in winter and early spring. Poisoning of cattle and horses is reported most often, while sheep and goats are poisoned less frequently

http://aces.nmsu.edu/pubs/_b/B113.pdf

Coping with Deer in Suburban Gardens

Deer are a joy to watch, and when the spotted fawns appear in June and July, few can resist a tender feeling for these graceful animals. Yet, where they are abundant, deer can be one of the most destructive pests of home gardens, landscape plantings and orchards. Buds and twigs are nibbled in winter, new growth is eaten in the spring, and leaves are browsed in the summer. In the fall, bucks rub bark and break down small trees and shrubs when removing the velvet from their antlers.

http://aces.nmsu.edu/pubs/_h/H222.pdf

Economic Insects of Chile

Economic infestations of insect pests in chile have historically been limited to seedling plants. Early season chile pests include thrips, leafminers, flea beetles, flea hoppers, and in some parts of the state, darkling beetles. Although less frequently encountered, economic infestations of false chinch bugs and cutworms have been observed damaging seedling chile fields. Pest pressure in seedling chile increases in fields planted adjacent to desert (especially after a wet winter) and small grains, and in fields that previously were planted to alfalfa. Leafminers, flea beetles, and flea hoppers tend to be the most common insect pests in early chile season.

Economic infestations of insects in post-bloom chile fields are less often encountered than early season pest problems. Fruit-feeding insects include corn earworm, fall armyworm, and pepper weevil. Post-bloom vegetative feeding insect pests include hornworm, beet armyworm, and leafminers. In principle chile-growing regions of the state, pepper weevil is the pest most likely to reach economically damaging populations in post-bloom chile fields.

http://aces.nmsu.edu/pubs/_h/H243/

Mule Deer in New Mexico

Mule deer (*Odocoileus hemionus*) are one of the most important game animals in New Mexico and the West. The size of the mule deer population in New Mexico is unknown, and densities of mule deer can vary greatly among areas and over time. For example, densities of mule deer ranged from an estimated <math><1.2</math> deer/mi² on private land in Colfax County to <math><1.9</math> deer/mi² on NMSU's Corona Range and Livestock Research Center (CRLRC), while a recent minimum count found 3.7 deer/mi² in higher-density areas of the San Andres Mountains (Bender et al., 2011, 2012; L. Bender, unpublished data). On CRLRC, mule deer densities declined from 1.9 deer/mi² in 2005 to 0.7 deer/mi² in 2008, highlighting the variation possible in deer populations in response to drought and other factors. In general, mule deer have been declining in numbers in New Mexico since populations peaked around the 1960s, similar to declines seen throughout the West (Heffelfinger and Messmer, 2003). Because of population declines, harvests of mule deer have also declined; deer harvests (mostly mule deer), estimated to be as high as 55,000 in 1960, declined to <math><10,000</math> in 2013. Despite declines, mule deer are still present in all 33 counties in New Mexico.

http://aces.nmsu.edu/pubs/_I/L301/welcome.html

Water

WATER RIGHTS ISSUES IN AGRICULTURAL LENDING

One-half of the land in the United States receives insufficient precipitation to sustain crops without irrigation. The line of demarcation is the 100th meridian — a climatological boundary that cuts through the center of the Dakotas, Nebraska, Kansas, Oklahoma and Texas, thus dividing the country into west and east; dry and wet. This line is also a philosophical boundary between the riparian and prior appropriation doctrines of water allocation.

Water is scarce in the West, making it a valuable commodity and an integral component of agricultural land ownership. Without water to irrigate, process or package agricultural products, most Western agricultural enterprises would quickly grind to a halt. This was graphically demonstrated in the Pacific Northwest's Klamath River Basin during summer 2001. Because water plays such a fundamental role in the viability of such enterprises, it must be considered by financial institutions involved in agricultural lending.

Like most lending decisions, an agricultural loan application requires a lender to evaluate both the risk of default and the value of the collateral needed to secure the loan. In the case of agricultural loans secured by the underlying property, a lender is frequently looking at the same set of assets in both evaluations. Water rights are one of the most important but frequently overlooked assets to be considered in this analysis.

This article is intended to acquaint the reader with the issues related to the evaluation of agricultural water rights. The discussion begins with a cursory review of the legal framework governing the acquisition and use of water in the West. It continues by identifying several issues and risks associated with the use of water under this system. Then it briefly touches on valuation considerations, before concluding with recommendations for minimizing risk in lending decisions.

Agricultural Water for Production

Agricultural water used to grow fresh produce can carry and distribute human pathogens. Surface water is more likely to be contaminated by human and animal fecal material than ground water because it is open to the environment. Therefore, it poses a much greater risk to human health when surface water used for irrigation or protective sprays directly contacts the edible portion of the crop. Surface water available for fresh fruit and vegetable production has been found to be contaminated with human pathogens such as *Salmonella*, *Escherichia coli* **O157:H7**, *Giardia*, and *Cryptosporidium*. Water distribution systems are also of concern, because these systems distribute water throughout the farm and can become contaminated if pipes, backflow devices or other pieces of the distribution system are not in good condition and functioning properly.

<https://gaps.cornell.edu/educational-materials/decision-trees/agricultural-water-production>

Drip Irrigation for Row Crops

Drip irrigation is the slow and frequent application of small amounts of water through emitters or tiny holes spaced along polyethylene tubing or tape. It also is called trickle, subsurface or micro-irrigation. Growers of high-value crops, such as tomato, pepper, strawberry and melons, were among the first to embrace this technology.

The important components of a drip irrigation system include a water source, pump, backflow preventer, injector, filter, pressure regulator, valves, and a distribution system of pipes (main and submain lines) and tubes (laterals). Solenoid valves and a controller can be used to automate a system.

The trend in drip irrigation is toward positioning the tubing at a depth of eight to 10 inches beneath the crop row and maintaining the tubing for as many years as possible, usually five to 10. This approach was endorsed by most of the speakers at the short course, but it also is possible to position the tubing on the surface or at a shallow depth of two to four inches. The tubing's life expectancy is much shorter in these latter instances.

A significant feature of drip irrigation is that the system can be used to deliver agricultural chemicals. Fertilizers and pesticides can be dissolved in water, injected into the irrigation system, and distributed directly to the plant's root zone.

Drip irrigation, in general, and chemical injection, in particular, offer advantages and disadvantages to growers who are considering adopting the technology. The speakers and panelists at the short course generally agreed that drip irrigation offers increased yields, increased profits, reduced labor requirements, reduced fertilizer and pesticide requirements, opportunity for automation, and fewer tractor passes through the field.

http://aces.nmsu.edu/pubs/_circulars/CR573.pdf

Designing Solar Water Pumping Systems for Livestock

In many parts of the world, including New Mexico water and energy availability are growing concerns. In areas where connection to an electric utility is not available, the primary technologies for water access—surface sources or pumping—have remained fairly constant for decades. As demands for higher quantities and quality of water, lower costs, improved reliability, and environmental concerns have increased, many livestock and agricultural producers are investigating an alternative technology for remote water pumping: direct coupled solar photovoltaic (PV) powered systems. Since the process to design and implement such a system may be a challenging task, New Mexico State University's Engineering program initiated a project to provide the Cooperative Extension Service (CES) with a demonstration module, an interactive design spreadsheet, and literature related to solar water pumping to better inform water users

about the benefits and methodology of implementing this technology. Available through NMSU multimedia and the CES statewide Extension agent network, these tools serve to educate interested constituencies (primarily farmers and ranchers) in using solar energy to pump water. This publication provides a general discussion of how to design a photovoltaic-powered solar water pumping system for livestock. A companion publication, Circular 671, *Designing Solar Water Pumping Systems for Livestock: User Manual* (http://aces.nmsu.edu/pubs/_circulars/CR671.PDF), provides step-by-step instructions for using a Microsoft Excel spreadsheet to perform necessary calculations for designing a solar pumping system.

http://aces.nmsu.edu/pubs/_circulars/CR670.pdf

Solar-Powered Water Pump Design Spreadsheet Version II: User Manual

The purpose of this user manual and accompanying Microsoft Excel spreadsheet (http://aces.nmsu.edu/pubs/_circulars/CR671/CR671.xlsm) is to guide you through the basic process of designing a solar-powered water pumping system and aid in feasibility and implementation decisions. The spreadsheet is designed to allow you to enter values such as well location and depth, number and type of animals, etc. By entering different values, you can investigate a variety of scenarios before making implementation decisions.

http://aces.nmsu.edu/pubs/_circulars/CR671.pdf

Important Water Quality Parameters in Aquaponics Systems

Aquaponics, a method of food production that combines fish farming with soilless plant production, is growing in popularity and gaining attention as an important and more sustainable method of growing food. Aquaponics combines the cultivation of both fish and plants into a recirculating ecosystem that utilizes natural nitrifying bacteria to convert fish wastes into plant nutrients. For more basic information on aquaponics, refer to NMSU Extension Guide H-170, *Is Aquaponics Right For You?* (http://aces.nmsu.edu/pubs/_h/H170.pdf).

Because this system combines plants with animal production, it has a special set of water chemistry requirements, and optimal water quality is essential to a healthy, balanced, functioning system. This guide describes the most important water quality parameters that affect the health and productivity of aquaponics systems. A good understanding of how these parameters interact with each other is necessary in order to maintain a balanced system. For additional information on water chemistry, refer to NMSU Extension Guide W-104, *Understanding Water Quality Parameters to Better Manage Your Pond* (http://aces.nmsu.edu/pubs/_w/W104.pdf).

http://aces.nmsu.edu/pubs/_circulars/CR680.pdf

Water for Dairy Cattle

Water constitutes 60 to 70% of a livestock animal's body. Water is necessary for maintaining body fluids and proper ion balance; digesting, absorbing, and metabolizing nutrients; eliminating waste material and excess heat from the body; providing a fluid environment for the fetus; and transporting nutrients to and from body tissues. Dairy cattle get the water they need by drinking and consuming feed that contains water, as well as from metabolic water produced by the oxidation of organic nutrients. Water loss from the body occurs via urine, feces and milk; through sweating; and by evaporation from body surfaces and the respiratory tract. The amount of water lost from a cow's body is influenced by the animal's activity, air temperature, humidity, respiratory rate, water intake, feed consumption, milk production and other factors. This publication covers water intake guidelines and water quality issues for dairy cattle.

http://aces.nmsu.edu/pubs/_d/D107.pdf

Water Quality for Livestock and Poultry

Water is a critical nutrient to all livestock and poultry. As with feed ingredients, livestock water should meet the nutritional needs of the animal. Most minerals and dissolved solids found in water provide nutritional benefits when present within limited concentration ranges. This guide outlines the recommended limits of certain substances commonly found in water used for livestock and poultry. With the exception of the salinity recommendations, these standards do not discriminate between animals raised for slaughter or those kept for breeding or pleasure. It is possible that animals maintained for long periods on water of marginal quality would be at risk of developing related health problems. Slaughter animals, which are kept for relatively shorter periods, would be less likely to develop health problems from water of the same quality. Without proper blood and tissue tests, it is often difficult to determine that animal health problems are caused by mineral toxicity because of the complex metabolic interactions of dietary minerals. Toxicity from a specific mineral or compound is a function of its concentration and relative levels of other components with which it interacts. The concentrations below indicate general water quality conditions and possible related health problems. They should not be used as sole diagnostic indicators.

http://aces.nmsu.edu/pubs/_m/M112.pdf

Water Quality Guide for Livestock and Poultry

Good quality water, in adequate supply, is essential to the health and proper growth of animals. The amount of water consumed by animals varies with the species, growth stages of the animals, and during pregnancy and while nursing.

http://publications.tamu.edu/WATER/PUB_water_Water%20Quality%20Guide%20for%20Live%20stock%20and%20Poultry.pdf

Livestock Water Quality

Water is an essential nutrient which is involved in all basic physiological functions of the body. However, it is important to note that water, relative to other nutrients, is consumed in considerably larger quantities. Therefore, water availability and quality are extremely important for animal health and productivity. Limiting water availability to livestock will depress production rapidly and severely, and poor-quality drinking water is often a factor limiting intake.

Considering that water is consumed in large quantities, if water is poor quality, there is an increased risk that water contaminants could reach a level that may be harmful. The water requirement and intake in livestock may vary depending on species and breeds of livestock, animal status, production mode, environment or climate in which livestock are raised. All these variables are directly or indirectly relevant to several aspects of water metabolism and physiology. In this context, it is necessary to understand water quality issues from the perspective of water intake physiology.

https://www.ag.ndsu.edu/waterquality/livestock/Livestock_Water_QualityFINALweb.pdf

2012 USDA Census of Agriculture

U.S. Summary and State Data

A comprehensive summary of agricultural activity for the United States and for each state. Includes number of farms by size and type, inventory and values for crops and livestock, operator characteristics, and much more.

<https://www.agcensus.usda.gov/Publications/2012/>

Conducting Needs Assessment Surveys

Very briefly, it's a way of asking group or community members what they see as the most important needs of that group or community. The results of the survey then guide future action. Generally, the needs that are rated most important are the ones that get addressed.

Depending on your resources (time, money, and people) a needs assessment survey may take many different forms. It can be as informal as asking around with people you know in your community: your postal carrier, the people you work with, the woman at the corner gas station. Or, it could take the form of a professionally-written survey that is mailed to hundreds of people.

<http://ctb.ku.edu/en/table-of-contents/assessment/assessing-community-needs-and-resources/conducting-needs-assessment-surveys/main>

Selling Your Product

There are many variables to consider for selling your product. Location, price, certifications, requirements of the buyer and the regularity or consistency of the buyer. One of the major factors in creating this project is to help growers think outside of the small regional markets available and tap into some of the larger, more regular markets around the state and in nearby metro areas.

In general, small farms rely on direct to consumer channels such as CSA, farmers markets and U-pick operations and to a lesser extent on restaurant, retail and distribution sales. This works for small farms because they receive a higher unit price and these markets are flexible to variations in volume.

A downside to selling to these markets is the need for crop diversity and potential inconsistent sales. If a customer is purchasing a CSA share or coming to pick a crop, they expect to find a wide variety of products to take home and if poor weather or other anomalies cause sparse turnouts then the grower could end up taking home a lot of produce.

Larger markets such as retail locations and distributors require consistent product at larger volumes. This can be difficult to achieve for small farms, however having nearly guaranteed markets even at lower unit prices can offer great cash flow potential.

If you are trying to decide which market channels best fit your needs, check out this guide to selecting market channels by Cornell University.

<https://blogs.cornell.edu/smallfarmsprogram/files/2014/07/Guide-to-Marketing-Channel-1ib5phn.pdf>

As a food hub, Comida Buena helps small to midsize growers aggregate their product to meet larger markets.

Market	Crop Diversity	Volume	Consistency of Product Required	Consistency of Sales	Sale Price
CSA	High	Set by grower	Weekly	Seasonal	High
U-Pick	High	Small to medium	Regular throughout season	Extremely variable	High
Farmers Market	High	Small to medium	Regular	Variable	high
Retail (local)	Medium	Small to medium	Usually regular	Regular	moderate
Restaurant	Medium	Small to medium	Regular/variable	Regular	Moderate
Regional Distributer	Low	large	Regular/Contract	regular	Low
Comida Buena Hub	Low to High	Low to large	Regular	Grower to Grower basis	Moderate

A few considerations for selecting market channels:

1) **Location**

Transportation costs can add up. Try to find markets that will yield a good return on transportation costs or work with Comida Buena to move product to outside markets.

2) **Requirements**

Many institutional and retail markets will require GAP certifications. Check with them before attempting to make a sale.

3) **Packaging or Market Costs**

Does your buyer require products to be packaged a certain way? Are you working with a broker who will take a fee? Additionally, farmers markets most often require a daily or yearly fee to operate.

The most successful small farms will utilize a number of different markets. While some rely only on one or two markets, volatility within these channels can be detrimental to your bottom line.

MARKETING YOUR PRODUCT

There are a number of great resources to help you reach your market.

Comida Buena

Comida Buena engages in marketing activities with dozens of local restaurants, institutions and retail spaces as well as working with other markets in Albuquerque, Santa Fe, Las Cruces and eventually, Tucson and El Paso. You can connect with these market channels through Comida Buena by contacting the project manager. We are able to offer crop planning guidance in accordance to what we will likely be able to sell.

Direct Marketing

Comida Buena is focused on intermediary markets such as retail locations, restaurants and institutions, however we have listed a few resources to help with your direct marketing goals.

New Mexico Farmers Marketing Association

NMFMA is a local, one-stop shop for learning tips and tricks on vending at farmers market. Check their website for upcoming trainings and events.

https://www.newmexicofma.org/marketing_tips.php

Community Vitality

This is a great resource for learning other aspects of marketing produce directly to customers.

<https://communityvitality.unl.edu/directmarketingfood>

Before you plant your first seed, answer this question: How will you sell your crops? A good marketing plan is an absolute must for a successful farm business. Know your market and your customers. Start by growing vegetables that are popular with people in your area. Make sure you grow enough of each crop, and make the quality of your vegetables good. Then consider the best way to sell them to your customers.

<https://www.extension.umn.edu/garden/fruit-vegetable/simple-successful/marketing-english/index.html>

How to Sell Farm Products to Food Distributors

Plenty of small farmers get by just fine without ever selling produce or other small farm products to a food distributor. But some farms find it's a great way to [market their products](#) and keep income coming in steadily on the farm.

<https://www.thespruce.com/sell-small-farm-products-to-distributors-3016898>

How to Sell Small Farm Products Online

If you would like to sell your farm products online - via the Internet on your small farm website - here are some ideas and tips for getting started. The Internet can be a great way to increase farm visibility and for local marketing, but you can also sell directly on the web to consumers, shipping them products or offering pickup. Or you can offer services like paying for their [CSA share](#) on the web, or buying meat in bulk through your website for pickup at the farm later.

<https://www.thespruce.com/sell-small-farm-products-online-3016900>

Selling Farm Products at Farmers Markets

Farmers markets are used by Kentucky growers of all farm sizes and scales. "Market gardeners" often tend less than an acre of land for selling strictly at the local farmers market. On the other hand, some of Kentucky's largest orchards use local farmers markets as a retail outlet during the

fall to command a premium price for their crop. The number of farmers markets in the United States increased from 1,755 to more than 3,700 (111% increase) from 1994 to 2004. Since 2004, the number of markets has more than doubled, to 8,144 in 2013.¹ The number of markets in Kentucky more than tripled between 1994 and 2004 (from 30 to more than 90 markets) as more producers and consumers became interested in locally grown food. The upwards trend in farmers markets has also continued in Kentucky, where there were more than 145 farmers markets registered with the Kentucky Department of Agriculture (KDA) in 2013, representing over 2,500 vendors.²

<https://www.uky.edu/Ag/CCD/marketing/farmmarket.pdf>

Local & Regional Food Systems

Food systems comprise all aspects of food production (the way the food is grown or raised; the way the food is harvested or slaughtered; and the way the food is processed, packaged, or otherwise prepared for consumer purchase) and food distribution (where and how the food is sold to consumers and how the food is transported). Food systems can be divided into two major types: the global industrial food system, of which there is only one, and sustainable/local (or regional) food systems, of which there are many. The global industrial food system has a much wider geographic reach than a local or regional food system

<http://www.sustainabletable.org/254/local-regional-food-systems>

The What and Why of Local and Regional Foods

In America's rural towns and urban centers, in remote farm fields and on the edge of cities, a sea change is underway. Farmers and ranchers selling their products nationally or internationally are finding a reason and a means to keep some sales closer to home. New farmers, small and midsized farmers, and those who want to personally brand their products are finding enthusiastic buyers right in their communities. Urban residents who may never have set foot on a farm are gaining a new appreciation for and connection to the men and women producing our food. And business owners are tapping into a market whose steady growth over two decades—growth that has become exponential in recent years—spells opportunity in the form of jobs, revenue, and economic development.

<https://www.usda.gov/sites/default/files/documents/1-Whatandwhy.pdf>

Sound Business Practices

Building and maintaining professional relationships is an essential part of a successful business. Depending on your personality this might be a walk in the park or a very daunting aspect of owning a business. Either way relationships are vital in a successful agricultural business. Building trust with your customer base is extremely important. Being able to fulfill your customers' needs and wants is also vital in the buyer/seller relationship.

Record keeping is something else that you will need to be familiar with when operating your business. Thankfully with the help of modern technology there are several different software companies that offer agricultural record keeping helps you maintain and build your business. As with any other business record keeping is essential to success. Software designed just for managing different agricultural businesses is available that can help you to manage anything from cattle to cotton.

RECORD KEEPING

Keeping sound records is the best way to ensure your farm is headed in the right direction- without good records everything is more or less a guess. Records can be kept on paper or on a spreadsheet or digital application. Generally, a farmer should keep records of:

Daily or Weekly:

- Weather (precipitation, max and min temps, frost dates)
- Purchases/Expenses – assigned to relevant enterprises or overhead
- Revenue from product sales – assigned to relevant enterprises and market channels
- Time spent on various tasks (weeding, marketing, etc.)

Annually:

- Soil organic matter, plant diversity or other soil improvements
- Net Worth (Balance Sheet)

Livestock Farmers:

- Weaning weights
- Feed consumed
- Vaccinations and Medication
- Birth dates
- Calving (or kidding or lambing) success rates
- Paddock grazing duration and intensity

Vegetable/Fruit Farmers:

- Practices used in any given field (compost application, tillage, cultivation dates)
- Seeding/Transplanting dates
- Germination rates
- Harvest date and weight of each crop
- Pest management practices used
- Comments re. produce quality, customer preferences, quantity unsold

FARM APPS

Mayor Domo - (Coming soon)

Mayor Domo is a forthcoming app created by an Albuquerque-based non-profit and small farm cooperative Agricultura. This app will be used for managing all aspects of a small farm with the unique benefit of also focusing on connecting the grower to markets within New Mexico. This is a great option for the local food producer who also wants to connect in real time with buyers and other growers.

Tended - <https://www.tendedapp.com/>

Tended is an app for small farms and market gardeners that keeps track of beds, production, weather, sales and more. This is a great app for a small farmer or gardener. Tended is free and offers a visual layout interface.

Farm Brite - <https://www.farmbrite.com>

Farm Brite is an all in one farm record keeping app aimed more at serious small to large productions. It offers a tiered pricing plan that can include livestock records, crop records, tool maintenance, farm schedules, payments, accounting, bookkeeping and offers a custom online farm store and marketplace. Perhaps the most robust all-in-one app out there.

Ag Squared - <http://www.agsquared.com/>

This is another farm planning, management and record keeping app. Ag Squared boast clever calculation tools to help determine costs, harvest, labor input and next steps.

CROP RECORDS

For forage or row crop production any records on your land and water need to be kept. The next thing would be any planting records that you have. Keeping record of what crop and variety of that crop is going to be planted on what space and big that space is, is essential. You can have two fields of corn, but they may differ drastically in what variety they are and what that variety is for. Also keeping track of any amendments or preparations that you had made prior to planting to prepare for the crop is also important.

Field name/reference:		Field area:		Harvest year:		Soil type:	
Cropping, soil nitrogen supply and the crop N requirement							
Cropping				Soil N Supply		Crop N requirement	
Crop	Crop area	Date sown	Market (tillage crops) or cut/grazed (grass)	Yield (arable crops only)	kg N/ha or SNS Index	Method of assessment	Source of information
		(month/year)					
Planned and/or actual applications of manufactured nitrogen fertilisers and organic manures							
Manufactured nitrogen fertilisers		Organic manures					
Date	Nitrogen rate	Date	Manure type	Application rate	Method of application	Total N content	Crop available N rate
	kg N/ha			t/ha or m ² /ha		kg/t or kg/m ²	kg N/ha

Once you have those pieces in place keeping accurate records of when a crop was planted (date) and any applications of fertilizer, herbicides etc. needs to be kept. When keeping records of your applications it is always important to list the type of amendment was used, how much and where it was applied and why it was applied. It is also important to keep a receipt on file of your purchase of the chemical for auditing purposes by the New Mexico Department of Agriculture. Also keeping a record of what chemicals you own and making sure they are stored properly is also essential. Anytime that you do anything to a field even if it is just a walk through for observation should be recorded. You may want to keep records of pests during your field scouting for future record. Usually the same type of pests show up around the same time of year, it will help you to be better prepared to combat those pests if you are prepared for when they usually show up. Also, by keeping a record of what pest is being treated and what application is being used as well as if that treatment worked or didn't will also help you as a producer in the future.

Record keeping template

Agricultural chemical use

Agricultural chemical application details						Weather details (if product is being sprayed outdoors)		Contact details	
Date of application	Product trade name	Application rate	Crop/commodity treated OR situation product was applied	Extent of use (area/volume /weight)	Location where product was used	Wind speed	Wind direction	Name and address of applicator and (if applicable) supervisor	Name and address of person for whom the application was carried out

Keeping progress of your crop as it progresses is also important. By doing a weekly or daily check on your field, you can assess if your crop is progressing as it should or why or why not it is delayed. Major events such as heavy rains including hail and freezes can really set your production back. It is important to keep records of such events to have for the future and to help in determining an accurate estimation of harvest potential. During your harvest is also a good time

to keep records. Keeping track of when you start harvest and how long it takes to harvest a particular field or crop will aid in your planning for next year. It is also important to record your returns on your harvest and any expenses related to the harvest of that crop.

SEED STARTING						
Date	Crop	Seed Source	Amount Seeded	Amount Germinated	Transplant Date/Location	Notes

CREATED BY

PLANTING								
Crop	Variety	Date/Time Planted	Plot Location	Seed/ Transplant	Seed Source/ Nursery	Seeding Rate/ Population	Bloom/ Fruit Date	Plant Traits <i>(physical characteristics, height, pest problems, etc.)</i>
				<input type="checkbox"/> Seed <input type="checkbox"/> Transplant				
				<input type="checkbox"/> Seed <input type="checkbox"/> Transplant				
				<input type="checkbox"/> Seed <input type="checkbox"/> Transplant				
				<input type="checkbox"/> Seed <input type="checkbox"/> Transplant				
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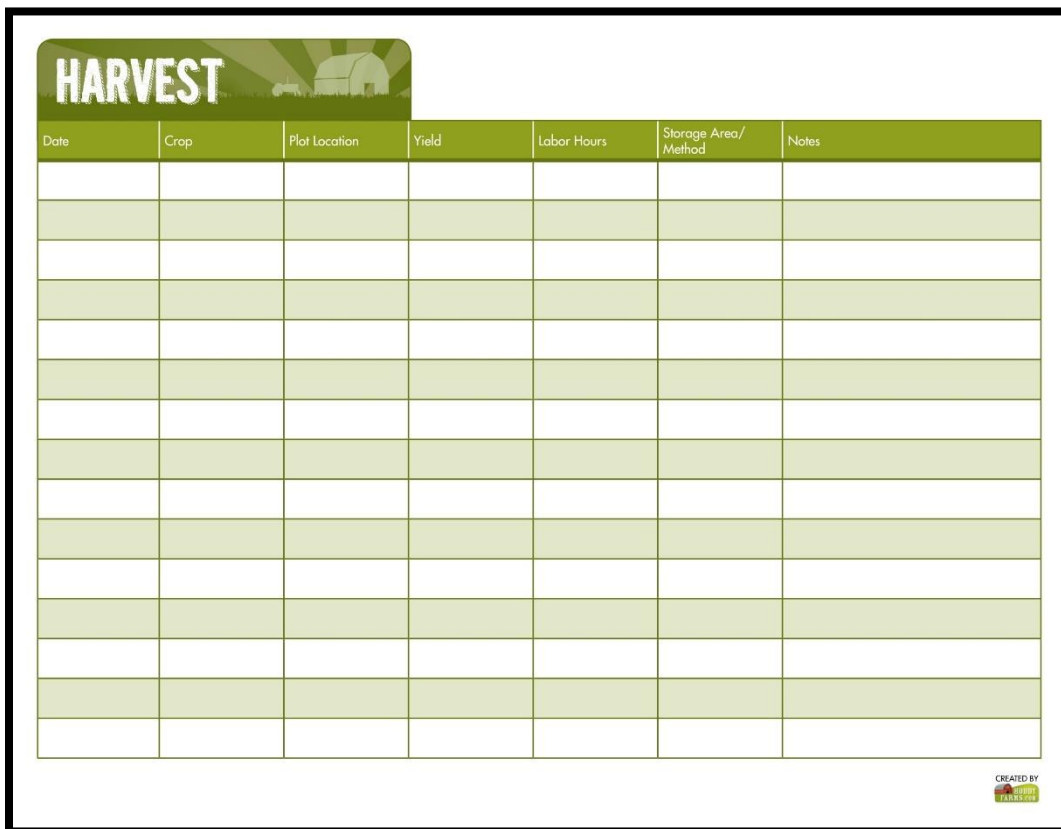
CREATED BY

HARVEST AND SALES

In addition to thorough records of what goes in and out of the fields, one must also know what goes to market and what goes to the bank.

A harvest record should be kept for all beds, this is also a great way to compare the outputs of certain plots and determine which methods or inputs work best on your farm. Additionally, records such as these are vital for crop rotations.

Keeping track of labor hours is a good way to determine which crops are bringing in enough money. One local farm loved to harvest strawberries and they found a good market for them locally, but once they tallied up the amount of labor it took to keep them weeded, protected and get them harvested they realized they would need to charge almost double the market price in order to justify their time.



The image shows a 'HARVEST' record sheet. At the top left, the word 'HARVEST' is written in a bold, white font on a dark green background. To the right of the title is a small illustration of a white barn with a red roof and a green field. Below the title is a table with 7 columns and 15 rows. The columns are labeled: 'Date', 'Crop', 'Plot Location', 'Yield', 'Labor Hours', 'Storage Area/Method', and 'Notes'. The table is currently empty. In the bottom right corner of the table area, there is a small logo that says 'CREATED BY' above a stylized sun and field icon.

Date	Crop	Plot Location	Yield	Labor Hours	Storage Area/Method	Notes

Unless the farm operation is solely for hobby and pleasure, the farmer will want to know the bottom line. Most farmers will have either specific or general sales projections and know where they need to be to be in the black.


A simple spread sheet, such as the one below is a good way to tally sales from week to week. Comparing weekly sales to weekly labor inputs will show you what is working and where changes can be made.

Weekly Sales Report										
Date _____		Week # _____								
Crop	CSA		Market		Wholesale		Retail		Other	
	\$	Amt.	\$	Amt.	\$	Amt.	\$	Amt.	\$	Amt.


LIVESTOCK RECORDS

In Grant County, cattle are the primary industry other than copper. Accurate record keeping in cattle is an extremely important aspect to maintaining a profitable business. Keeping records on your cow herd starts with your mother cows and heifers. Where those cows/heifers came from if they were purchased or if they were retained by you and their vaccination records is critical. Vaccination records for all of your cattle is important. Bulls need to be evaluated yearly through a breeding soundness exam and determined to be suitable to be put back out on your cow herd. Having a record of that exam and the results of any tests should be kept. The general health of the herd should be recorded. Any annual vaccinations given should be recorded with a date and what the vaccination was for and what product/how much product was used. Vaccination records on calves should also be kept as they can aid in the marketing value of calves during the season and you may qualify for premiere categories in marketing those calves because of your

documentation. Documenting when you turn your bulls out on your cows and when they were pulled off will determine when you should be expecting to start seeing your calving season begin and end. Records on which cows calved on what date and what that calf weighs as well as the breed and sex of the calf and any other documentation that the producer might deem important should be kept. It is also critical to note if the calf was manually pulled because of dystocia (difficulty laboring) or if the cow prolapsed and what type of prolapse occurred and how it was addressed. These types of notes will aid in your decisions on whether to keep or cull certain animals.



COW HERD PERFORMANCE RECORD SHEET



Name _____ Mississippi County _____ Date Weighed _____
(Owner, Farm, or Ranch Name)

Address _____
(Street, Route, or P. O. Box) (City) (State) (Zip Code)

Herd Performance Records

Dam ID	Calf ID	Calf Birth Date	Calf Sex	Calf Weaning Weight	205-d Adjusted Weaning Weight	205-d Adjusted WW Ratio	Calf Muscle Score	Calf Frame Score	Dam Weight	Dam Body Condition Score	Dam Frame Score	Dam Efficiency (Calf Wt ÷ Cow Wt)

Mississippi State University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation or group affiliation, age, disability, or veteran status.

VACCINATION RECORD						
DISEASE	DATE	DATE	DATE	DATE	DATE	DATE
Foot and mouth						
Brucellosis						
Rinderpest						
Anthrax/Black Quarter						
Lumpy Skin Disease						
Rabies						
Leptospirosis						
Rift Valley Fever						
Mastitis						
TREATMENT (DEWORMER)	DATE	DATE	DATE	DATE	DATE	DATE

BREEDING RECORD BOOK FOR CATTLE									
DETAILS OF COW					DETAILS OF CALVES BORN				
Name of Cow	Date of Birth	Sex	Ear Tag Number	OO Number	Approved By	Place of Use	Date of Use	Order of Use	Notes
Date of Birth									
Breed									
Approved									
Notified									
Name of Health Officer									
Approved On									
Date of Use									
Date of Birth									
Name of Cow	Date of Birth	Sex	Ear Tag Number	OO Number	Approved By	Place of Use	Date of Use	Order of Use	Notes
Date of Birth									
Breed									
Approved									
Notified									
Name of Health Officer									
Approved On									
Date of Use									
Date of Birth									
Name of Cow	Date of Birth	Sex	Ear Tag Number	OO Number	Approved By	Place of Use	Date of Use	Order of Use	Notes
Date of Birth									
Breed									
Approved									
Notified									
Name of Health Officer									
Approved On									
Date of Use									
Date of Birth									
Name of Cow	Date of Birth	Sex	Ear Tag Number	OO Number	Approved By	Place of Use	Date of Use	Order of Use	Notes
Date of Birth									
Breed									
Approved									
Notified									
Name of Health Officer									
Approved On									
Date of Use									
Date of Birth									

American Angus Association
Beef Improvement Record
Calving and Weaning Report

Date: 6/21/2016
Customer:

Use a separate form for entering ET and foster calves.

Dam Identification			Sire Identification		Calf Identification				Calf Performance Data				Dam Information								
Tag	Birth Date	Exit	Tag	Tag	Tag	Tattoo	S	Tw	Br	CE	Actual	Mgt	Wgt	Loc	Wt	Wt	Cond	Temp	Recess	Disposal	
Dam Assn Num	Birth Date	Calving Data	Tag	Tag	Calf Assn Num		X	Birth Date	WT	Score	Wt Date	Wt	SC	Custom	Date	Height	Score		Code	Date	
AAA	12/20/03																				
AAA	12/20/03																				
AAA	12/20/03																				
AAA	01/04/07																				
AAA	12/20/07																				
AAA	11/28/08																				
AAA	11/10/09																				
AAA	12/06/12																				
AAA	11/05/13																				
AAA	11/06/13																				
AAA	11/10/13																				
AAA	01/11/28/10																				
AAA	05/12/15/10																				
AAA	06/11/20/10																				
AAA	07/11/24/10																				
AAA	08/01/15/10																				
AAA	09/01/03/10																				
AAA	11/12/20/11																				
AAA																					

SEX CODE: B - BULL C - COW S - STEER	CALVING AID: 1. NO ASSISTANCE 2. SOME ASSISTANCE 3. MECHANICAL ASSISTANCE	CARRASSIAN SECTION: 4. CARRASSIAN SECTION 5. ABNORMAL DELIVERY	BIRTH CODE: 1. STILLBORN, CARRIED FULL TERM 2. DIED AT BIRTH - DEFECT 3. DIED AT BIRTH - OTHER 4. BORN ALIVE, DIED BEFORE WEN - DISEASE
WEIGHT CODE: 1. BORN ALIVE, DIED BEFORE WEN - OTHER 2. BORN ALIVE, DIED BEFORE WEANING 3. BORN ALIVE, DIED BEFORE WEN - WEATHER	WEANING (DSE DAY): 1. NON-CHEASPP FEED 2. CHEASPP FEED	WEI CODE: Cattle from different groups or pasture units are designated by using a letter code such as A, B, C, etc.	*WEIGHED TOO YOUNG

Page 1 of 5

Feeding records are also extremely important especially from a financial perspective. If you are producing hay for your cattle or buying it records of it should be maintained. If purchasing from a seller keeping receipts for tax purposes as well as planning should be kept. Also noting the quality of the feed that was purchased. Paying less money for bad quality hay doesn't really benefit the producer, or the cattle in the end. Where you buy feed, how much it cost, what type of feed should be kept on record. Another aspect to feed is keeping track of what you are feeding to what part of your cow herd (bulls, bred cows, open cows, bred first time heifers, etc.) and when you started and how much of it are you feeding. Cow herds have different nutritional requirements during different parts of the year so maintaining a record of that can aid in planning and purchasing of feed in the future. Also documenting how your cow herd is doing on the feeding plan that you have is also essential. If they are not doing well some changes might need to be made in the near future and plan differently for next year. My grandpa always said, "It's easier to maintain a cow through the winter than it is to get one to gain, because you blink and they take a turn for the worst."

Mgmt. Control Panel

Feeding Record

Pen 1

Feed Date	Hay				Corn				Soy Bean				Other		Other		Feed Costs
	Square	Cost	Round	Cost	Gluten	Cost	Cracked	Cost	Hulls	Cost	Meal	Cost	Pellets	Cost	Grain	Cost	
01/01/06	1	4.00			20	1.90	10	0.95			5	0.50					7.35
01/02/06			1	40.00					20	0.12							40.12
01/03/06																	0.00
01/04/06																	0.00
01/05/06																	0.00
01/06/06																	0.00
01/07/06																	0.00
01/08/06																	0.00
01/09/06																	0.00
01/10/06																	0.00
01/11/06																	0.00
01/12/06																	0.00
01/13/06																	0.00
01/14/06																	0.00
01/15/06																	0.00
01/16/06																	0.00
01/17/06																	0.00
01/18/06																	0.00
01/19/06																	0.00
01/20/06																	0.00
01/21/06																	0.00
01/22/06																	0.00
01/23/06																	0.00
01/24/06																	0.00
01/25/06																	0.00
01/26/06																	0.00
01/27/06																	0.00
01/28/06																	0.00
01/29/06																	0.00
01/30/06																	0.00
01/31/06																	0.00
Totals	1	4.00	1	40.00	20	1.90	10	0.95	20	0.12	5	0.50	0	0	0	0	47.47
																	\$47.47

Feed Records by Pen

Pen 2
Pen 3
Pen 4
Pen 5
Pen 6

Feed per Pound Calculator

Cost per Bag

Pounds per Bag

Price per Pound

Enter

Total of Pounds Fed

Cost for Amount of Feed Fed

Enter

Another thing to keep in mind is documenting the weather. If you have an easy winter and are able feed less on the same budget and your cattle do well, you can prepare for a more difficult winter in the future by putting funds aside for a hard winter in the future. It is also worth documenting that if a certain feed that is being fed is really working on your cow herd during a certain point in the year what that feed is, how much you are feeding and what the conditions of the cow herd are. You may have found a niche for your operation to cut costs but maintain the health of your cow herd.

51 52 2015		Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (Events)	
		high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
53	Jan	25	23	21	25	23	21	100	98	93	30.3	30.17	30.08	10	4	0	9	4	-	0.03	Fog, Rain, Snow
54																				0.61	Rain, Snow
55	2	30	27	24	30	28	25	100	98	92	30.15	30.04	29.9	10	6	2	14	4	-	0	
56	3	53	40	26	33	29	25	100	76	43	30.15	29.97	29.87	10	10	10	25	11	34	0	
57	4	37	32	28	30	28	25	96	85	60	30.57	30.44	30.17	10	9	7	9	6	-	0	
58	5	59	44	28	43	34	27	96	74	50	30.51	30.4	30.26	10	10	6	15	7	-	0	
59	6	62	52	43	37	34	31	71	56	35	30.35	30.28	30.24	10	10	10	17	11	-	0	
70	7	43	34	23	36	26	12	96	75	54	30.82	30.62	30.28	10	10	9	21	10	26	0	Rain
71	8	27	24	23	14	11	10	63	59	55	30.71	30.57	30.43	10	10	10	9	5	-	0	

Financial records are also important. Documenting when your cattle were sold and who they were sold to and for how much is just good business sense. Also keeping some records on your cattle after they leave your ranch isn't a bad idea either. If you sold heifers that end up turning into really good mother cows you can use that as a marketing technique. If you sell calves that maybe

didn't hang as well on the rail you can make some changes in your herd whether that be genetically or nutritionally to address those issues in the future.

Anything you do on your land whether that be brush control, pest control or even death records of animals that have died during the year and what age they were and why they died are also extremely important. The bottom line in it all is whatever you do, make sure you write it down somewhere where you can find it! Keeping records in agriculture is easier than it has ever been with the use of technology. Several companies offer software that can be specialized toward your operation. You can get apps on your phones or tablets to help as well!

INVOICING

On the market there are several different kinds of agricultural business management software. In selecting this type of software you should pay special attention to the details of what the software can and can't do. Also, does it fit your operation? Do you want to be able to access your businesses information from your desk or from the field or both? If you are needing to be mobile, getting software that you can use from the field and from the comfort of your desk is going to be important. This goes hand in hand with your record keeping. There is so much software out there to help you do both. The important part is to make sure that it will fit you and your operation. This software is a great tool and can be used to also create invoices for your business when needed. Another alternative is QuickBooks. QuickBooks is an easy user-friendly software that is used to manage businesses. Just tailor it to your operation, and you can quickly and easily use it to manage your agricultural business.

INVOICE

Your Company Name
 Street Address
 City, ST, ZIP Code
 Phone Number, Web Address, etc.

DATE: _____
 INVOICE #: _____

BILL TO
 Name _____
 Address _____
 City, State, ZIP _____
 Country _____
 Phone _____
 Email _____
 Client # _____

SHIP TO
 Name _____
 Address _____
 City, State, ZIP _____
 Country _____
 Contact _____

P.O. #	Subst Rep. Name	Ship Date	Ship Via	Terms	Due Date

Description	Quantity	Unit Price	Line Total

NOTES: _____

SUBTOTAL	-
DISCOUNT (AMOUNT)	-
PST 8.000%	-
GST 6.000%	-
SHIPPING & HANDLING	-
TOTAL	-

THANK YOU FOR YOUR BUSINESS!

Financing an Agricultural Operation

Perhaps the most daunting aspect of starting a farm business is finding the capital to begin operating. Indeed, this is the largest single barrier of access for new and beginning farmers. However, with so many options available most producers can begin operating within a relatively short time with a proper business plan and persistence. In general, there are three options for starting a farm outside of having or borrowing money from family or friends: Grants, Loans and Crowd sourcing. Of these three, loans are the most reliable, tried and true method and the only one Comida Buena recommends relying on.

Many people are hesitant to take out a loan because of the desire to stay debt free and because of the volatility and risks inherent in any business venture. Connecting with professional farm loan servicers such as FSA, USDA or Farm Credit can help alleviate such hesitations and remember, starting a farm is a big deal, you shouldn't take out a loan or begin a farm unless you are confident in your ability to be a farmer.

GRANTS

While grants seem like a great place to start, Comida Buena does not recommend planning for a grant to start your farm because they are highly competitive and few and far between for start-up costs. We recommend taking out a USDA Microloan or other loans from farm financing specialists. Once you have a solid business plan and have applied for these other funding opportunities, then check for grants.

The best way to do this is to contact your local USDA Rural Business Development representative and meet with them about upcoming opportunities. In addition, performing an internet search for farm start up grants is a good way to see what is available.

LOANS

FSA Loan Programs

Providing access to credit, FSA's Farm Loan Programs offer opportunities to farmers and ranchers to, start, improve, expand, transition, market and strengthen family farming and ranching operations, beginning farmers, racial and ethnic minority farmers and women producers, value-added, direct sale, organic and specialty crop operations, young people actively involved in agricultural youth organizations needing financial assistance for income-producing, educational,

agricultural projects, urban farmers and roof-top producers, operations using alternative farming methods such as hydroponics, aeroponics, vertical farming and freight container farming.

<https://www.fsa.usda.gov/programs-and-services/farm-loan-programs/>

Beginning Farmers and Ranchers Loans

America's next generation of farmers and ranchers are supported through FSA's "Beginning Farmer" direct and [guaranteed loan](#) programs. [Farm Ownership](#) loans can provide access to land and capital. [Operating loans](#) can assist beginning farmers in become prosperous and competitive by helping to pay normal operating or family living expenses; open doors to new markets and marketing opportunities; assist with diversifying operations; and so much more. Through the [Microloan programs](#), beginning farmers and ranchers have an important source of financial assistance during the start-up years.

While FSA is fully committed to all farmers and ranchers, there is a special focus on the particular credit needs of farmers and ranchers who are in their first 10 years of operation. Each year, FSA targets a portion of its lending by setting aside a portion of all loan funds for financing beginning farmer and rancher operations. With the single exception of the Direct Farm Ownership Down Payment Loan, the Beginning Farmer classification is not related to a type of loan program; it references a specific, [targeted funding source](#).

<https://www.fsa.usda.gov/programs-and-services/farm-loan-programs/beginning-farmers-and-ranchers-loans/index>

Farm Credit

Helps the entire Agricultural community including production agriculture, processors and suppliers as well as the rural economies throughout the state. Real Estate Loans for the purchase, improvement, or refinancing of debt on farms, ranches, facilities and rural real estate. Country Home Loans purchase or improvement. (Farm Credit is an equal credit opportunity lender/equal-housing lender.) Operating Loans for operating inputs and expenses such as feed, fertilizer, seed, and labor, as well as for such expenditures as rent, taxes, insurance and day-to-day living. Livestock Loans for care, feeding, or refinancing of debt on livestock. Equipment Loans for the purchase or refinancing of debt for tractors, trucks, farm implements, buildings, irrigation systems or any other equipment. Agribusiness/Facility Loans for the purchase, construction, improvement or operating needs of dairy facilities and other agribusinesses. Rural Residential Tracts for smaller tracts of land located in rural areas purchased with the intent to build within five years. Maximum value of all improvements \$269,807.

<https://www.farmcreditnm.com/>

Ag Credit

The team of loan officers at Ag Credit specializes in financing all types of farming operations. We understand the complex needs and demands of a successful operation and are committed to your success. Our job is to provide credit to rural America. Thus, if you work or live in the country, Ag Credit is here to meet your needs. Real Estate and Farm Improvement Loans, Equipment Loans, Operating Loans, AgStart Loans, Leasing Automobile and Personal Loans.

<https://www.agcredit.net/loans/ag-loans.aspx>

Ag New Mexico

As a credit cooperative, Ag New Mexico is owned by its borrowers and managed by a customer elected board of directors, who are farmers, ranchers and business people. When you receive an Ag New Mexico loan, you become a stockholder, which entitles you to vote in the director elections and on other business issues and to run for the board of directors. No other type of lender offers this benefit. Agribusiness financing, agricultural installment loans, agricultural operating loans, rural real estate loans and rural home loans are some of the programs that they offer.

<https://www.agnewmexico.com/about-us/why-ag-new-mexico>

Specialty Crop Block Grant Program

The purpose of the Specialty Crop Block Grant Program (SCBGP) is to solely enhance the competitiveness of specialty crops. Specialty crops are defined as “fruits, vegetables, tree nuts, dried fruits, horticulture, and nursery crops (including floriculture).”

The agency, commission, or department responsible for agriculture within any of the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the U.S. Virgin Islands, and the Commonwealth of the Northern Mariana Islands is eligible to apply directly to the U.S. Department of Agriculture for grant funds. Organizations or individuals interested in the SCBGP should contact their state department of agriculture for more information.

<https://www.ams.usda.gov/services/grants/scbgp>

Rural Development Loan and Grant Assistance

USDA Rural Development forges partnerships with rural communities, funding projects that bring housing, community facilities, business guarantees, utilities and other services to rural America. USDA provides technical assistance and financial backing for rural businesses and cooperatives to create quality jobs in rural areas. Rural Development promotes the President's National Energy

Policy and ultimately the nation's energy security by engaging the entrepreneurial spirit of rural America in the development of renewable energy and energy efficiency improvements. Rural Development works with low-income individuals, State, local and Indian tribal governments, as well as private and nonprofit organizations and user-owned cooperatives.

<https://www.rd.usda.gov/programs-services/all-programs>

Using Comida Buena

Comida Buena is here to help you build your farm business through business planning, sales and distribution of your products and certifications. Here are the ways you can tap into the Comida Buena network and achieve your goals:

BUSINESS PLANNING

Comida Buena offers 1 on 1 business planning services with Grant County Extension. Whether you are aiming to start of food business or already have one and could use a little more planning and guidance you can set up a time to sit down with County Extension, consult with Comida Buena project manager to get a clear idea of what products are likely to sell or have us review and tweak your business plan. Please visit our website at: <http://frontierus.org>

Jessica Swapp

Grant County Extension

jessiej@ad.nmsu.edu

(575) 388-1559

Ben Rasmussen

Comida Buena

brasmussen@swchi.org

(575) 597-0032

CERTIFICATIONS

Navigating to current state of certifications, permitting and regulations is challenging. Many small growers are exempt from having to obtain GAP or other food safety certifications but following basic food safety guidelines is a must for producers regardless of size.

Comida Buena offers free, on-site food safety (GAP) and organic consultations. These consultations will walk the producer through a mock inspection and identify the strengths and weaknesses of the operation and provide a plan of action to get the operation inspection ready.

DISTRIBUTION

Comida Buena would like to help distribute your food. All of our producers will undergo a food safety walk through and complete an initial interview.

Comida Buena will operate as a food hub. We will purchase food from the grower, aggregate it with other products and sell/distribute them to clients around the state.

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