Micro-Dairy Startup Guide

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So you want to start a micro dairy?

First things first. Micro-dairies are very different from large scale dairy farms. They are personally fulfilling enterprises, viable means of income, and absolutely necessary for strengthening local economies. In fact, we believe that micro-dairies are the future of agriculture. A four cow micro-dairy allows one to have a normal life, make a decent living and still have time in the day for other endeavors. In addition, micro-dairies contribute an essential product to local, sustainable food systems and provide vital community development.

However, micro-dairies are not for everyone. So before you jump in, it’s wise to ask yourself these important questions:

1. Do you know anything about dairy animals?
2. Do you enjoy interacting with them?
3. If no, do you have the time, desire and resources to learn?

No matter your level of farming experience, you can design your micro-dairy to fit your needs. We believe that the ideal micro-dairy is a simple operation. In fact, we believe that in any region where you can grow grass, anyone with the right attitude and inspiration can produce farm-fresh milk. It really is that easy.

We know of people who have been incredibly successful with their micro-dairies, despite beginning with no dairy knowledge or skills at all. Some were even afraid of cows to start with! All it took was finding a local, friendly farmer who was willing to teach the basics in exchange for some farm work. Due to the simplicity of the micro-dairy setup, in a few short weeks they were confident enough to do it on their own, knowing it was a process of learning as you go.

There is an immense sense of achievement when you come out of the learning/start-up phase. Every day offers new growth – whether it’s a new understanding of your equipment, your process, or animals – or simply doing it with no mishaps occurring. It really can be very satisfying work.

*Knowing an experienced farmer nearby who can mentor you, provide support and/or allay all the little worrysome concerns that may arise before you gain confidence in what you’re doing is a wonderful thing – even if you never need them. Although we strongly suggest you do connect if you can, as farming is as much about community relationships as it is about producing good food.*
Do you have the time, money & labor required to commit to dairy farming?

Do you have extra support available?

Although micro-dairy chores can be completed in a relatively short space of time each day (check the “Morning Chores” video on our site), milking still needs to be done every day, often twice daily, for much of the year. As such, being able to train a family member, friend, or neighbor how to milk and care for your animals is crucial, for there will be a time when you simply have to be somewhere else.

Do you have an interest in local, sustainable, ethical food systems and enjoy interacting and engaging with your local community?

As a micro-dairy farmer, you will be at the heart of your local food economy, providing quality, farm fresh milk that supports the land, the environment, the animals and the humans in your community. Having a customer base to make your enterprise profitable also means being willing to network and market yourself and believe in your own product. We believe that ideally, micro-dairies should be well-integrated into the community landscape, providing a valuable, local resource.

How do you feel about physical work? Be honest with yourself: are you up for the task?

Operating a micro-dairy does not require constant physical demands, but it does require hard work, especially during the summer. You need to be physically and mentally prepared to complete the tasks associated with running a small dairy, such as moving/making hay, moving manure, cleaning out the barn, and exerting authority (humanely) with your animals. It will help if you have a positive attitude, are up for a challenge and enjoy the company of cows.

If you’ve decided that you like hard work, fresh air, caring for dairy animals, building the health of your land, protecting the environment, and producing healthy food for your community, then starting a micro-dairy might be just the thing for you.
Planning your Micro-Dairy

Historically, diversification has been the key to survival for family farms. Farms specializing in the production of one crop are a relatively recent phenomenon. Obviously the income from a four cow micro-dairy alone will not support a family. It will, however, provide a family with a significant and wholesome secondary or supplementary income. In addition, a micro-dairy can be a profitable and diversified add-on to an existing vegetable/fruit farm or CSA, and contribute valuable manure for soil enrichment.

What does your ideal micro-dairy look like?

You will need to develop a rough proposal of the size and scale of the farm you wish to have, and/or consider how to best use the farm and facilities you have already. Your answers will need to take into account how much suitable land you have access to and how much milk you plan to produce. In addition, you will have to decide what animal and what breed you’d like to milk, and how many.

A list of the most common dairy animals milked in the U.S. includes:

- cows
- goats
- sheep
- water buffalo
- camels
Some food for thought:

Animals on micro-dairies should have access to fresh air, sunlight and real grass. We recommend approximately 2 acres of improved pasture per cow/or equivalent goat/sheep, etc. You may be able to do with more or less depending upon the rainfall, but make sure you have two acres available if you are trying not to give your cows supplemental forage during the grazing season. This applies to temperate climates; the south and west have different requirements. Contact a University Extension office in your state (or neighboring state with similar climate) for the best localized recommendations. These folks are experts and their job is to help you.

Remember: the average lifespan of a cow on a commercial dairy farm is 4.5 years with only 2.5 of those years as productive. Just raising a calf to production age can cost $2,000 or more! Luckily for us, the productive life of a dairy cow on a micro-dairy can easily be doubled or even tripled if she is properly cared for and not stressed for maximum milk production. The return on your investment in your cows can also be doubled or tripled as well.

Grow in response to your market - not in anticipation of it.

You will want to know your market and plan to only produce enough milk for market demand. This is critical for your success. Never over produce! Success comes by building production slowly as demand increases in order to insure that the majority of farm’s milk can be sold at retail prices right at the farm. Those are always the most profitable sales because transportation and distribution costs are nonexistent.

According to IDFA’s Dairy Facts, a family of 3 will buy a gallon of milk every three days. So if one cow makes five gallons of milk per day, you need five customers (assuming each is a member of a family of 3) to each visit your farm and buy a gallon of that milk on day one, another five customers on day two, another five customers on day three and then finally on day four, the five customers from day one will come back for another gallon and the cycle will begin again. So the production from just one relaxed cow on a micro-dairy is likely to produce milk to supply at least 15 families.

Another income stream to keep in mind is agritourism. People love animals. Agritourism won’t cost a bundle or require transportation or distribution costs. A well promoted micro-dairy, in a high profile location, has the potential to attract dozens of paying tourists and school children a day. Sales of related products to visitors can also be significant. Micro-dairies are clean and the cows are friendly and relaxed: animal agriculture at its best.
Know where you stand

You will need to research and learn about what is legal in your state (read up on your state’s raw milk regulations on our site!). These regulations will influence your whole business from start to finish, including how you produce your milk, what milk you can sell (raw or pasteurized), how you can sell it (e.g. retail, direct from farm, via delivery, or through a cow-share agreement), how much you can sell (some states have a daily limit on raw milk sales), what you can sell it in (glass or plastic), specific equipment needed (e.g. to sell bottled milk you may require automated bottling), labeling requirements and more. **Adherence should not be taken lightly.**

You will now be ready to decide if you want to sell raw or pasteurized milk or both. In some states it is illegal to sell raw milk at all, so pasteurized milk may be your only option. Perhaps raw milk is legal but your customers prefer it pasteurized.

If this is the case and you want to sell pasteurized milk, or pasteurized milk products like yogurt, cheese, butter and cream, your facility will need to be licensed as a Grade A dairy.


(A short summary of the facility requirements for on-farm small batch pasteurizing can be found [here](https://www.fda.gov/food/safety-roads-grade-a-pasteurized-milk-ordinance-pmo)).

*We caution you to start small and not aim to grow too quickly. It’s not necessary, particularly as a micro-dairy enterprise should generally be considered additional income, not a primary income, thereby allowing you to...*
have a normal life and plenty of time during the day to work at more primary income streams.

**Befriend Your Inspector!**

This next step is really important: for many, micro-dairy success will require that you talk with and form a friendship (yes, a friendship!) with your local milk inspector. This will allow you to learn specific state requirements for facilities design and hygiene processes.

Grade A dairy requirements will vary according to your site and to your local ordinances, and your local inspector is the only one who can tell you what construction or equipment changes you’ll need to make in order to become a licensed Grade A dairy. In addition, this same inspector may be doing regular inspections of your dairy, so it's good to have them on your side. Plus, he or she may also be a good resource for finding second hand equipment and other knowledgeable farmers around town.

**Sourcing Equipment**

Now that you’ve familiarized yourself with your state’s regulations, you’ll need to do some research on your individual equipment needs.

There are a wide range of options available from hand milking into a pail, to very simple mobile milker bucket systems, to more complex pipelines. If you are completely new to dairy farming, it’s often a good idea to start small and simple, knowing you can upgrade as you go. The milking setup you choose will depend on the number of animals you will be milking, as well as the labor, time, and energy available. Although
pipelines call for a bigger initial layout, they can save a lot of money by improving efficiency and can easily be sourced second-hand for around $5,000-$10,000 depending on completeness and refurbishment needs.

A big thing you will need to consider with your equipment setup is how you will cool the milk after milking. Will you invest in a bulk tank, or use milk cans in a water bath or milk cans in a chest freezer? These are just a few options, which again will depend on your state’s regulations.

Here are some examples of milking systems:

- Pipeline
- Bucket Milker
- Portable Milker

If you choose to pasteurize, here is a good article from The Cheese Reporter magazine discussing the difference between HTST and Batch pasteurizers.

In terms of farm equipment, you will also need to work out adequate fencing, water (cows need almost 50 gallons of clean water each per day), and shelter for your animals (see barn considerations below). You will also need to decide how you will move manure and bedding so it does not pile up in one place. Human or machine powered? A small, compact tractor will make things easier, but is certainly not essential.

*See our recommended equipment sources here and our State by State Directory of Dairy Technicians, Equipment Suppliers to give you some ideas on where to buy.*

A High-Value Byproduct of Micro-Dairying

A single Jersey cow produces roughly 18 tons of valuable manure per year. The manure produced by four to six cows can be easily stored, composted and sold for
much needed organic fertilizer. The average income from the sale of the manure may reach $1500 per year or more per farm, and could either be used on farm, sold, or bartered for other local food products. Here’s an article in *Mother Earth News* that expands on the value of cow manure.

**Barn Design**

If you already have access to a barn, you may be limited by its existing structure. In fact, the shape you business takes will likely evolve from the system you have in place.

In the case that you DO NOT have a barn, it’s time to get creative and sketch a design.

*While the crux of the design entirely depends on the system you choose, these five things maximize a cow’s comfort and should be included in the plan:*

- good air quality
- a dry, comfortable resting place
- access to feed
- access to water
- sure footing

Some general things to consider are:

- Ease of use. What setup will make your daily chores the most efficient?
- Size of the animal=size of the aisle. Do not make your aisles too small so that animals cannot easily maneuver (or you can’t get out of their way) in a stressful situation.
- Access for equipment. If you’re using a tractor for most of your manure moving work, you’re going to need the height and width for it to comfortably fit within the barn. For most, using a wheelbarrow to get it out of the barn to the tractor does the trick.
- Ventilation. Generally this means the height of your sidewalls. This ties back to the air quality piece for cow comfort.
- Orientation. Consider what your barn is used for and how often the animals will be in it. Often for homes we use north-south orientation to capitalize on solar heating, but that may induce heat stress on your animals and not be the wisest choice.
- Barn design for bedding type. The setup of your aisles and flooring choice will be very much dependent on your intended choice of bedding.
Fit it with your plan. Your barn should allow you to manage your herd along with the values in your management plan, so that you’re not compromising on their health and comfort.

*See appendix for examples of barn designs.*

**Animal Care 101: Clean, Dry, and Comfortable Animals**

The following guidelines make sense to us, but we acknowledge that animal care is opinion-based and often site-specific. There is no “perfect” or “only” way. No matter how you choose to care for your animals, the small scale of your micr-dairy will ensure that problems of pollution, odors, and flies will be highly unlikely.

- Think small: up to six cows can be kept and milked in a compact, comfortable barn not much bigger than an ordinary two-car garage. Half of the barn houses the cows and the other half contains the milk handling and storage systems.
- Enclosed tie stalls require 1000 cubic feet of space per cow and a a good variable speed exhaust fan that ideally draws the air from in front of the cow and out behind them.
- Tread length, gutter dimension, along with stall divider, neck rail, trainer and manger design differ depending upon the breed of cow, climate, and farmer’s preferences. You have to be careful with tread length; farmers have strong feelings about that. The extension service will also make these kinds of recommendations, but in our experience they often tend towards longer tread lengths. The tread length has a great deal to do with the placement of the neck rail and the design of the manger.
- Treads in a tie stall require very good mats or liberal use of bedding. It is also good to mix pulverized lime in with the bedding and spread it on the walks as well. It improves traction, sweetens the manure and brightens up the barn.
- Never use old fashioned stanchions if the cows will be spending any extended length of time in the barn (i.e. over winter), as they do not allow the cow to get up and down easily, or turn around to groom themselves. As a result, tie stalls are more useful in colder climates.
❖ Lose packs should have 100 square feet of floor space per cow and a good water source.
❖ Cows should be fed away from their loafing area.

*Don’t forget to consider things like access to hot and cold water for cleaning/sanitizing the barn/milking parlour and processing room, as well as appropriate drainage. Maintaining a clean and hygienic milking and processing environment is critical.

Time for a Technician

If you are planning on installing a pipeline system, you will want to contact your local dairy technician. (You can find them through our Directory of Dairy Technicians & Equipment Suppliers).

A dairy tech will often be able to provide consultation, equipment and installation. But be wary of dealers who may want to milk you for what you’re worth (excuse the pun). If you are in the market for a pipeline system, it’s good to know that used pipelines can be just as good as new, and much less expensive. Just make sure the specifications (e.g. width of piping) meet your state regulation requirements.

Acquire Your Animals and Keep Them Healthy

What to feed?
Fresh grass, simple dry hay, some grain and plenty of good clean water is the healthiest ration for cows. Most micro-dairy farmers purchase their cows’ grain or hay feed and use their land for pasture. This represents a tremendous savings in time and energy.
for the farm owners. Most regions of the U.S. have an ample supply of hay for horses and cows alike. And, unlike horses, cows can also be fed fermented hay and corn.

The average cost to feed a milking cow at a micro dairy is less than $3 per day. Dry cows cost less than $1.50 to feed per day. Cows can be fed a little grain during a portion of their dry period to build up their body condition, but this is not a necessary practice. Without grain, the cost per day would drop to $1.00 or less. Based upon those figures it costs a little less than $1000 per year to feed a milking cow, including her dry period. Fortunately a healthy and happy cow has the potential to generate $12,000 or more per year in milk sales alone for a happy and healthy micro-dairy farmer.

What to test for?
You want to ensure your animals’ health and that your milk is healthy, so you run some tests when you first get your cows. Each state will have different requirements, so do check with them first. Generally you want to test for tuberculosis & brucellosis and have them vaccinated for rabies. This can all be done through your local vet. In terms of testing your milk, how, when, and what to test for falls under your legislative requirements as outlined in step 2.

When to milk?
Commercial dairy farmers have very little flexibility regarding their milking schedules due to the numbers of cows they milk and the high per-cow milk production. Each milking takes hours and it is tough, demanding work. The tiny scale of micro-dairies allows their owners to develop individualized milking programs and schedules. According to local legend, Robert Frost milked his cows at noon and midnight, since he hated to wake up early. Most cows are milked twice per day but one milking per day is possible, especially for cows that are not fed grain. Also cows that are producing less than twenty pounds per day may be milked once per day, further reducing chore times.

In addition, it is possible to extend a cow’s normal dry period (a cow’s non-milking period) from two months per year to six or more months per year. The cows can be “dried off” all at the same time for “seasonal” production or dry periods can be staggered for year round production. Dry cows are easy keepers. Their nutritional requirements are minimal and they spend most of their days resting, eating and preparing to give birth.

It’s time to get milking!

Soon you’ll be providing a fresh, delicious, valuable product to your friends and neighbors, And you’ll have a hand in contributing to a localized, ecological,
community-focused food system where the milk comes from neighbors, not from off a big, polluting truck! Welcome to the micro-dairy revolution. Thanks for helping AMD to change the world, one micro-dairy at a time.

Appendix

❖ Also see Tips for Proper Handling of Cows on a Micro-Dairy  
❖ Additional excellent resources include: The Farmstead Creamery (good barn designs), A Veterinary Book For Dairy Farmers by R.W. Blowey (third or forth edition is best), and Keeping a Family Cow by Joann Grohman.  
❖ Here is a pdf about remodeled parlors that is also worth a read.
Here is a helpful Creamery Licensing Flow Chart by Gianaclis Caldwell, author of “Farmstead Creamery Advisor”: