

3 Farm Infrastructure Considerations

Resource Kit for Nova Scotia Farmers

Evaluating Your Farm's Infrastructure Requirements

If you have purchased or inherited an existing farm, it may have a great deal of existing infrastructure in various states. On the other hand, you may be developing a farm from scratch. The first thing you need to do is make an inventory of the infrastructure you have and a list of the things you still need. New infrastructure or repairs to existing infrastructure can be expensive and need to be carefully evaluated. Building codes and environmental regulations are updated frequently, so you should consult with the relevant authorities *before* undertaking any work.

LIVESTOCK

If you are planning to keep livestock, the following infrastructure may be required:

- housing
- feed storage facilities
- fencing
- pasture
- water supply

Housing

Livestock housing needs to fulfill a number of requirements. First, it has to be properly sited to minimize environmental impacts and maximize animal welfare. Proper siting ensures the livestock facility is not prone to flooding or overheating, exposed to wind or lacking natural ventilation. An agricultural engineer can help you choose the best site for your livestock housing.

Second, it should be designed in accordance with the Codes of Practice developed by the National Farm Animal Care Council:

<http://www.nfacc.ca/codes-of-practice> The Codes of Practice include guidelines on maximum livestock stocking densities and sanitation.

Third, you must consider how you will manage the manure produced by your livestock. The NS Department of Agriculture has Manure Management Guidelines that you should be familiar with before building a new barn or

renovating an existing barn: http://www.gov.ns.ca/agri/rs/envman/manureguide_200610wres.pdf

Feed Storage Structure

You should consider how you will store your livestock feed. Grain-based feed and hay need to be kept in a cool, dry environment. Silage and haylage need to be kept in a moist, air-tight environment. Silage and haylage can be bagged or plastic-wrapped, which is a more cost-effective option than constructing a silo if you don't already have one. Ensure that any existing or new structures are adequately sized for your feed storage needs.

Fencing

There are a wide variety of fencing materials available. Fences can be portable or permanent. Some types of livestock can be contained with a single strand of electric wire, while others require a mesh fence. Refer to the [Livestock Fencing Guidelines](#) for more information on choosing and constructing fences.

Pasture

Putting too many animals on too little land causes reduced productivity to both and can damage the health of the land in the long term. As a general rule, allow for about one acre (0.405 ha) of pasture for every cow and for every 5 sheep or goats for the growing season. If you would like to provide hay for your livestock's winter feed needs, include another acre of forage land per cow or per 5 sheep and goats. Horses graze over a longer period each day (up to 20 hours) and trample a lot of forage in the process, so it's a good idea to provide 2.5 acres (1 ha) per horse of grazing land during the growing season.

For more information on how to establish a successful grazing system, see the [Maritime Pasture Manual](#) or contact a Perennia forage specialist.

Water Supply

Livestock need to have access to a reliable and potable source of water. While watering livestock from a stream or pond may seem like a cheap and natural option, this practice can be harmful to livestock health and result in environmental damage to the water body. Bodies of water should be fenced off and livestock access limited to small areas with gates and gravelled or

concreted paths in order to limit contamination. If you have an existing well and water lines, assess their capacity to meet your livestock watering needs or drill a new well and install new water lines with those needs in mind.

Any wells constructed in Nova Scotia must meet the Well Construction Regulations under the Environment Act. A list of certified well drillers and well diggers in Nova Scotia can be found at:

www.novascotia.ca/nse/cms/Search.asp .

HORTICULTURE

If you are planning a horticultural operation, the following infrastructure may be required:

- drainage
- water supply
- deer fencing
- buildings -greenhouse, washing/grading/packing shed, refrigerated storage
- other equipment

Drainage

Nova Scotia receives a relatively high amount of rainfall each year. Many soils in the province are naturally well-drained, while others have a high clay content and are poorly-drained, which severely limits their ability to support crop production. However, the installation of tile drains can significantly increase the productivity of this type of land. Installing tile drains can be expensive; however, you may be able to cost-share the expense by applying to the Department of Agriculture's [Homegrown Success Program](#). Experience has shown that draining soils before planting perennial crops like grapes, apples, and high-bush blueberries is highly beneficial.

For larger scale flooding issues, you may wish to dig ditches and/or install culverts. This requires either a permit from the Department of Environment before digging commences or a contract with a licensed excavator.

Water Supply

You can draw water for irrigation from a stream or river, but an approval from the Department of Environment is required for water withdrawals greater than 23,000 litres of water per day. In addition, the construction of

a pond for irrigation may require approval from the Department of Environment. This approval is usually reviewed by Fisheries and Oceans Canada (DFO), Habitation Protection under the Fisheries Act. DFO-Habitat Protection may require mitigation measures related to the installation of the intake, appropriate sized fish screening on the intake, and a prescribed maintenance flow (instream flow requirements) in the stream for the protection of all life stages of fish through the duration of withdrawal. All intakes should be screened in accordance with DFO's "Freshwater Intake End-of-Pipe Fish Screen Guidelines (1995)": www.dfo-mpo.gc.ca/oceans-habitat/habitat/water-eau/pipe/index_e.asp

See Chapter 3 of the [Environmental Regulations Handbook for Nova Scotia Agriculture](#) or contact the [Department of Environment](#) for more information.

Deer Fencing

Deer can be a major nuisance of horticultural crops. There are a number of strategies you can use to limit crop damage by deer. See the Department of Natural Resources fact sheet "[When White-Tailed Deer Become a Nuisance](#)" or contact a [Perennia](#) specialist for more information.

Buildings

Buildings may be required for a horticultural operation, ranging from a tool shed to a greenhouse or refrigerated storage facility. These can represent a significant investment in capital. If you require these facilities but wish to start with a small operation, rental facilities may be available.

Some low-cost, season extension techniques have been developed as alternatives to permanent glass greenhouse structures, such as high tunnels. For more information on greenhouses or greenhouse alternatives, contact Perennia horticulture specialist Rachael Cheverie at (902)896-0277 ext. 226 or rcheverie@perennia.ca .

Other Equipment

Equipment for cropping operations may mean only a hoe and a rake or it may mean a tractor and other highly mechanized equipment. For larger, expensive items, there are a number of alternatives to purchasing your own equipment, such as renting or hiring a custom machine operator. You could also purchase equipment in cooperation with other farmers in your area in order to share the cost.

Many farmers purchase used equipment to save money. Farm machinery often has a useful life cycle of many decades and this can be a sound strategy for reducing costs, particularly if you are mechanically inclined and can do some of the repairs and maintenance yourself. However, you should be aware that many safety features that are now standard in new tractors, such as roll-over protective structures (ROPS) and seatbelts, are not present in older tractors.

Before purchasing equipment, ensure that it is correctly sized for the job you intend to do with it and that you really need it, especially if renting or hiring a custom operator are options where you live.

[Written by Kevin Bekkers, Agricultural Resource Coordinator, Rebecca Sooksom, THINKFARM Resource Coordinator, and Laurie Cochrane, Agricultural Engineer, Resource Stewardship Division, Nova Scotia Department of Agriculture, March 2010. Updated in December 2013 by Rebecca Sooksom. Some of the information in this fact sheet was taken from the *Guide to Farming in NY: What Every Ag Entrepreneur Needs to Know*, a publication of the NY Beginning Farmer Project, Cornell Small Farms Program.]