

# Penn State **Extension**

## FARMLAND ASSESSMENT CHECKLIST

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This checklist is meant to be used as a guide as you examine prospective farm properties for lease. BEFORE visiting farm properties for lease, carefully review each consideration. Identify any particular aspects vital to your operation. NEXT, as you visit a particular property, check the boxes on the left to confirm that you have considered each item. Note comments on the right to help remember unique observations, next steps and/or questions. You may want to bring an extra sheet of paper to help keep your notes organized. By carefully scrutinizing all of the items listed, you may be able to better evaluate the suitability of each property for your farm operation and identify any “deal breakers.” Keep in mind that having a detailed business plan will have you better prepared to assess the requirements of potential properties.

Information on developing working landlord-tenant relationships and crafting lease agreements can be found in the Resources section on page 7.

### CONSIDERATION

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### COMMENTS OR SITE VISIT NOTES

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#### Soils

- Soil type/rating
- Depth to water table
- Depth to bedrock, fragipan, and hardpan
- Flood zones – Is the land historically prone to flooding? How often?

#### Land Suitability and Climate

- Sufficient Acreage
- Location and proximity
- Land Orientation
  - (sufficient sunlight
  - sufficient shade
  - north vs south facing slopes
  - Wind
- Microclimates
- Topography/ Slope
- Vegetation
- Site History
- Weed pressure and poisonous weeds
- Prior herbicide applications

#### Water & Irrigation

- Sufficient water
- Appropriate water quality (potable, irrigation, livestock)

#### Infrastructure, Equipment, Improvements & Maintenance

- Access
- Fencing
  - Fencing, corral, loading ramp, restraint system
  - Deer fencing
- Cell Phone Reception
- Equipment Storage
- Equipment Usage Housing / Residence

- Infrastructure
  - Barns
  - Equipment sheds
  - Farm office
  - Farm stands
  - Feed storage facilities
  - Food processing facilities
  - Greenhouses, high tunnels
  - Mobile livestock units
  - Product storage facilities, coolers, freezers
- Livestock
- Power Supply(public / private / generator)
- Property Borders
- Roads

**Other Considerations**

- Ag Support Services
- Current Tenant Relations
- Easements
- Neighbor Relations
- Records
- Restrictions/Restricted Areas

# CONSIDERATION DETAILS

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## **SOILS**

Knowing your soils should be a top priority. The quality of the soil will influence what you can produce most profitably. In a few situations the soil might not be appropriate for what you thought you wanted to grow. A good way to get a basic idea of the land before you even drive out to the site is to look at the soil survey. The soil survey for every square mile of the US is available online at <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>. Check to see if your site is rated “prime farmland” or “farmland of statewide importance.” That is a good sign that you should have few restrictions (from the soil) of what you can grow on that site. Two other important things to check are the ‘depth to water table’ and the ‘depth to a constrictive layer.’ This will give you hints about whether you have deep enough soil that dries out sufficiently to grow fruits and vegetables. You can also get this same information by reading the descriptions for the soil types on your farm.

You don’t want to have to spend thousands of dollars with the National Resource Conservation Service to dry out springs and seeps in order to farm. Under waterlogged conditions, all pores in the soil or soilless mixture are filled with water; so the oxygen supply is almost completely deprived. As a result, plant roots cannot obtain oxygen for respiration to maintain their activities for nutrient and water uptake. Plants weakened by lack of oxygen are much more susceptible to diseases caused by soil-borne pathogens. Waterlogging due to lack of oxygen in the soil causes death of root hairs, reduces absorption of nutrients and water, increases formation of compounds toxic to plant growth, and finally retards growth of the plant.

See “Resources” page 7 for more information on the web soil survey and how to use this resource.

- Soil type
- Depth to water table
- Depth to bedrock, fragipan, and hardpan
- Flood zones – Is the land historically prone to flooding? How often?
- Clay soil – Pennsylvania’s soil can have a high percentage of clay content. Consider whether this will be restrictive to your operation dependent on the percent and density of clay?
- Fertility – What is the current cropping quality, investment necessities, and will the soil need to be managed before you start cropping?
- pH – Does the pH match your crop needs? If not, how much investment of time and money is necessary to alter the conditions
- Slope
- Soil rating

## **LAND SUITABILITY AND CLIMATE**

**ACREAGE** – How many useable acres are there on the site? It is easy to overestimate the amount of acreage that is crop able on a farm. A few tools that can give you a close approximation of suitable cropland are on the websoilsurvey and on <https://www.paonestop.org/>. These each have a mapping feature where you can draw potential field edges onto an aerial map and have the program calculate your acreage. Another option is to use a measuring wheel to measure as you walk the field.

**LOCATION & PROXIMITY** – Where is the property in relation to markets, customers, labor, and agriculture support services and supply stores? Will you need to house labor? What additional resources will you need dependent on your proximity to markets to deliver to your customers?

**LAND ORIENTATION** — Consider the direction and/or quantity of sun available in all areas of the land that will be used. Are there shady areas? Hills, trees, and buildings can all create shade problems that you do not realize in the summer but become more accentuated later in the year when the sun is lower in the sky. Are there shady areas? Vegetable

production areas should be located in full sun. That means they must have a MINIMUM of six hours of direct sunlight. However, truly full sun with no shade is recommended for most vegetables. Light is the life source for plants that form their energy through photosynthesis. Edges of your field which receive shade and only sun for six versus twelve hours in a day will have less access to light, slowing their growth and reducing your yield.

In contrast if you plan to raise animals shade can be extremely important. For example, beef cattle begin to experience physiological stress when temperatures exceed 80 F. Shade can be critical in determining how well cattle deal with extreme heat events. To be effective there needs to be 20 to 40 square feet of shade per animal. Note access to plentiful water is also important to reduce heat stresses. Are there south or north facing slopes? South-facing slopes will get more sunlight and be a few degrees warmer than other areas. This can help them dry out faster in the spring and provide a warmer microclimate for heat loving vegetables. North-facing slopes will be a few degrees cooler.

Is there often a breeze or wind at the site? In a windy site it will be important to provide livestock protection from the wind (windbreaks, etc). Below 18 F cattle become stressed and begin to require additional feed in order to maintain body temperature. Winter winds will increase this need for additional feed. For vegetable producers strong winds may blow away high tunnels and row covers. On the other hand a light breeze can help dry plant leaves which helps prevent plant diseases. This light breeze can be a boon. For example, at a 40 acre vegetable farm in Berks County the owner states, "There is always a breeze on the farm which keeps my workers happy. The breeze helps dry the plants and I have less blight on tomatoes at this farm." A light breeze is also very beneficial for livestock.

**MICROCLIMATES** — Identify any frost pockets without air drainage, wet areas, high spots exposed to excessive winds, erosion, dry areas, etc. This information can be used in conjunction with macroclimate data or "hardiness zone maps" (see "Resources," page 7) to assess varieties of crops that could be grown in various locations. Pennsylvania ranges from zones 5 – 8, consider the number of growing days the area has and the average temperatures throughout the year.

**TOPOGRAPHY/SLOPE** — The land should be flat enough to be tilled or for equipment to be safely operated. This is not as important if grazing livestock. Identify strategies for productively managing non-tillable and excessively sloped areas and discuss whose responsibility it will be to manage those areas. If you are planning to crops that require frequent tillage of the soil on sloping ground you will want to work with the National Resource Conservation Service to develop a conservation plan including swales and grass strips to prevent erosion.

**VEGETATION** — Identify strategies for overcoming limitations related to existing tree cover, brush, grasses or weeds, including any existing invasive or vigorous weeds. Identify and point out to the landowner areas where tree removal is necessary. Discuss with the landlord how this work will get done.

**WEED PRESSURE/ POISONOUS WEEDS** - If you are entering into a short term lease be particularly careful to evaluate your weed pressure. For vegetable producers identify whether you have large patches of perennial weeds such as Canadian thistle or Johnsongrass that would take years to get under control. Also look for extremely high annual weed pressure. For livestock producers scout for poisonous weeds in your pasture.

### **SITE HISTORY**

- A few areas in Pennsylvania have a history of old apple orchards that might have left high levels of arsenic in the soil. Find out what was grown in that area. Generally sites that are currently in agricultural production are not likely to have a history of contamination.
- Contamination – Consider getting a comprehensive soil test to check for soil pollution. Information on "Environmental Soil Tests" can be found here <http://agsci.psu.edu/aasl/soil-testing/environmental-soil-testing>. Examples could include industrial waste, lead, arsenic, mercury... etc.

**PRIOR HERBICIDE APPLICATIONS** It is critical that you ask the prior farmer about what herbicides might have been applied to any field you plan to use the following year. There are a few classes of herbicides with long

residuals which will limit what crops you can grow the following year. For example, one Pennsylvania new farmer planted his entire four acres to mixed vegetables for eighty vegetable subscription members only to find out when his crops were not growing in the spring that the field had been sprayed the previous spring with a pre-plant herbicide which can effect vegetable crop growth 18 months after it was applied. There are a few classes of herbicides which require long rotation intervals before some crops. Triazines (ie atrazine) and meso

## **WATER & IRRIGATION**

**WATER RESOURCES** — Identify your water source and make sure there is sufficient water that is high enough quality for your use.

For vegetable production you need at least one to two inches of water per week during the main growing season. An inch of water for an acre is 20,000 gallons of water! If you are going to be able to irrigate sufficiently from a well you will need a significant flow in order to be able to irrigate efficiently. For example if you have a well with 37 gallon per minute flow it will take approximately 12 hours to irrigate one acre one inch. If you have 10 acres to irrigate you would need to be irrigating 24 hrs a day all week to get everything watered during a dry spell.

For vegetable production you will need a source of potable water to use for vegetable wash/pack. Wells and springs may provide a source of potable water. Check water pot ability by sending a sample to an accredited lab. While water collection from roof tops or other areas may seem like a good idea it is not allowable under good agricultural practices for vegetable wash pack unless it is treated after collection.

Ponds and streams can provide a large source of water. From a pond you can irrigate a larger volume of water at the same time. Check with the landlord about seasonal fluctuations in streams and pond levels. However, you need to consider possible food safety concerns of irrigating with surface water. Good Agricultural Practices require that surface water used to irrigate that comes into contact with the edible portion of the crop is tested at least three times per year for microbial contamination. Surface water used for livestock watering also must be reasonably free from contamination. The Penn State Ag Analytical Lab and other labs provide water testing for livestock and irrigation water <http://agsci.psu.edu/aasl/water-testing> (814) 863-0841.

## **INFRASTRUCTURE, EQUIPMENT, IMPROVEMENTS & MAINTENANCE**

**ACCESS** — How will you access the property? Check to see that roads leading to the property are traversable or adequately maintained, plowed, etc. for when you will need to make regular visits or transport goods to market. Does the site have adequate entry and exit for all equipment in every season and time of day during which you will be farming? See that the site has adequate access and turnaround space for large trucks delivering bulk supplies (or that a suitable alternate spot exists nearby). Each field or area on the property should have adequate entry and exit ways for regular equipment traffic. If individual fields, paddocks or areas have not previously seen the regular entry or exit of heavy equipment, farm vehicles, livestock or customers, consider the impact of such traffic on access ways and discuss with the landlord potential improvements to stabilize access ways, such as laying gravel. Make sure you discuss with the landlord the quantity, frequency and type (i.e. tractors, ATV's, customer vehicles) of traffic you are planning on.

**FENCING** – For vegetable producers in most areas of Pennsylvania deer fencing is a must. If there is not eight foot tall deer perimeter fence surrounding the area you plan to farm you will need to use portable deer fence or install permanent deer fence. If you have a short term lease electric 3 D deer fence may be a good option as you can move your investment easily. You will want to check with the township and the landlord that the type of deer fence you plan to install is allowable. In some townships you may have to work with them to make changes/exceptions to existing rules to allow for deer fence.

For livestock producers a permanent perimeter fence is generally necessary to keep livestock out of roads and other people's properties. Some landowners may be willing to work with you to share this investment. Additional divisions of pastures may be more easily added with movable electric fence.

**CELL PHONE RECEPTION** — Check to see that your phone service carrier provides cell phone reception at the site (or in a nearby location) for making and receiving calls.

**EQUIPMENT STORAGE** — Identify and inspect locations for storing your equipment. Ask questions. Discuss terms. Will your equipment be stored inside or outside? Understand your limitations and any additional costs that may accrue.

**EQUIPMENT USAGE** — Some landowners may be willing to include some equipment in the lease for your use. If so, identify and inspect the equipment, discuss terms, including fees, maintenance schedules, time restrictions and the rights of any other users. Alternatively, landowners may be interested in being hired by you to perform custom work with their equipment (i.e. plowing, hay harvest, etc.) Consider all options.

**HOUSING** — Identify all buildings that could be used as residences, or consider all areas that could be used for building sites or for siting mobile housing. If an existing residence is to be included in the lease or a separate residential lease is to be crafted, both parties should be aware of the basic rights and responsibilities afforded to landlords and residential tenants by Pennsylvania State and Federal laws (see "Resources," page 7).

**INFRASTRUCTURE** — Identify and inspect any infrastructure on site that could be available to the farm operation, from barns to irrigation lines to coolers. You and the landowner should determine which improvements will be necessary in order for the farm operation to thrive and which improvements you will have the right to make. If you will be investing in improvements, a discussion as to if or how you will be compensated should be initiated. Routine maintenance schedules for all infrastructure to be included in the lease should be discussed. Any anticipated major overhauls or repairs should be identified and distinguished from routine maintenance. Typically you are responsible for all routine maintenance that prevents abnormal deterioration, while the landowner is responsible for all major overhauls, replacements or repairs to structures or other infrastructure. Be sure to consult with builders, irrigation specialists and other experts to get appraisals, quotes and advice on any infrastructure improvements you anticipate needing. Dependent on your operation, infrastructure can be a costly investment. Make a list of all existing infrastructure, their condition, and estimated cost for repairs and additions, for both the immediate and long-term future of your business.

**LIVESTOCK** — Any livestock that the landowner owns that is to be housed on site or managed by you should be inspected and the terms of livestock care discussed. If you have questions about animal health, contact a livestock veterinarian or specialist. Consider bio-security and isolation requirements, as well as the potential for herd or flock contamination. Inspect fencing, and discuss the installation and maintenance of animal fencing and water systems.

**POWER SUPPLY** — Identify electric service, if needed. Contact the local power company to establish price rates for power or to investigate the feasibility of bringing power to other areas of the site where needed. If it is determined that you will use a generator, identify and discuss proper storage facilities for the generator and its fuel source.

**PROPERTY BORDERS** — Identify all borders to confirm size of workable lands. Walk borders to determine where sensitive areas exist. For example, agricultural activity would be restricted in proximity to a stream or wetland that acts as a border or intersects a border. If the landowner is not familiar with exact border locations, you can access tax maps that delineate parcels at the local town office.

## **OTHER CONSIDERATIONS**

**AG SUPPORT SERVICES** — Take note of how far hardware stores, feed suppliers, mechanics, custom hire equipment operators, or other support businesses or services are from the proposed site. Consider how much time you will spend traveling back and forth from each of these, or what other travel/shipping costs might be incurred. For example, if your

tractor needs maintenance or repair, how close is the nearest mechanic, or how far will they need to drive? PA Ag map is a useful resource for locating agriculture businesses <http://agmap.psu.edu/>.

**CURRENT TENANT RELATIONS** — Inform yourself about any current or previous tenants. Ask the landlord if the current tenant is aware that the landlord is looking for a new tenant and see if it is possible to speak to the tenant. Conversations with previous tenants can be invaluable, as they can reveal strengths, challenges or special features about a property that might otherwise be unknown, even to the landowner! Current or previous tenants might also share records that can be valuable sources of information (see “RECORDS,” below) or be willing to work alongside you in the fall or spring to help you get to know the new parcel. Note any particular expectations and/or desires the landlord currently has with regard to the property (in terms of aesthetics, farming approaches, etc.). Be sensitive that current or previous tenants are not required to meet with you and might be going out of their way to provide you information.

**EASEMENTS** — Become aware of restrictions placed on the property, including conservation easements, rights of way, and to what extent these restrictions could impact farm operations or limit expansion. For example, find out the width of a right-of-way zone that the power company owns for power, also what rights these entities have for access, management, etc. (i.e. spraying herbicides under power lines...) or the distance from the state highway into the property that the state owns. Understand who owns the mineral rights and if it is a possible site for Marcellus Shale drilling.

**NEIGHBOR RELATIONS** — Understand the usage, ownership and perimeters of bordering properties. Ask the landlord if it is possible to have a conversation with bordering landowners or tenants and if they are aware of your intentions to farm. Consider engaging them as you develop your plan, as they may have significant concerns about noise, pollution or aesthetics that may be more easily addressed up front. You do not need the landlord’s approval to talk to neighbors.

**RECORDS** — If available you should examine any records related to past land use. These include: soil test results, pesticide application records, well or other irrigation water quality testing results, organic certification records, building blueprints, wastewater system design plans and permits, Current Use Program forest and field management plans and any other record that might reveal information pertinent to managing the land for agricultural use. Was there a conservation plan completed in the past? If so, ask for a copy. If the landlord has a current tenant, ask to speak to him or her in order to obtain appropriate records. Be sensitive that current or previous tenants are not required to divulge these records and might be going out of their way to provide you information.

**RESTRICTIONS/RESTRICTED AREAS** — Identify any areas of the property where you will not be permitted to operate. Determine any sensitive areas that require special attention or will be restricted to certain farming practices and discuss those specific restricted practices. Discuss any farming practices or infrastructure modifications that you suspect might raise concern, such as constructing a tool shed or immovable chicken coop or establishing a composting or odor-prone livestock operation in proximity to residences, and propose sites for their implementation. Ask the landlord about hunting grounds, postings, or ATV trails that exist and are used on the property. Fostering a good landlord relationship remains in your ability to communicate. Make sure to outline exactly what you want to do so that both parties have a clear vision and understanding of changes that may happen to the land.

There are many other considerations not included in this field checklist that need to be made before entering into a lease agreement, such as your landlord’s expectations about insurance, access, lease term, long term ownership and land stewardship. Please consult “Resources” (page 7) for additional guidance in crafting a full lease agreement.

# RESOURCES

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**PA Farm Link** helps link farmers with available land and works with landowners to make their land available for agriculture purposes. <http://www.pafarmlink.org/>

## **For Learning More About a Specific Property**

**SOIL SURVEYS** — Soil surveys are a wealth of information. The USDA Natural Resource Conservation Service publishes maps and tables with soils information for every county in Pennsylvania. The maps are detailed enough to differentiate soils within a given property. The surveys indicate suitability of soils for a range of land uses, including all types of farming, forestry, recreation or building. Hard copies of soil surveys are often available at public or college libraries and at Conservation District and Natural Resource Conservation Service offices. The Web Soil Survey is an online version of the soil survey; this interactive service allows you to target a specific location and learn about its soil features. Online at <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>. Check out this article about using the Soil Survey <http://extension.psu.edu/business/start-farming/soils-and-soil-management/web-soil-survey>

**SOIL NUTRIENTS** - You can submit soil samples to the PSU soil testing lab for analysis. Online at <http://agsci.psu.edu/aasl>

**TOWN TAX MAPS** — Town offices maintain tax maps that are public information. These maps are a good way to figure out who owns bordering property. The tax maps include the number of acres, the name of the property owner and the borders of all of the properties in the vicinity. Town offices also keep records that list all formal documents of significance associated with a piece of property; these may include information about easements, previous owners and landmarks delineate the boundaries of a property, such as roads, streams or outcroppings.

**HARDINESS ZONE MAPS** — Hardiness zones define where extreme low temperatures occur in a particular region. Perennials are generally classified according to the hardiness zones in which they can grow. Interactive hardiness zone maps can be found online at <http://planthardiness.ars.usda.gov/PHZMWeb/>

## **For Developing Landowner-Tenant Relationships and Crafting Lease Agreements** **NOFA NJ Document?**

### **Managing Landlord-Tenant Relationships: A Strategic Perspective**

This 3-page fact sheet from Ohio State University gives guidelines for effective communication between farmer tenants and landowners for both the period prior to entering into an agreement and after the lease term starts. The information provided can be useful for maintaining positive relations between farmers and landowners in any state of the U.S. Online at <http://ohioline.osu.edu/fr-fact/pdf/0004.pdf>.

### **Information on developing a farmland lease (Chapter I in the Guide to Farming in Pennsylvania)**

This chapter details the essential terms of an agricultural lease. The entire guide is available online at <http://extension.psu.edu/business/farm/guide>

**ONLINE TUTORIAL ON FARMLAND LEASING** — Land For Good, a non-profit based in Keene, New Hampshire, provides an excellent online tutorial on farmland leasing in New England. This tutorial is relatable for Pennsylvania as well. This tutorial introduces you to the benefits and challenges of leasing and explains types of farm leases and when to use them. Online at <http://landforgood.org/wp-content/uploads/LFG-New-England-Farm-Leasing-Tutorial.pdf>

## **For Housing**

### **Renting in Pennsylvania: Landlord Tenant Act of 1951**

Online at [http://www.attorneygeneral.gov/uploadedfiles/consumers/landlord\\_tenant\\_act.pdf](http://www.attorneygeneral.gov/uploadedfiles/consumers/landlord_tenant_act.pdf)

## THIS PUBLICATION DREW UPON THE FOLLOWING RESOURCES

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**Farm Rental Assessment Checklist, University of Vermont Extension**

<http://www.uvm.edu/newfarmer/land/checklist.pdf>

**Leasing Farmland in New Jersey: A Guide for Landowners and Farmers**

<http://nj.gov/agriculture/sadc/farmlink/resources/leaseguide.pdf>

**A Landowner's Guide to Leasing Land for Farming**

[http://www.thegreenhorns.net/wp-content/files\\_mf/1344531092landownersguide.pdf](http://www.thegreenhorns.net/wp-content/files_mf/1344531092landownersguide.pdf)

**Farmland ConneCTions: A Guide for Connecticut Towns, Institutions and Land Trusts Using or Leasing Farmland, American Farmland Trust and University of Connecticut Extension**

[www.farmland.org/documents/FINAL\\_AFTFarmlandConneCTions\\_lo.pdf](http://www.farmland.org/documents/FINAL_AFTFarmlandConneCTions_lo.pdf)

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