

The 
NORTH FARM
Michigan State University

2021 FARM BUSINESS INCUBATOR MANUAL



A Program of:



Upper Peninsula Research
and Extension Center
MICHIGAN STATE UNIVERSITY

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College of Agriculture and
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Institute of Agricultural Technology

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Purpose of Manual



The purpose of the Farm Business Incubator Manual is to provide information you need to participate in our program. Our program helps you:

- Access high quality land at affordable rates.
- Access basic farm tools, infrastructure and technical assistance so you can get started right away.
- Transition onto your own farm.

There are many resources The UPREC North Farm offers and many steps you can take to become a successful farmer. There are also many things you can do so that you farm:

- Safely
- Legally
- Responsibly

Many of these practices and rules are outlined in this manual. Some of the rules come from the university, some come from farmers participating in the program, and others come from commitments The UPREC North Farm makes to groups who support the project. All of the rules are important for you to know so that you can be successful on your farm.

This manual also provides:

- Program dates for this season
- Basic information on the fees, schedules, and rules of the program
- Contact information for UPREC staff

Please read each section very carefully and make sure you understand what we expect from you and what you can expect from us. If you have any questions, please talk to the North Farm Coordinator.

MSU is an affirmative-action, equal-opportunity employer. Michigan State University Extension programs and materials are open to all without regard to race, color, national origin, gender, gender identity, religion, age, height, weight, disability, political beliefs, sexual orientation, marital status, family status or veteran status

Program Description



Congratulations on being accepted into the Farm Business Incubator program! We are excited to have you join us and look forward to supporting you in any way we can as you grow your farm business.

We are here to help. It is our goal to help you make your farm a success. To do this, we will help you to implement your farm business plan, provide farmland to grow crops, and assist with finding markets to sell your products.

What we provide for you:

Land: The UPREC North Farm site leases land at an affordable rate to FBI farmers (Please refer to The UPREC North Farm Land Lease for complete details regarding policies and procedures for land use at The UPREC North Farm). Land has been organically managed according to USDA NOP Standards and we expect participants to manage their fields using the same standards. UPREC will provide initial tillage/ground preparation according to participant instructions.

Equipment/Infrastructure: You will have access to some tools and infrastructure at the UPREC North Farm. Please refer to pages 11-12 of this manual for more details regarding access and requirements for using equipment and infrastructure.

Before the season: As needed, we offer technical assistance in:

- Planning your crops and markets
- Ordering seeds and seedlings
- Getting permits and insurance

Training and on-farm assistance: As a participant in the Farm Business Incubator, you will have on-farm assistance from the North Farm Coordinator, as well as information on on-line and in-person workshops/conferences throughout the state and Midwest that can further your farming knowledge.

Markets: We are here to help you determine the best markets for your farm products. We have experience in several methods of marketing and can connect you with interested buyers and other resources.

Keeping records: We provide templates and resources to help manage documentation for your farm enterprise.

Managing your farm business plans: We help you review your business plan regularly and make revisions as needed.

Bank Loans and credit: We will help provide information to determine what types of funding, if any, make sense for your farm.

What we require from you:

Adherence to the UPREC North Farm rules: You must agree to the site policies and procedures, as well as provide documentation as necessary for certifications.

Completion of farm business plan: You are expected to arrive with a business plan. Plan to revise your business plan throughout the program. You will be required to review your plan with the North Farm Coordinator on a yearly basis, as well as a final review at the end of Year 5 with the MSU Product Center.

Adherence to GAP requirements: GAP (Good Agricultural Practices) is a voluntary audit that verifies that fruits and vegetables are produced, packed, handled, and stored as safely as possible to minimize risks of microbial food safety hazards. You must comply with all GAP standards and guidelines and provide valid documentation so The North Farm can maintain this certification. **See The North Farm's Food Safety Manual for more details.**

Adherence to organic standards: While your plot is not required to be certified, we require that your farm is managed organically as to not jeopardize the certification of the UPREC North Farm. For more information regarding organic certification, please visit the [OMRI approved substances list](#) or review the [NOP certification standards](#) and the Organic Guidelines section of this manual.

Manage weed pressure: Your plot must not interfere with other growers' (present or future) ability to manage weed pressure.

Manage the fertility of your plot: You will be responsible for monitoring your soil's fertility and applying nutrients where suggested. Please consult with the North Farm Coordinator to create a fertility plan.

Provide a fall cover crop for your plot: When applicable, you will be required to provide a fall cover crop seeding. Please consult with the North Farm Coordinator to create a cover crop plan.

Coordinate with Farm staff: Because of shared facilities, you must coordinate with the North Farm Coordinator for use of irrigation, wash/pack facilities, storage facilities, etc. Please use scheduling tools to ensure that facilities are available to all participants.

Keep detailed records of your farming operation: We expect you to document various aspects of your farm for planning and certification purposes. See the **Record Keeping Requirements** section of this manual for a complete list of required documents.

Meet with North Farm Coordinator regularly: Communicate regularly with the Coordinator to keep them up to date on the status of your plot and any issues that might arise. Farm walks will be scheduled to ensure open communication and collaboration. Quarterly meetings are required to ensure that you are on track with your seasonal goals, and business plan goals.

Sweat Equity: You will be expected to volunteer time in the development of The UPREC North Farm and its production/research. The requirement for this will be the equivalent of one half workday (**4 hours**) per week, scheduled with the North Farm Coordinator. This is an opportunity to work with other growers and expand your perspective and experience, through participation and conversation with other farmers and the North Farm Coordinator.

2021 Program Dates



*** Note: These dates are only approximate calendar dates and are subject to change/adjustment.

January 15	First quarterly meeting for the year with North Farm Coordinator (for Year 2 & beyond)
February 15	Housing opens for FBI farmers (Year 1)
First Week of March	Orientation with North Farm Coordinator
First Week of March	New farmers have access to farm infrastructure after completing orientation Greenhouse opened for transplant production (date subject to change)
May 1	Farmers have access to field plots **Weather dependent**
May 1	Second Quarterly Meeting with North Farm Coordinator
July 1	Third Quarterly Meeting with North Farm Coordinator
October 1	Fourth Quarterly Meeting with North Farm Coordinator
November 15	All field clean up should be complete and cover crops should be in the ground. Fall crops may remain in the field, but should be consolidated so as to allow preparation of the remaining space. **Weather dependent**
December 15 *date subject to change*	Coolers in Grange are shut down for the winter season; farmers must move all product for the winter into their allotted spaces in the Root Cellar

2021 Fee and Payment Schedule



	Fee	Due Date	Fee Includes
Base Rate	\$1,540/acre/season	March 1 st	<ul style="list-style-type: none"> ● Land Lease <ul style="list-style-type: none"> ○ Up to 1 Acre ● Mainline water access ● Initial tillage ● Access to pack shed and walk-in cooler space ● Access to root cellar ● Access to greenhouse space ● Access to hand tools and walk-behind tractor ● Access to field tunnel and hoophouse space ● Technical assistance from Farm Manager ● Access to equal share of storage in Dairy Barn and Quonset hut
Tractor/Operator Fee	\$60/hr	December 31 st	<ul style="list-style-type: none"> ● Delivery of compost ● Unloading/delivery of potting media/packages/etc. ● Time of tractor/equipment use ● Labor of operator ● Documented in Services Log
Compost	\$20/yard	December 31 st	<ul style="list-style-type: none"> ● Manure based compost managed on-site. Compost application must adhere to Food Safety Manual guidelines ● Documented in Service Log
Housing (Optional)	\$175/per room/month	1 st of each month	<ul style="list-style-type: none"> ● Private room in cooperative housing on or near The North Farm property ● Utilities and landline telephone (Not including long distance) ● Option to rent whole house (please inquire with UPREC Director)

Invoices will be mailed to farmers on or before February 15th. If you cannot make payments by the due date, you must make formal written arrangements with the UPREC Director, or a late fee of \$50 will be charged.

General Farm Guidelines



Limitation of Liability

Please refer to the property lease agreement in the Appendices section of this document for more information on your responsibilities as a lessee, and the limitation of liability that the UPREC North Farm holds.

Field Preparation: We begin field tillage in late April or early May, depending on weather and soil conditions.

We begin summer crop residue tillage in late September/early October. Please talk with farm staff about where you want to plant your late crops. Make sure you:

- Store or remove all your property by November 15th.
- Coordinate with farm staff to prepare cover crop/late planting plots for winter.

Facilities: Keep all equipment and supplies secure (see **Equipment Use Section**) and use as follows:

- Keep work areas clean and avoid items that invite insect pests, rodents, or mold.
- Keep walkways clean and open; store items neatly and safely.
- Respect North Farm property and the property of your fellow farmers.
 - Adhere to Standard Operating Procedures for maintenance of various structures facilities.

Structures and Buildings: You are not permitted to build any structures on the farm, unless given approval by the North Farm Coordinator. The North Farm must give advance approval of the installation of any fences, and removal of trees/limbs.

Trash: You are responsible for removing all trash from your farm site: stakes, trellis netting, and other supplies. Everything must be removed from your fields by November 15th.

- Keep your fields and all common areas clean and neat at all times. Remove all trash each day.
- A dumpster is available for trash disposal in the UPREC office parking lot. Coordinated trash runs using a farm vehicle are encouraged.

Vegetable/Crop Residue: You are responsible for removing all crop residues from your field, high tunnel and hoop house space, transplant house, root cellar and in the Grange washpack area.

- You must provide your own containers in the buildings to collect and remove crop residue during the post-harvest process to remain in compliance with GAP protocol
 - Bins must be emptied daily so as not to attract pests into the building
- A compost area is provided at the west end of the transplant house for communal farm use
 - If winter access is restricted, coordinate with the farm Forewoman to locate a winter compost site.
- Any alternate compost sites must be approved by farm staff before use **AND** must be actively managed so as not to become a nuisance (odors, runoff, etc.) or attract pests.
- You must incorporate/remove all crop residues/culls in your field by the end of the season so as not to promote disease/pest pressure. Exceptions include green manures/cover crops and must be approved by the North Farm Coordinator.

Parking:

- Please do not block any North Farm vehicles or building access.
- Please minimize damage to grassy areas when driving on the farm.

Farm Help and Visitors: You are encouraged to invite people to your farm site for tours or to help with production. You must be present with visitors unless approved by staff. Be sure your visitors understand the farm guidelines. All visitors are required to sign the visitor log and be briefed on GAP policies and guidelines using the GAP training overview sheet.

Sublet: You are not allowed to sublet (rent out) your plot.

Access to your plot: The North Farm staff is allowed to enter your field when necessary and without notice. We also host field visits, volunteer events, and educational tours, which may feature or include your farm. We will notify you in advance of these events and encourage your involvement.

Photographers and Media Requests: You will be asked to sign a media release form allowing staff and others to photograph you during your participation in The North Farm program. Sometimes media, photographers, students, funders, donors, or other organizations may visit the farm and want to take photos of you or your crops in the fields. North Farm staff will do our best to notify you in advance so you can opt out if preferred. Otherwise, we request that you respectfully engage with visitors on the farm who may be learning about, writing about, or promoting you or the program. Please keep in mind that you represent your farm, as well as The North Farm and Michigan State University.

Alcohol: The North Farm's alcohol policy is governed by the Michigan State University's ordinance that states, "The use or possession of alcoholic beverages, including beer and wine, subject to state law, **is permissible** in housing facilities (rooms, suites and apartments) assigned by Michigan State University..." However, "The possession of open or uncapped containers of alcoholic beverages and the consumption of alcoholic beverages is **prohibited** in all public areas of lands governed by the Michigan State University Board of Trustees." See http://trustees.msu.edu/ordinances/ordinances_sec21.html

General:

- Most importantly, we strive to respect all other participants and farm visitors. Please realize that you are living and working in a community and that everyone deserves your respect.
- Supervise visitors at all times.
- No open fires, except in designated fire pit.
- Illegal drugs and unregistered firearms are not permitted.
 - This also includes legal cannabis
- Violent or aggressive actions – physical or verbal – towards others will not be tolerated.
- No pets allowed unless prior approval has been granted.
- MSU properties are smoke free, this prohibits the use of cigarettes, e-cigarettes and vaping products

Water Use and Irrigation



These watering guidelines are only for dry periods. Use less water if it rains during the week. Measure rain amounts with a rain gauge and/or logging of hourly use of irrigation.

Always check the soil moisture before and after watering.

Irrigation Schedule

Please coordinate irrigation use with other program participants and the North Farm Coordinator. A spirit of cooperation is necessary as everyone will be sharing a common resource. It is important that the irrigation system continues to work properly. You are responsible for making repairs due to damage you cause or incidents that occur in your field (i.e., animal damage, nicks, tears, or leaks). Notify the North Farm Coordinator of major irrigation problems or failures, especially involving a wellhead or pump. **It is important for you to fix any leaks as soon as you notice them in order to avoid waste of water, time, and money.** Turn off all pumps and watering systems at night and before you leave the farm.

Conserve Water:

- Avoid watering on sunny and/or windy days between the hours of 10 AM and 4 PM to avoid wasting water — more than 50% can evaporate.
- Check the soil 6 to 8 inches below the ground (root zone) before and after irrigating to see how much water to apply and whether you watered the root zone.
- Watch the weather. Use a rain gauge.
- Consider using mulches or plastic to retain soil moisture.
- Overwatering can have detrimental effects on plant health and leach nutrients. Please keep this in mind when determining irrigation schedules.

Limitation of Liability:

The North Farm does not guarantee continuous access to water at all times. The North Farm has access to deep wells at multiple locations across the farm, and has purchased and installed accompanying pressure tanks and pumps to accommodate water access needs during the growing season. The North Farm has invested in appropriate infrastructure to the extent possible. If an event beyond the financial or physical control of The North Farm occurs that limits access to farm site water, The North Farm cannot assume liability.

Frost-free hydrants:

It is absolutely imperative that all frost free connections (hoses, irrigation) are removed every day in cold weather to ensure that the hydrant does not crack due to freezing above ground. If a failure to do so results in damaged equipment, the responsible party will be held financially accountable.

Soil and Land Use



Organics: The North Farm produces crops by following the organic standards set by the National Organic Program (NOP). Please read the **Organic Guidelines Section** for more information. Contact a staff member if you have questions about what materials you can use under the organic standards. While your farm is not required to certify, it is imperative that you manage your plot organically so as to not jeopardize The North Farm’s ability to certify. All fertilizers, pesticides, and other inputs must have an “approved for organic” or OMRI-approved label. Keep accurate records of pest pressure and pesticide applications in your field. Submit copies of your records at year-end to The North Farm staff.

Soil Testing: Farmers must do a Standard Soil Test **annually** with organic matter levels. We will provide tools and information to help you through this process. It is suggested to submit fall samples to plan your fertility for the following season.

Fertilizers and Compost: Your soil tests will determine which fertilizers and compost you should use. Compost must be bioassayed for weed seed content and possible phytotoxic contaminants prior to use (in tunnels or fields). The Farm Manager is available to help craft fertility plans. Record any amendments you apply. Excess use can harm soil and water quality and your records will help develop the long-term nutrient management plan for The North Farm.

Cover Crops: Integrating cover crops into your growing system is required.

Crop Rotation: Keep a field map of where you planted crops throughout the season. Crop rotations are important for disease, pest, and nutrient management. Submit copies of your crop rotations to the North Farm staff each season so we can advise future farmers how to allocate bed space from the history of previous crop records.

Weeds: Control weeds by mulching, mowing, cultivating, or flame weeding. Keep weeds from entering other farmer’s fields. Maintain edges of your fields and remove brush and/or weeds. You are not allowed to use synthetic herbicides. Farmers should not grow any plants that are listed on the Federal Noxious Weed list. Check with North Farm staff before planting uncommon crops.

Rocks and Stones: Place rocks and stones from fields on existing rock piles or in marked locations. Please do not start new rock walls or piles on field edges or in your field. Larger rocks damage farm implements and equipment. Everyone needs to contribute to the process of persistently removing rocks from our plots.

Pest Management: If you intend to use pesticides on your fields, you must obtain a private pesticide applicator licensing through the state of Michigan. Please discuss this with the North Farm Coordinator to ensure that you are in compliance. All pesticides must be OMRI approved.

Equipment Use



After you complete all training and demonstrate that you understand how to use the equipment, you will have access to the following equipment:

- BCS walk-behind tractor and attachments (rear-tine tiller and straight bar w/ cultivation shanks)
- Weed trimmer with string
- Solo backpack sprayer
- Flame-weeder
- Hand tools: hoes, rakes, garden carts, shovels, seeders, etc.
- Power/carpentry tools

Due to liability issues, all large-scale tractor work is performed by the North Farm Coordinator or other UPREC staff. Please see the MSU Custom Work Rates sheet (Appendix B) for rates on tractor work.

Using equipment:

- When finished, clean the equipment, replace fuel, and put it in the proper location.
- Make sure all tools and equipment are cleaned and put away at the end of the day.
- Equipment must stay on the farm-site.
- Be courteous of other farm incubator's needs of equipment, coordinate times of use if necessary.

Know the equipment before working with it:

- Participate in The North Farm Equipment Training.
- Read the operator's manual.
- Learn all controls.
- Be sure that other people who are not trained do not use the equipment.
- Contact the North Farm Coordinator with any questions or concerns

Look for problems in the field:

- Walk the field and look for rocks, irrigation lines, hydrants, stakes, etc. before using equipment.
- Exercise caution when operating equipment near slopes and ditches.

Know the equipment is in a safe condition before operating:

- Always have the rototiller kick guard in place.
- Check oil levels and fuel tanks before starting.
- Make sure all connections are tight.
- Inspect for leaks.

Protect yourself and others:

- Avoid loose clothing and drawstrings
- Use safety glasses and hearing protection
- Wear gloves and boots – no open-toed shoes.
- Never stand on or reach under the equipment when it is running.

Equipment damage: Please inform the North Farm Coordinator and UPREC staff of equipment problems or damage. You will be charged repair cost if damage is the result of improper use.

Hoophouse/Transplant House/Caterpillar Tunnel Use



Participants have access to the heated transplant house (FIN) for transplant production throughout the season and in the caterpillar tunnels and hoophouse for in-ground production.

Space:

- Each participant will have access to 6 tables (18 pallets) of bench space in the heated transplant house for a total of 180 square feet.
- Each FBI farmer will have access to a 12' x 50' field tunnel
 - o UPREC North Farm staff will assist you in skinning/un-skinning the field tunnels each spring and fall
- Each FBI farmer will have access to one 30"x140' bed in the back half of the unheated hoop house (HH2)
 - o Each FBI farmer will have access to 24"x40' beds in the front half of the unheated hoop house (HH1), with number of beds subject to change, based on the number of program participants

Use: In the spirit of cooperation, growers will need to work together to manage the use of the transplant house, and shared hoop house beds.

Equipment: Farmers must provide their own soil amendments in the covered spaces. The hoophouse is not a place to store tools, equipment, or personal belongings.

Care for the structures: Farmers using the hoophouse/field tunnels share responsibility for upkeep and repair. You need to keep them clean to prevent insect, weed, disease, and rodent problems. Please notify The North Farm staff of any major repairs that must be done.

Transplant house cleanup: Hoophouse space must be kept clean and well maintained. Storage of personal transplant house items is only allowed in designated areas. All trash (potting soil bags, broken trays/flats, etc.) should be removed from the hoophouse on a daily basis. All plant material not suitable for field production should be removed from the hoop-house and composted to eliminate pest and disease pressure.

Safety and security: You should secure the hoophouse and all materials in it. Do not leave valuables in the hoophouse, as it is not locked.

Children and visitors: You must escort all children and visitors in the hoophouses at all times. Children are not permitted in the hoophouse without their parents.

If you fail to comply with the guidelines, North Farm staff may rescind your hoophouse/field tunnel privileges.

Pest and Disease Management



If you need to control pests or disease, it helps you and your customers stay safe by minimizing the use of pesticides and disease treatments. This saves time and money and is good for the environment. **Please note that only organically approved pesticides may be used on The North Farm and all applicators must have the proper licensing.**

1) LEARN

- Only those with a pesticide applicator certification may apply pesticides.
- Learn to identify pests in your fields – know which insects are beneficial and which pests can damage your crops.
- Remember what time of year pests show up on your farm.
- Learn about ways to control the pests once they appear.

2) PREVENT

- Rotate crops each year and plant varieties that are pest and disease-resistant.
- Use row cover to prevent pests from accessing your crops.
- Learn individual insect cycles and plant susceptible crops when plant-specific insects are not active.
- Consider dedicating areas to plantings that attract beneficial insects.

3) SCOUT AND MONITOR

- Check plants for pests regularly in and around your fields.
- Look on the top and bottom of leaves; check in the soil by the roots.

4) WRITE DOWN WHAT YOU FIND

- Keep a notebook with the dates you encountered insects.
- Note the crops you examined and levels of insect pressure you found.
- Take pictures to aid in identification.

5) TALK TO OTHER FARMERS AND NORTH FARM STAFF

- Find out if other farmers have the same pests.
- Ask them how they are controlling them.
- Work together to control damaging insects in adjoining plots.
- Discuss options with The North Farm staff.

6) MAKE A DECISION

- Ask yourself if the pest is going to cause sufficient damage for you to lose income.
- If damage is minor, you may decide to do nothing.
- If insect pressure is heavy, decide which control measures to employ.
- Using pesticides should be your **last** option.

Pesticide Safety



IN CASE OF AN EMERGENCY: Go to a hospital quickly. You must carry the **LABEL** of the pesticide that you were using.

If you feel the need to use pesticides to control a pest, you must first clear this with the North Farm Coordinator. **Only individuals with pesticide applicator training and certification may apply pesticides.**

It is your responsibility to keep records, post appropriate signage, and to know:

- What is sprayed on your crops
- When it is safe to harvest your crops
- When it is safe to reenter your field

Pesticides must be stored in the designated cabinet located in the Grange bathrooms. You MUST have SDS sheets available for all products you use.

Organic Guidelines



Please note that these guidelines are provided for your reference. While most apply to requirements at The North Farm, some are only required if you choose to certify your farm.

Organic farming means:

- Using ecological and integrated farming methods that protect and improve soil health/quality and cultivate a resilient farming system
- Using only OMRI-approved fertilizers or pesticides
- Using crop rotations and cover crops to manage soil health
- Using properly aged and managed manures and composts.

Crop rotation means:

- You must understand plant families in order to implement good rotations.
- You must rotate crop families to different locations in your fields from planting to planting and from year to year.
- Rotating between crops that are heavy feeders and light feeders.
- Switching between crops that inhibit weeds and crops that grow poorly under weed pressure.

Sustainable nutrient management means:

- Testing your soil each year to know what fertilizers & minerals you need.
- Using only approved fertilizers.
- Adjust the pH of your fields following soil test recommendations.

Compost use means:

- Using mature composted materials based on fertility requirements.
- Understanding your nutrient requirements and the value of the composted material.
- Following application requirements for any materials that are not considered ‘finished’ or ‘mature’ compost per the NOP standards.

Pest and Disease Management means you:

- Utilize prevention as a first disease and pest defense strategy.
- Provide plants with good soil and balanced nutrients.
- Choose healthy plants and disease resistant varieties.
- Encourage “beneficials” – predators and parasites – on your farm.
- Use alternative methods such as mulching, bug traps, and row cover instead of pesticides.
- Use pesticides as a last resort.

Weed Management means:

- Create a crop plan that utilizes multiple strategies to inhibit weeds before they become a problem.
- Not using prohibited herbicides to manage weed pressure.

Which Pesticides or Fertilizers Can I Use in Organic Crop Production?

Always ask a certifier or the North Farm Coordinator to find out if a pesticide or fertilizer can be used in organic farming. The pesticides that are allowed and prohibited may change each year. All pesticides and fertilizers must be in compliance with OMRI and/or certifier guidelines.

Seed and Transplant Sources:

- Use organic seeds when available or untreated conventional seeds if organic seeds are unavailable.
- Buy transplants from a certified organic source.
- Be careful when using commercial potting mixes. They may not be OMRI-approved and/or contain ingredients not permissible in organic production.
- Organic farmers are not allowed to use genetically engineered (GE or GMO) seeds or plants.

Record Keeping: Keep good records. Organic certification has a list of standards of how records need to be kept. With organic certification, harvest and sales records are necessary. Provide cropping maps and descriptions. Provide a list of what fertilizers and pesticides were purchased and where & when they were used. Write down when and why you used pesticides as well as where they are stored. Good records provide the proof of your compliance with organic standards.

Food Safety Requirements



Please refer to The North Farm Food Safety Manual for complete details regarding policies and procedures for using shared facilities at The North Farm and maintaining our GAP certification. You are required to maintain all the necessary documentation and follow standard operating procedures outlined in The North Farm Food Safety Manual.

Record Keeping Requirements



It is essential to keep good records. By keeping good records right from the start, you can position yourself for eligibility and application for financial support through loans, organic certification, GAP certification, or many other important or helpful opportunities.

Complete records will also help you plan your production for the following seasons and will be invaluable when you update your farm business plan and prepare your taxes. If you need more help, advice, or guidance with recordkeeping, The North Farm staff will offer assistance. Below is a suggested list of things you should be documenting in your records:

- Business and crop plans
- Marketing plans
- Profit & loss statements
- Cash flow statements
- Farm balance sheet
- Seed purchases and varieties
- Farm expenses
- Planting and seeding schedules
- Harvest (yield) and market schedules
- Sales records
- Inputs/applications (pesticides, irrigation, fertility)
- Food safety procedures
- Field work (tillage, cover cropping, etc.)
- Soil testing

The following records are *required* for participation in the program and will be reviewed at each quarterly meeting. Failure to comply with these guidelines may result in disciplinary actions by the North Farm Coordinator.

- Records required for GAP certification
 - o See North Farm Food Safety Manual
- Crop plan/planting schedule
- Fertility management log
- Pesticide application log
- Water use log
- Yearly soil tests
- Greenhouse/transplant materials documentation

- Seed acquisition

Cooler/Refrigeration/Crop Storage Use Policy

Farm Business Incubator participants will have access to 3 cold storage areas and one warm storage area

Walk-In Coolers: These coolers are located in the Grange wash-pack area and are primarily for produce that must be refrigerated. The coolers are kept at different temperatures for warm and cool storage crops. The North Farm Coordinator will notify you of any temperature changes throughout the season, depending on the type of crops being stored.

Walk-In Coolers Use Guidelines:

- North Farm staff will assign cooler space and label each shelf with farmers' names.
- Items that are not placed on the correct shelf, protrude into the central walkway, or take up another farmer's space will be discarded.
- All boxes must be labeled with the following:
 - Farm/Farmer name
 - Crop
 - Harvest location
 - Date of harvest
- Unlabeled boxes will be disposed of at the discretion of North Farm staff.
- Crops that have spoiled will be disposed of at the discretion of North Farm staff.
- Disposal of spoiled crops by the North Farm Coordinator will result in \$30 fine per event.
- Farmers must load and unload quickly and be sure that the cooler door is firmly closed.
- Only raw vegetables may be stored in the cooler. No prepared foods, meats, dairy or other products allowed.
- No boxes, containers, personal marketing materials, or any farm or market supplies may be stored in the cooler.
- Crop residue must be removed daily from the space and placed in the designated compost piles.

Root Cellar: Located in the basement of the Dairy Barn, the root cellar is intended for produce that needs to be kept in cooler temperatures for longer periods of time.

Root Cellar Use Guidelines:

- All boxes must be labeled with the following:
 - Farmer name
 - Crop name
 - Harvest location
 - Date of storage
- Only raw vegetables may be stored in the root cellar. No prepared foods, meats, dairy or other products allowed.
- Boxes, containers, personal marketing materials, or any farm or market supplies stored inside the root cellar must be on a table or pallet in the first stall in the root cellar.
- All boxes or loose product must be stored off the ground, in a bulk bin, or on a pallet.
- Crop residue must be removed daily from the space and placed in the designated compost piles.

Trailer Cooler: The trailer cooler is used during the mid-late summer to keep bulk-storage of crops cool before transferring to the root cellar. You must work with the North Farm Coordinator to determine whether or not you will need space in the trailer cooler to accommodate crops that will not fit in the walk-in coolers.

Trailer Cooler Use Guidelines:

- All boxes must be labeled with the following:
 - Farmer name
 - Crop name
 - Harvest location
 - Date of storage
- Only raw vegetables may be stored in the root cellar. No prepared foods, meats, dairy or other products allowed.
- Boxes, containers, personal marketing materials, or any farm or market supplies **ARE NOT** to be stored inside the trailer cooler.
- All boxes or loose products must be stored off the ground, in a bulk bin, or on a pallet.
- Crop residue must be removed daily from the space and placed in the designated compost piles.

Hilton Basement Room: The second room in the basement of the Holstein Hilton (North Farm office building) is available for storage of crops that do not require cold storage (garlic, squash, etc.). You must notify the North Farm Coordinator if you intend to use this space.

Hilton Basement Room Use Guidelines:

- All boxes must be labeled with the following:
 - Farmer name
 - Crop name
 - Harvest location
 - Date of storage
- Only warm-storage vegetables may be stored in the root cellar. No prepared foods, meats, dairy or other products allowed.
- Boxes, containers, personal marketing materials, or any farm or market supplies **ARE NOT** to be stored inside the trailer cooler.
- All boxes or loose products must be stored off the ground, in a bulk bin, or on a pallet.
- Crop residue must be removed daily from the space and placed in the designated compost piles.

Insurance Requirements



It is up to you to do your own research and decide what insurance policies you need for your business. Below is some general information you may want to consider when making your business plan.

There are three main types of insurance for farmers:

- Farm and Product liability insurance
- Workers' compensation insurance
- Crop insurance

Liability insurance: Farm (general) liability insurance protects you from being sued if you hurt someone or damage their property. Farm liability insurance covers medical expenses, first aid, the cost of a lawyer, bodily injury and property damage, farm chemical transportation coverage, and more. Product liability insurance protects you from customer lawsuits if a customer gets hurt or sick from eating your crops. There are many insurance companies that sell different types of liability insurance. Choose an insurance company that is familiar with and sells farm insurance for farmers. Talk to an insurance agent and explain how you plan to farm. Learn about the best types of insurance to protect you and your assets.

Workers' compensation insurance: (also called workers' comp) provides coverage if a worker you hire is injured on the job.

Crop Insurance: Crop insurance protects the value of selected crops if a disaster happens. Some of these disasters are: hail, drought, too much rain, freezing, heat, and disease. Crop insurance is available only through private crop insurance agents. You have to buy crop insurance before the damage happens. Please check on the dates that you need to buy the insurance.

NOTE: If you want to be eligible for farm insurance through Farm Bureau, you need to be a member of the Michigan Farm Bureau. The Farm Bureau has different levels of membership. Their most basic membership package costs approx. \$50.00 a year.

Conflict Resolution



You and MSU UPREC staff will agree to follow the guidelines in this manual, or disciplinary action will be taken including the possibility that you may be asked to leave the farm and the Farm Business Incubator Program. No refunds of rental fees will be issued if you are asked to leave the program.

MSU Ordinances:

The North Farm and all properties leased from The North Farm are governed by Michigan State University and adhere to published ordinances, rules, regulations and policies set forth by this body. Any violation of these ordinances may subject you to immediate dismissal from The North Farm program and penalties stated in section 6 of Michigan State University's list of ordinances. This list of ordinances may be found at: <http://trustees.msu.edu/ordinances/> or obtained by contacting Michigan State University.

Grievances:

1. Within a community, conflicts are likely to occur. We encourage open communication regarding issues of conflict, but ask that you involve the North Farm Coordinator if an issue cannot be resolved independently.
2. You can file a complaint against another farmer or The North Farm itself. Your complaint should be in writing, if possible. Write or discuss your complaint as soon as possible after the problem happens. Complaints should be brought to the North Farm Coordinator, or to the North Farm Coordinator's supervisor if the complaint involves the North Farm Coordinator.
3. The North Farm Coordinator will work to fix the problem with you, and/or seek other staff to help resolve the situation.
4. The MSU Office of the University Ombudsperson is an available resource for additional support in working through a grievance. These duties are carried out in a neutral, confidential, informal, and independent manner. The University Ombudspersons are not advocates for any individual or group on campus; instead, they are advocates for fairness. Talking to an Ombudsperson does not constitute filing a formal complaint or notice to the University, since the purpose of the University Ombudsperson's Office is to provide a confidential forum where different options may be considered.

Staff Contact Information



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The North Farm Coordinator

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MSU Extension Educator

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Participation Agreement



The Farm Business Incubator Program helps you start and build a specialty crop farm business. The North Farm offers a program that includes:

- Access to farmland, equipment, infrastructure, and other resources
- Technical assistance with crop production
- Farm planning assistance
- Marketing and sales support
- Business management and establishment support
- Training opportunities.

Enrolling in The Farm Business Incubator Program: To participate, The North Farm asks that you agree to:

- Plan and start up a farm business for up to 5 growing seasons.
- Grow and market your crops as a business.
- Receive training and assistance from The North Farm as needed.
- Follow the provided guidelines in the 2021 North Farm Farmer Manual and other supporting documentation.

Agreement to farm: This document contains all the agreements and guidelines that are part of The Farm Business Incubator Program. Please review this manual and talk about it with the North Farm Coordinator. When you sign your name below, it means you agree with all the rules in The 2021 Farm Business Incubator Manual, including, but not limited to:

- Farmer plot assignments and land rental payments
- Payments for services received as listed in the fee schedule
- Participation in 2021 trainings and farm visit schedule
- Farm rules, requirements and guidelines including, but not limited to:
 - Water use and irrigation
 - Soil and land use
 - Equipment use hoophouse/field tunnel use
 - Pest and fertility management practices
 - Food safety guidelines
 - Organic guidelines
 - Record keeping and reporting
 - Conflict Resolution

I, _____, have reviewed this document, understand it and agree to participate in the 2021 North Farm Incubator Program. I understand that this manual is subject to change, and that it will be evaluated annually.

_____ Farmer Signature	_____ Date	_____ Farmer Name (printed)
_____ Farmer Signature	_____ Date	_____ Farmer Name (printed)
_____ Farmer Signature	_____ Date	_____ Farmer Name (printed)

Appendices



Appendix A: Property Lease Agreement

PROPERTY LEASE

LANDLORD: Board of Trustees of Michigan State University
a Michigan constitutional corporation
c/o Land Management Office
109 Agriculture Hall 535 Chestnut St., Suite 246
Michigan State University
East Lansing, Michigan 48824

TENANT: _____

TERM: One (1) year, This Lease commencing on 1 March, _____, and ending on 1 March, _____ on the date on which Tenant is no longer participating in the North Farm Farm Business Incubator Program (“FBI”), whether by natural expiration of Tenant’s participation in the FBI Program, Tenant’s voluntary withdrawal from the Farm Business Incubator Program or Tenant’s removal from the FBI for cause.

RENT: One Thousand Dollars (\$1,540) per tillable _____ acres, for a total of one thousand dollars (\$1,540) per year, payable in the following amounts at the following times: commencing on 1 March, _____.

PREMISES: Real property located in Section 28 of the Rock River Township, County of Alger, State of Michigan, more fully described as follows:

which premises contain _____ acres, more or less, of which _____ are tillable, together with access toll such buildings and improvements on such premises made available as part of the Program: *The Grange, The Holstein Hilton, The Hoophouse, The Transplant Greenhouse (FIN), The Root Cellar, The Dairy Barn, The Quonset.*

- 1. Lease.** The Landlord, in consideration of the Rent and the agreements contained in this Lease, leases the Premises to the Tenant for the duration of the Term.
- 2. Rent.** The Tenant shall pay the Rent to the Landlord, at the times set forth above, and at the Landlord’s address shown above or any other place designated in writing by the Landlord.
- 3. Premises Taxes and Insurance; Utilities.** The Landlord shall be responsible for the payment of all the taxes and insurance on the Premises and all the utility services for the Premises, including water, sewer, gas electricity, heat, and other services delivered to the Premises. The Tenant shall pay for all other services contracted for by the Tenant as soon as an invoice is presented so that no past due accounts arise.
- 4. Acceptance of Occupancy.** The Tenant shall commence occupancy of the Premises on the commencement date of the Term and begin paying Rent and other charges as required by this Lease. The Tenant acknowledges that the Premises are in a state of repair that is acceptable for the Tenant’s

intended use of the Premises participation in the FBI Program.
The Tenant accepts the Premises as they are.

5. **Use of Premises.** The Tenant shall farm the Premises in a good and husbandlike manner and shall occupy and use the Premises for no purpose other than as part of the FBI Program, and in particular shall not use the Premises, or permit the Premises to be used, for any unlawful business or purpose.
6. **Alterations; Return of Premises.** The Tenant shall not make any alterations or additions to any building or land improvement without the prior written consent of the Landlord. At the expiration of the Term, the Tenant shall give up the Premises, together with the buildings and improvements (including any alterations and improvements made by the Tenant) located on the Premises, in as good order and repair as when leased, excepting any damages brought about without negligence on the Tenant's part by the elements or by ordinary usage. The Tenant shall have no rights in any crops left unharvested at the expiration of the term of this Lease.
7. **Repairs.** The Landlord shall make repairs to the buildings on the Premises except in case of damages arising from the negligence of the Tenant or the Tenant's agents or employees, in which case the Tenant shall be responsible for repairs.
8. **Assignment; Subletting.** The Tenant may not sublet, assign, or relinquish or transfer its interest in the Premises or any part of the Premises without the prior written consent of the Landlord.
9. **Personal Property.** The Tenant shall maintain and pay for all insurance covering the Tenant's personal property on the Premises and shall pay taxes which may be assessed against such personal property. The Landlord shall not be responsible for any loss of business or other loss caused by damage to the Tenant's personal property on the Premises.
10. **Entry and Inspection.** The Tenant shall permit the Landlord or the Landlord's agents to enter the Premises at reasonable times and with reasonable notice, to inspect and repair the Premises.
11. **Indemnity.** The Tenant shall indemnify and save the Landlord harmless from and against any loss, damage and liability occasioned by, growing out of, or arising or resulting from any default under this Lease or any intentional or negligent acts on the part of the Tenant or the Tenant's agents or employees.
12. **Default and Reentry.** If the Tenant fails to pay Rent or other charges when due; if the Tenant fails to comply with any requirements of the FBI Program; if the Tenant fails to perform any other obligations under this Lease within ten (10) days after receiving written notice of default from the Landlord; if the Tenant makes any assignment for the benefit of creditors or a receiver is appointed for the Tenant or the Tenant's property; or if any proceedings are instituted by or against the Tenant for bankruptcy (including reorganization) or under any insolvency laws, the Landlord may terminate this Lease, re enter the Premises, and seek to relet the Premises on whatever terms the Landlord thinks advisable. Notwithstanding reentry by the Landlord, the Tenant shall continue to be liable to the Landlord for the Rent and other charges owed under this Lease and for any rent deficiency that results from reletting the Premises during the term of this Lease. Notwithstanding any reletting without termination, the Landlord may at any time elect to terminate this Lease for any default by the Tenant by giving the Tenant written notice of the termination.

In addition to the Landlord's other rights and remedies as stated in this Lease, and without waiving any of those rights, if the Landlord deems necessary any repairs that the Tenant is required to make or if the Tenant defaults in the performance of any of its obligations under this Lease, the Landlord may make repairs or cure defaults and shall not be responsible to the Tenant for any loss or damage caused by that action. The Tenant shall immediately pay to the Landlord, on demand, the Landlord's cost for curing any defaults, as additional rent under this Lease.

13. **Lease Possession.** As long as the Tenant pay the rent as specified in this Lease and performs all of the Tenant's obligations under this Lease, the Tenant may peacefully and quietly hold and enjoy the Premises for the Term. If the Tenant does not vacate the Premises at the end of the Term, the holding over shall constitute a month-to-month tenancy at a monthly rental rate to be set by the Landlord at the Landlord's sole discretion.

14. **Entire Agreement.** This Lease contains the entire agreement of the parties with respect to the Premises. This Lease may not be modified except by a written document signed by both parties.

15. **Binding Effect.** This Lease shall bind and benefit the parties and their successors and permitted assigns.

To evidence their agreement as set forth above, the Landlord and Tenant have caused this Property Lease to be duly executed effective as of the date first set forth above.

TENANT:

Witnesses:

_____ **Date:** _____

LANDLORD:

**BOARD OF TRUSTEES OF
MICHIGAN STATE UNIVERSITY**


Witnesses:

_____ **Date:** _____

**Charles J. Reid, Director
Land Management Office**

_____ **Operator**

Appendix B: MSU Custom Work Rates

		<h3>2019 Custom Machine and Work Rate Estimates</h3>					
FIRM Team Fact Sheet Number Authors: Bob Battel, Field Crops Educator Michigan State University Extension • June 2019							
2019 Production Season Costs							updated June 2019
Farm Labor Unskilled ⁷ = \$ per hour	\$14.19						\$2.30 per gallon of fuel
Farm Labor skilled ⁷ = \$ per hour	\$16.35						\$2.53 per gallon lube & fuel cost
TRACTORS ONLY:							
		max.	min.	Custom \$/Hour	Machine Cost \$/Hour	Est. Fuel Gal. / Hour	Est. Fuel Cost per Hour
No driver, or fuel cost	4WD - 260 hp.	\$ 148.10	\$ 63.20	\$105.65	\$112.03	11.4	\$30.15
	MFWD - 225 hp.	\$ 118.10	\$ 49.40	\$83.75	\$98.05	9.90	\$26.19
	MFWD - 130 hp.	\$ 82.90	\$ 40.70	\$61.80	\$56.62	5.70	\$15.08
Iowa=\$0.20/ hp-hour (fuel not included)	2- WD - 75 hp.	\$ 60.20	\$ 32.10	\$46.15	\$23.98	3.30	\$8.73
Est. Fuel use .044 gal. diesel/PTO hp / hour	2- WD - 40 hp.	\$ 27.80	\$ 27.80	\$27.80	\$11.90	1.76	\$4.66
Auto Steer systems charge per acre	\$2.89						
TILLAGE OPERATIONS:							
	Custom \$/Acre ¹	max.	min.	Total Machine Cost/ Ac ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵	Est. Fuel Gal./Acre ⁶
Plowing: Moldboard (6 bottom)	\$20.83	\$ 50.00	\$ 7.50	\$27.33	\$115.34	4.17	1.32
Chisel Plow (23 ft.)	\$15.74	\$ 50.00	\$ 6.00	\$14.41	\$187.76	13.03	0.64
Chisel – front disk (16.3 ft.)	\$19.14	\$ 30.00	\$ 7.00	\$18.49	\$170.29	9.21	1.04
Vertical tillage	\$14.55	\$ 35.00	\$ 9.00				
Disk - V - Ripper combo (17.5 ft)	\$21.40	\$ 36.00	\$ 8.00	\$0.00	\$0.00	11.59	1.00
V-Ripper 30" O.C., 17 ft.	\$20.49	\$ 35.00	\$ 15.00	\$15.62	\$96.53	6.18	1.61
Subsoiler 30" - 10ft (12-15")	\$19.65	\$ 35.00	\$ 10.00				
Disk - tandem (21 ft)	\$13.34	\$ 30.00	\$ 5.00	\$14.47	\$176.82	12.22	0.74
Field Cultivator (23 ft.)	\$12.87	\$ 28.00	\$ 7.50	\$6.64	\$86.19	12.98	0.31
Harrow	\$10.59	\$ 19.00	\$ 7.00				
Soil Finisher	\$16.45	\$ 30.00	\$ 7.00				
Row Cultivate (12 rows)	\$12.62	\$ 30.00	\$ 6.00	\$8.71	\$134.57	15.45	0.46
Stalk Shredder (20 ft.)	\$12.48	\$ 40.00	\$ 3.00	\$15.70	\$121.83	7.76	0.74
Rotary Hoe (21 ft.)	\$8.95	\$ 16.00	\$ 4.00			25.96	0.18
Land Rolling	\$8.00	\$ 12.00	\$ 5.00				
Highboy spraying	\$8.00	\$ 20.00	\$ 5.00				
Boom Sprayer - self-Prop.80ft.	\$6.78	\$ 20.00	\$ 4.00	\$6.38	\$281.49	44.12	0.07
Boom Sprayer - pull type 50ft.	\$6.50	\$ 17.00	\$ 3.50	\$6.09	\$280.69	46.09	0.12
PLANTING:							
	Custom \$/Acre ¹	max.	min.	Total Machine Cost/ Ac ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵	Est. Fuel Gal./Acre ⁶
Planter- conventional - w/fert & insect 30" corn-soys	\$19.16	\$ 46.00	\$ 6.00	\$16.79	\$235.06	14.00	0.40
Planter- conventional no attachments	\$18.98	\$ 46.00	\$ 10.00	\$15.25	\$213.50	14.00	0.40
Planter only - notill	\$17.11						
Planter- soybean 15" rows	\$17.14	\$ 32.00	\$ 6.00				
Planter- No Till w/splitter & w/fert	\$18.06	\$ 32.00	\$ 16.90				
Variable rate seeding	\$2.40	\$ 5.00	\$ 1.00				
Drill Soybeans Conventional	\$17.33	\$ 32.00	\$ 9.00				
Drill - No Till (15 ft.)	\$19.35	\$ 34.00	\$ 9.00	\$26.88	\$170.96	6.36	0.90
Drill Grain, press wheels	\$15.06	\$ 36.00	\$ 5.00	\$15.59	\$105.86	6.79	0.61
Seed Tender	\$3.30	\$ 6.00	\$1.00				
Pest Control - scouting	\$4.93	\$ 10.00	\$ 2.00				
Pest Control - scouting with drone	\$3.80	\$ 4.00	\$ 3.60				
Sugarbeets:							
	Custom \$/Acre ¹	max.	min.	Total Machine Cost/ Ac ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵	Est. Fuel Gal./Acre ⁶
Sugarbeets - Planting (12 rows)	\$32.50						
Sugarbeet - Self-Propelled Harvest & Cart	\$154.00						
Sugarbeet - Hauling per ton	\$35.00						

HARVESTING:	Custom \$/Acre ¹	max.	min.	Total Machine Cost/ Ac ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵	Est. Fuel Gal./Acre ⁶
Combine - 8 row (Corn)	\$32.07	\$ 90.00	\$ 8.00			6.79	2.00
Corn Head for Combine	\$9.05	\$ 10.50	\$ 6.00				
Combine - 8 row stalk chopper head	\$41.35	\$ 60.00	\$ 30.00	\$44.55	\$332.79	7.47	1.90
Combine Small grains (20 ft head)	\$27.86	\$ 50.00	\$ 14.00			6.79	2.04
Combine Soybeans (30 ft. head)	\$30.29	\$ 66.00	\$ 8.00			10.18	2.04
Combine Soybeans- air reel- flex	\$37.80	\$ 50.00	\$ 30.00			7.42	2.04
Soybean Head for Combine	\$8.95	\$ 10.00	\$ 7.00				
Combine, cart, haul to storage - Corn	\$41.57	\$ 90.00	\$ 18.00				
Combine, cart, haul to storage - Soybeans	\$38.83	\$ 85.00	\$ 17.00				
GPS mapping addition to harvesting	\$2.30	\$ 5.00	\$ 1.00				
Picker 2 row - Ear Corn + 3 wagons	\$28.58	\$ 41.00	\$ 7.00				
Grain Cart - corn / acre	\$5.51	\$ 12.00	\$ 1.00	\$30.67	\$210.70	6.87	1.44
Chopping Forage- Pull type 3 row	\$38.20	\$ 60.00	\$ 15.00			2.07	3.38
Chopping Forage -Pull type Pickup hd-10ft	\$401.00						
Chopping Forage-Self-propelled 625hp /hr	\$401.00	\$ 1,150.00	\$ 55.00		per hour		2.58
Chopping Silage- Self propelled- per ton	\$6.75	\$ 8.00	\$ 5.50				
Chopping Haylage- Self propelled/ton	\$8.40	\$ 9.00	\$ 8.00				
Snaplage/ acre	\$65.15	\$ 70.00	\$ 55.00				
Bunk Filling- chop, haul, filling & packing / ton	\$14.00						
Silage Bagging per ft. (9 ft diameter)	\$9.33	\$ 15.00	\$ 1.00				
Mowing	\$14.04	\$ 32.00	\$ 7.00				
Raking	\$6.62	\$ 20.00	\$ 1.50	\$2.61	\$66.33	26.18	0.07
Tedding	\$7.60	\$ 20.00	\$ 3.00				
Windrowing - hay or straw	\$12.20	\$ 16.00	\$ 15.00			12.12	0.32
Swathing hay or small grains (25 ft.)	\$14.96	\$ 36.00	\$ 7.50	\$21.88	\$265.19	12.12	0.32
Mower-Conditioner Pull-type (9 ft.)	\$15.05	\$ 27.00	\$ 7.00				
Mower-Conditioner- Self Propelled (16ft)	\$16.67						
Mower - Conditioner- Rotary (12ft)	\$12.50					8.73	0.38
Small Square Baling Hay per bale	\$1.00	\$ 3.00	\$ 0.25			4.36	0.40
Wrapping Bales per bale	\$4.97						
Baling Round- 600-800 # per bale	\$11.80	\$ 10.00	\$ 5.00				
Baling Round -1200 -1500 # per bale	\$11.67	\$ 16.50	\$ 5.00			9.45	0.35
Baler 1000# Round/ with wrapper	\$11.80	\$ 22.00	\$ 3.00			9.45	0.35
Mow-Rake-Bale-fld Haul- Lrg. Round/bale	\$24.12						
Baling -1500 # Lrg. Round - straw/stalks	\$12.63	\$ 19.00	\$ 8.00				
Baling -1500 # Lrg. Round - straw - with wrap	\$13.41	\$ 15.00	\$ 11.00				
Picking up w/accumulator- lrg.sq.bale	\$2.65	\$ 3.00	\$ 2.00				
Baling - Lrg Sqr. Hay 4x3x8	12.46	\$ 20.00	\$ 5.00			11.65	0.49
Hauling round bales/bale/loaded mile	\$3.75						
Hauling square bales/bale/loaded mile	\$2.55	\$ 6.00	\$ 0.25				
FERTILIZER:	Custom \$/Acre ¹	max.	min.	Total Machine Cost/ Ac ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵	Est. Fuel Gal./Acre ⁶
Fertilizer Dry Bulk: Spreading	\$5.22	\$ 15.00	\$ 1.50				
Fertilizer dry Bulk Spreader only	\$4.16	\$ 6.00	\$ 5.00				
Lime application	\$8.06	\$ 30.00	\$ 4.00				
Fertilizer- Liquid-Knifed In	\$11.05	\$ 19.00	\$ 4.00				
Fertilizer - side dressing	\$10.93	\$ 15.00	\$ 8.00				
Liquid-Sprayed:	\$6.38	\$ 13.00	\$ 4.00				
Fertilizer- Anhydrous: 21 ft.	\$13.31	\$ 36.00	\$ 5.00				
Soil Testing - GPS grid samples	\$6.70	\$ 20.00	\$ 2.00				
Liquid Manure Spreader Injected -1000 gal.	\$11.87	\$ 16.00	\$ 10.00				

FERTILIZER:	Custom \$/Acre ¹	max.	min.	Total Machine Cost/ Ac ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵	Est. Fuel Gal./Acre ⁶
Liquid Manure spreader only /hr.	\$63.49	\$ 100.00	\$ 50.00				
Solid Manure spreader only /hr	\$55.99	\$ 60.00	\$ 50.00				
Manure Pump, Hauling, Spreading - liquid (9500 gallon cap.) per hour	\$86/hr	\$ 300.00	\$ 23.00				
Manure Pump, Hauling, Injecting 1000 gal. liquid (9500 gallon cap.)	\$12 per 1000 gal.						
Bobcat/Skid Loader / hr.	\$61.09	\$ 135.00	\$ 18.00				
Mowing CRP or pasture / acre	\$19.22	\$ 65.00	\$ 5.00				
Ditch Mowing	\$65 per hour	\$ 100.00	\$ 40.00				
Brush Hogging / acre	\$27.76	\$ 50.00	\$ 6.00				
Grain Drying - in bin dryer /point/bu.	6c/pt/bu	\$ 10.00	\$ 0.02				
Grain Auger/ bu.	6c/bu.	\$ 0.10	\$ 0.01				
Grain Auger only / bu	4c/bu.						
Blower- silo filling / hour	\$20/hr.	\$ 20.00	\$ 20.00				
Grain Storage/ mo.	3c/bu/mo	\$ 0.40	\$0.00				
Grain Storage for season	21c/bu	\$ 0.45	\$ 0.10				
Grain Haul - per bushel - field to farmstead	9c/up to 10 miles	\$ 0.40	\$ 0.01				
Grain Haul - per bushel - farm to mkt 25mi	17c/up to 25 miles	\$ 0.65	\$ 0.03				
Grain Haul per Loaded Mile	\$4.00						
Livestock Haul Trailer/ loaded mile	\$3.00	\$ 6.00	\$ 1.50				
Power Washing per hr.	\$49.35	\$ 75.00	\$ 12.00				
Rock picking/acre	\$18.10	\$ 21.63	\$ 15.00				
Backhoe / hour	\$95.70	\$ 135.00	\$ 65.00				
Auto Steer System	\$1.40						
Machine storage square foot per year	\$0.49						
Custom Farming - Corn	\$113.85	\$ 225.00	\$ 75.00	(all machine operations for growing & harvest)			
Custom Farming - Soybeans	\$98.77	\$ 210.00	\$ 50.00	(all machine operations for growing & harvest)			
Custom Farming - Sm Grains	\$118.35	\$ 200.00	\$ 50.00	(all machine operations for growing & harvest)			

Fuel cost is calculated by adding fuel, oil and lub \$2.30 Fuel Price ==>

\$2.530

** base fuel & lube price used

1 Custom \$ per acre: Represents the rate obtained from surveys of actual farm data surveys for 2014 & 2015 from Universities listed below to do this type of machine work for another farm on a general basis. Higher or lower rates apply in each situation depending on crop conditions, soil conditions, size of fields and their locations. This numbers includes machine, power unit & operator where needed. Values have been adjusted higher to reflect the change in power fuel costs noted above.

3 Total Machine Cost/Acre: Includes tractor, fuel cost⁷, lubricants, repairs, maintenance, labor and overhead costs including depreciation. This could be considered as an estimate of the ownership cost and operation of this machine on a per acre basis. No profit or return to management, which would be necessary for on going enterprises were included in this number. Values are based on "Farm Machinery Economic Cost Estimates for 2014, University of Minnesota

4 Machine Rate per Hour: This number takes the Total Machine Cost per Acre and factors in the estimated Acres per Hour to give a value that represents an estimate of the hourly operational and ownership cost of machinery supported by ©University of Minnesota, Machinery Economic cost estimates for 2014. If the machine is run at full capacity (or engine clock hours) this per acre rate should be in the custom work value generated.

5 Acres/Hour: This is an estimate of the acres this machine should average on a per hour basis with normal down time.

6 Gal./Acre: This is an estimated machine use of fuel consumed to do this activity and is based on a factor of 0.044 gallons of diesel fuel per PTO horsepower-hour on an average. Your individual machines fuel use may vary from this number.

7 Labor cost; charged for this table at a rate of \$15.00 per hour unskilled tasks and \$20.00 per hour for skilled labor (planter, sprayer, harvester).

Costs were developed as an adjusted estimate of common rates being used by farms in this area to cover their cost of operation.

Major shifts in power fuel cost during the past few year has had an impact on and has changed the cost of machine operational cost.

As a thumb rule it is estimated that each \$1.00 increase in fuel cost, will increase most machine operations by an additional 15%.

- University of Minnesota, Machinery Economic cost estimates for 2019 @ <http://wazarus.cfans.umn.edu/william-f-lazarus-farm-machinery-management/>
- 2019 Iowa Farm Custom Rate Survey - Ag Decision Maker-Alejandro Plastina; <https://www.extension.iastate.edu/agdm/crops/pdf/a3-10.pdf>
- Kansas Custom Rates Comparison for 2018, Gregg I bendahi, <http://www.agmanager.info/machinery/papers/2016-rates-paid-kansas-farmers-custom-work>
- University of Illinois - Machinery Cost Estimates @ 6-2017, Univ. of Illinois @ <http://www.farmdoc.illinois.edu/manage/machinery/index.html>
- Wisconsin Custom Rate Guide 2017. https://www.nass.usda.gov/Statistics_by_State/Wisconsin/Publications/WI-CRate17.pdf
- Oklahoma Farm and Ranch Custom Rates, 2017-2018. <http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-6752/CR-205%202013-2014web.pdf>
- 2017 Indiana Farm Custom Rates . https://ag.purdue.edu/commercialag/Documents/Resources/Management-Strategy/Crop-Economics/0517_Langemeier_Indiana_Farm_Custom_Rates.pdf
- 2018 Nebraska Farm Custom Rates, <http://extensionpublications.unl.edu/assets/pdf/ec823.pdf>
- Ohio Farm Custom Rates 2018, <https://farmoffice.osu.edu/sites/aglaw/files/site-library/farmmgtpdf/enterprisebudgets/Ohio%20Farm%20Custom%20Rates%20Final%202018.pdf>

* This report is a summary of information extracted from various sources. Your actual cost may vary greatly from the numbers presented. It is recommended that you calculate your own cost and economic returns necessary for the operation of machinery and equipment on your individual farm.

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HOW TO FIGURE YOUR MACHINE WORK RATES

If you are hiring or doing custom work, the following will help you determine the custom rate. Custom rates are based on tradition or usual rates set in the community, the bargaining positions of both parties (i.e., availability of machinery services and demand for machinery services in your local area) and cost of operating the machines on your farm.

Cost of ownership and operation can be determined as follows:

Ownership cost per unit (e.g., acre, bushel, ton, hour) using the DIRT1 5:

1. Depreciation: $\frac{\text{original cost} - \text{salvage value}}{\text{years of use}}$		\$ _____
2. Interest: $\text{interest rate} \times \text{AIV}^a$		\$ _____
3. Repairs: estimated 2 to 5 % of original cost		\$ _____
4. Taxes: (0 in Michigan -i.e., no taxes on personal property used in agriculture)		\$ _____
5. Insurance: (estimated 0.5% x AIV for insurance premium)		\$ _____
6. Total ownership cost per year (add lines 1 thru 5)		\$ _____
A. Ownership cost per unit: total ownership cost ÷ estimated annual use (acre, hour, bushel, ton)	(A)	\$ _____
Operating Cost per (acre, hour, bushel, ton)		
1. Tractor: fuel (gallon fuel per unit x price/gallon) x 1.15 ^b		\$ _____
2. Machine: gas or fuel gallons per unit x 1.15 ^b		\$ _____
3. Labor: hours per unit x wage rate (if labor wage unit is per acre, bushel or ton multiply this wage by acres bushels or tons per hour to determine wage/hour)		\$ _____
B. Total operating cost per unit	(B)	\$ _____
C. Total ownership and operating cost per unit	(A+B)	\$ _____
D. Desired profit margin and / or risk premium	%	_____
E. Custom Rate (per acre, hour, bushel, ton) $\text{Line C} \times [1 + (\text{Line D}/100)]$		\$ _____

a Average investment value (AIV) = (original cost basis + trade in value) ÷ 2.
b The addition of 15 percent above fuel cost is for oil & lube. maintenance.

Custom Machine rate calculator is available on line at Ohio State University: <http://aede.osu.edu/research/osu-farm-management/decision-tools>

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