

**NORTHEAST SMALL SCALE, “SUSTAINABLE” FARMER
DACUM OCCUPATIONAL PROFILE**
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This DACUM (Develop A CurriculUM) Occupational Profile is a systematic listing of duties and tasks performed by **small scale, ‘sustainable’ farmers located in the northeast US**. A product of the Northeast New Farmer Network *Farming Skills Curriculum Development Pilot Project*, it has been sponsored by the New England Small Farm Institute to guide development of competency-based training programs for beginning farmers in the northeast.

Convened by Dr. Robert E. Norton, Senior Research and Development Specialist, Center on Education and Training for Employment, The Ohio State University, a panel of “farmer experts” created a comprehensive list of the work they believe the northeast’s successful small scale, ‘sustainable’ or ‘environmentally aware’ farmers actually DO (or should do): duties (large areas of work described in performance terms; clusters of tasks); and associated with each duty, a set of tasks (specific, meaningful units of work). Additions to this occupational profile (mainly planning and land access tasks) were offered by over 60 farming beginners convened in seven DACUM review ‘focus groups’. To round out the profile, original panel members created lists of (1) required tools, equipment, supplies and materials, (2) necessary general knowledge and skills, (3) essential worker behaviors and (4) critical future trends and concerns.

In conducting a first review of their DACUM chart, panelists noted the similarity between the practical duties and tasks of the small scale, ‘sustainable’ northeast farmer—our Project’s target constituency—and the duties and tasks of all farmers. They agreed to further refine the chart to highlight the occupation’s three qualifiers—region, scale and farming philosophy—by adding four new elements. First, they prepared a list of their own fundamental principles of ‘sustainable agriculture’—Essential Values and Principles, since farming philosophy and values shape the structure and practical management of every farm. Second, they agreed that, if the term ‘sustainable’ is to serve as a meaningful description of farming philosophy and practice, one or more definitions should be included in this document. (They have included three.) And finally, since the occupation we are describing is both scale and region specific, comments on scale (small) and on region (northeast) have been included. With the encouragement and support of Dr. Norton, these four new elements have been added to this otherwise traditional DACUM Research Chart.

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Essential Values & Principles

- Commitment to farming with respect for the constraints of ecological systems
- Commitment to place—the farm is not a moveable unit of production, but a neighborhood presence
- Decisions are made with knowledge of their ecological impact
- Farm systems that respect the requirements of nature, farm family needs, and personal values and goals
- Farming goals that address the community, the environment, education and quality of life as well as profit
- Commitment to farming as a way of life, not simply a means of making a living
- Commitment to sustainability, the regeneration of rural and farming communities, and the value of genetic diversity
- Respect for the ethological needs of all livestock (i.e. “the five freedoms”: freedom to stretch all limbs; freedom to groom; freedom to turn around; freedom to access adequate ventilation, light, food and water; and freedom to access company of like kind)
- Love and respect for nature and the soil
- Love and respect for hard work

- Concern for social justice and social and ecological responsibility
- Reverence for all life—human, animal and vegetable
- Humility about the place of human beings in the scheme of nature
- Dedication to recycling, and to conserving and improving the quality of air, water and soil

Definitions of the term ‘Sustainable Agriculture’

(1) “The term ‘sustainable agriculture’ means an integrated system of plant and animal production practices having a site-specific application that will, over the long term—(A) satisfy human food and fiber needs; (B) enhance environmental quality and the natural resource base upon which the agriculture economy depends; (C) make the most efficient use of non-renewable resources and on-farm resources, and integrate, where appropriate, natural biological cycles and controls; (D) sustain the economic viability of farm operations, and (E) enhance the quality of life for farmers and society as a whole....”

Food, Agriculture, Conservation and Trade Act of 1990 (“1990 Farm Bill”)

(2) “Sustainability can best be achieved through an understanding of the four subsystems of agriculture (Raeburn 1984): 1) Biological: plants and animals and the biological effects of physical and chemical factors (climate, soil) and of management activities (irrigation, fertilization, tillage) on plant and animal performance; 2) Work: the physical tasks of agriculture and how they can be achieved by combining labor, skills, machinery and energy; 3) Farm economics: the cost of production and the prices of crops being raised, quantities produced and used, risks, and all other determinants of farm income; 4) Socioeconomic: markets for farm products, land use rights, labor, machinery, fuel, inputs, credit, taxation, research, and technical assistance. The study of such subsystems is facilitated by the agroecological approach, which provides a conceptual framework to study the interactions within and between subsystems. Such interactions can be studied at any level. An advantage of the framework is that humans can be studied as integral components of the agroecosystems.” Agroecology: The Science of Sustainable Agriculture (Altieri 1995)

(3) “Sustainable agriculture does not refer to a prescribed set of practices. Instead, it challenges producers to think about the long-term implications of practices and the broad interactions and dynamics of agricultural systems. It also invites consumers to get more involved in agriculture by learning more about and becoming active participants in their food systems. A key goal is to understand agriculture from an ecological perspective—in terms of nutrient and energy dynamics, and interactions among plants, animals, insects and other organisms in agro-ecosystems—then balance it with profit, community and consumer needs. From the SAN website - quoted in Sharing the Harvest (Henderson 1999)

Definitions of a ‘Small Farm’

(1) “Small and part-time farming in the [northeast] with regular off-farm income by one or more farm family members has recently been increasing, after a long decline that started in the Great Depression years. Our small and part-time farms have proven to be one of the most resilient sectors of the farm economy.... These ‘new’ small farmers are, in fact, small business persons. Their agriculture is not a hobby—they are in the business of farming to make a profit and are constantly exploring ways to increase income through a wide variety of means. This seriousness of intent [has led one federal agency] to a new, albeit “unofficial”, small farm definition—‘a farm that is operated by an individual or farm family engaged in any agricultural enterprise for the purpose of earning an income, and who files a Schedule F Farm Income Tax Return in conjunction with a Standard Form 1040 with the IRS.’” - New England Small Farm Institute - informational brochure

(2) “In developing its recommendations, the Commission describes small farms as farms with less than \$250,000 gross receipts annually on which day-to-day labor and management are provided by the farmer and/or the farm family that owns the production or owns, or leases, the productive assets.” A Time to Act: A Report of the USDA National Commission on Small Farms

(3) “Intensively managed, diversified agriculture practiced on relatively small holdings.” “The essential element is that the farm is managed and worked by the farmer or farm family and that the eyes-to-acres ratio is small.” “Farming at a scale in which the farmer is in intimate, direct and regular contact with all aspects of production.” “The labor and management provided by the farmer is a significant portion of total labor and management, and the farm is small enough that the farmer is actively involved in all of it.” - DACUM panelists

Farming in the Northeast

“How can [the northeast] have an advantage for agriculture? The answer is simple—access to markets.... Our northeast market is large enough to allow farmers to sell their final products for a price that generates a profit. The growers of the main agricultural staples—corn, wheat, soybeans, hogs, cattle and, for the most part, milk, have the price that they receive for their final products set primarily by a Board of Trade or the government, with no regard for the cost of production—only supply. The products grown here in the northeast are in demand by a large group of consumers **LOCALLY**, who will pay a higher price, making it easier for the farmer to charge enough to cover the cost of production and hence make a profit.... Market access is how agriculture can grow and thrive in a populous place like the northeast.”

- Kent Lage, Director, Massachusetts Farm Viability Program (DFA)

Duty A: PLAN WHOLE FARM

1. Set whole farm goals (e.g. gather farm partners, family, and/or interested parties; set vision, mission statement, 3-part sustainability goals and farm/family priorities [economic, environmental, quality of life])
2. Assess available resources & needs (e.g. physical, capital, human; skills, experience, time, land, equipment, profitability, short and long-term owner’s draw)
3. Conduct market research (e.g. research industry, competition, markets/customers, production potential, marketing strategies)
4. Select enterprise(s)
5. Prepare production plan (e.g. process budgets, production potential, farm operations timeline, labor needs)
6. Prepare marketing plan (e.g. pricing, marketing strategies, logo, product line, target customers, sales potential, promotion, product placement, labor needs, consumer trends, name, organic/”green” label options, potential for value-adding)
7. Prepare financial plan (e.g. financial statements, annual budget, cash flow projections, whole farm budget, capitalization plan)
8. Secure access to land (e.g. rent, lease, purchase)
9. Assess site (e.g. map & analyze: soils, topography, water, drainage, threats to natural resources, access, infrastructure, climate and microclimate)
10. Prepare conservation & land use plan (e.g. research conservation programs & regulations; timeline & budgets for: infrastructure development, conservation practices, irrigation/water projects; update maps)
11. Research legal requirements (e.g. zoning, organizational structure, product handling, liability, tax abatement options, development rights)
12. Assemble whole farm plan (e.g. timelines, budgets, labor, equipment, infrastructure, supply, and financial needs, roles, general business description, one year, five year, and long term plans)

Duty B: SET UP FARM BUSINESS

- 1 Obtain necessary financing (e.g. family, banks, others)
2. Establish farm legal structure (e.g. sole proprietor, partnership, corporation, cooperative)
3. Establish farm management team (e.g. create management and professional job descriptions; hire lawyer, accountant, and others; hire non-labor employees; establish service contracts; conduct new employee orientation)
4. Establish farm policies (e.g. visitor, safety, personnel)
5. Obtain necessary licenses, permits & certifications (e.g. federal employer ID#, fuel storage, farm labor camp, tax exemption, organic certification, certified kitchen)
6. Open business bank accounts
7. Purchase liability & property insurance
8. Establish credit with key suppliers
9. Obtain necessary office equipment & supplies
- 10 Set up bookkeeping system (e.g. cash journal, asset ledger, payables & receivables; by hand or on computer)
11. Set up filing & record-keeping systems
12. Provide for farm family security (e.g. purchase life & health insurance, establish retirement plan)

Duty C: MANAGE FARM BUSINESS

1. Establish tasks & timelines (e.g. administration, production, marketing)
2. Manage communications (e.g. phone, fax, email, on-site messages, correspondence)
3. Collect payments
4. Pay bills
5. Manage payroll
6. Pay taxes & fees
7. Balance checking account(s)
8. Monitor cash flow
9. Manage short & long-term debt
10. Take family living/owner's draw
11. Keep good records (e.g. income, expenses, payroll)
12. Adhere to federal, state & local regulations (e.g. sales tax & exemptions, workers compensation, payroll reporting)

Duty D: PURSUE EDUCATION & PROFESSIONAL DEVELOPMENT

1. Prepare plan to meet skill & information needs (e.g. goals, timeline, budget)
2. Apprentice to experienced farmer
3. Find farmer-mentor
4. Observe your farm *daily*
5. Read agricultural literature (e.g. books, journals, catalogs)
6. Visit other farms
7. Establish relationships with local institutions & organizations
8. Attend classes, conferences, workshops & trade shows
9. Consult with local experts
10. Dialogue with customers
11. Keep posted on current events & trends
12. Learn from experience (e.g. frequently compare actual outcomes to farm plan and adjust day-to-day operations accordingly)

Duty E: NOURISH FAMILY & COMMUNITY RELATIONS

1. Set aside time for family & self
2. Establish friendly relations with neighbors
3. Participate in community organizations & activities
4. Maintain an attractive farmstead
5. Host community events & farm tours
6. Patronize local businesses
7. Establish cooperative relationships with other farmers, businesses & organizations
8. Promote sustainable, local farming & food system security

Duty F: MANAGE FARM LABOR RESOURCES

1. Prepare farm labor plan (e.g. self, family, hired [H2A, interns, other], volunteer, CSA work-share)
2. Create job descriptions (e.g. clear & comprehensive)
3. Fill out any necessary state & federal labor forms
4. Recruit labor
5. Establish labor contracts
6. Conduct farm orientation (e.g. health & safety issues, “where things are”)
7. Assign daily tasks
8. Train farm workers (e.g. fieldwork, efficiency, equipment safety)
9. Supervise farm workers (e.g. communicate, motivate, resolve disputes)
10. Adhere to all state & federal labor regulations (e.g. state and federal employment law [fair wage, workers’ compensation, unemployment, equal opportunity, sexual harassment, etc.]; state and local farm property tax abatements programs; volunteer protection; product and general liability; risk management)
11. Keep good records (e.g. time sheets, labor reports, records of disputes & injuries)

Duty G: MANAGE TOOLS, EQUIPMENT & SUPPLIES

1. Inventory tools, equipment & supplies
2. Acquire necessary tools, equipment & supplies (e.g. purchase, borrow, rent)
3. Fabricate tools & equipment
4. Establish preventive maintenance schedule for tools & equipment
5. Establish parts & supplies inventories (including scrap pile)
6. Monitor condition of tools & equipment
7. Maintain tools & equipment
8. Repair tools & equipment
9. Provide storage for tools, equipment & supplies
10. Store tools, equipment & supplies (e.g. safely, in good order)
11. Get rid of unneeded tools & equipment (e.g. sell, give away)
12. Keep good records (e.g. equipment manuals, repair records, expenses, capital repairs, future problems/needs)

Duty H: MANAGE FARM INFRASTRUCTURE (e.g. grounds, farmhouse, utilities, roads, sheds, shop, fence line, ditches, barns, irrigation systems, greenhouses)

1. Adhere to federal, state & local legal & regulatory requirements (e.g. zoning, permits, building codes, fuel & pesticide storage)
2. Build/ install infrastructure
3. Create farm signage (e.g. promotional, safety, traffic, posting)
4. Establish preventive maintenance schedule for infrastructure
5. Establish parts & supplies inventory
6. Monitor condition of infrastructure

7. Maintain infrastructure
8. Repair infrastructure (e.g. emergency, seasonal, annual)
9. Demolish unnecessary infrastructure (including salvage & recycling)
10. Keep good records (e.g. plans of land, “as-builts”, expenses, capital repairs, future problems/needs)

Duty I: MANAGE PRODUCTION & NATURAL RESOURCES

1. Implement conservation practices & measures (e.g., buffer strips, water quality management projects, wildlife habitat improvement, strip cropping)
2. Test soil & water
3. Build soil health & productivity (e.g., make compost, plant and manage cover and catch drops, integrate crop and livestock production, install crop rotations, add organic amendments if and as required)
4. Obtain necessary supplies & inputs
5. Monitor weather
6. Manage pests (e.g. insects, diseases, parasites, weeds, critters, predators; provide habitat for beneficials)
7. Manage crop & livestock rotations
8. Conduct trials of new breeds, crops, products & techniques
9. Monitor ecological impact of all production activities
10. Manage crop residues & other farm by-products (e.g. compost)
11. Custom hire farm services
12. Adhere to federal, state & local regulations
13. Keep good records (e.g. inputs, soil health, weather, pests)

Duty J: RAISE LIVESTOCK

1. Prepare annual livestock & animal products production plan (e.g. stocking, rotation, feeding & grazing, health, production goals)
2. Obtain stock (e.g. produce on farm, buy in)
3. Provide stock with appropriate housing, shelter & protection from predators
4. Establish flock or animal ID system
5. Assess animal nutrient needs
6. Establish grazing plan
7. Manage pastures
8. Obtain feed & supplements (e.g. produce, buy in)
9. Balance feed rations
10. Feed & water animals
11. Monitor animal health & well-being
12. Meet all animal health & veterinary needs
13. Manage manure & livestock mortalities
14. Harvest animal products (e.g. milk, eggs, fleece, honey)
15. Slaughter meat animals
16. Perform post-harvest handling & processing tasks (e.g. pasteurize, bottle, wash, process, butcher, package, freeze, store)
17. Add value to animal products if required by marketing plan
18. Adhere to federal, state & local regulations (e.g. slaughtering & processing, manure)
19. Keep good records (e.g., herd or flock ID numbers, purchase and sales, production, general health, feed & supplements, breeding, processing, treatments [parasite control, medications, physical i.e. dehorning])

Duty K: RAISE CROPS

1. Prepare annual crop production plan (e.g. planting schedule, crop rotation, soil fertility, application of inputs, harvest dates, production goals)
2. Obtain seeds & plant materials (e.g. produce on farm, buy in)
3. Prepare soil (e.g. greenhouse or field, tillage or no-till, beds or rows)
4. Plant crops (e.g. seed, transplants, rootstock, slips)
5. Care for growing plants (e.g. transplant, mulch, prune, trellis, cover, stake)
6. Fertilize crops (e.g. foliar, side-dress)
7. Irrigate crops
8. Cultivate soil
9. Harvest crops
10. Perform post-harvest handling & processing (e.g. wash, trim, pack, cool, store)
11. Add value to crops if required by marketing plan
12. Adhere to federal, state & local regulations (e.g. APHIS, pesticide regulations)
13. Keep good records (e.g. planting & harvest dates, inputs, yields, crop health, field plan “actuals”, sales)

Duty L: MARKET FARM PRODUCTS AND SERVICES

1. Prepare annual/seasonal marketing plan (e.g. marketing strategies, sales outlets [on-farm, farmers' markets, retail, wholesale], pricing, value adding).
2. Monitor market conditions (e.g. price, supply, competition, consumer trends)
3. Develop promotional materials
4. Promote farm products & services (e.g. advertise, participate in “buy local” or “green label” campaigns)
5. Obtain necessary supplies (e.g. scales, receipt books, cash box, packaging, labels)
6. Contact buyers (e.g. retail and/or wholesale)
7. Sell farm products & services
8. Distribute farm products (e.g. deliver, ship)
9. Obtain customer feedback
10. Adhere to federal, state & local regulations (e.g. sales tax & exemptions, weights & measures)
11. Keep good records (e.g. customer comments, competition, price changes, sales, promotional activities)

Duty M: REVIEW & RE-PLAN WHOLE FARM

1. Prepare year-end financial statements, tax returns & reports
2. Review whole farm plan (e.g. goals & needs, production, land, financial & marketing plans)
3. Review/analyze all farm records (e.g. compare projections to results, budgets-to-actuals, crop yields, financials, environmental impact; compare actual profitability with profitability projections, goals, and needs.)
4. Revise whole farm plan as needed (see Duty A)
5. Develop annual plan for coming year (see Duty A)

Occupational Characteristics Lists

Tools, Equipment, Supplies & Materials

- Good land!
- Good water source(s) for irrigation, livestock, field crews & processing
- Farm equipment: tractor or other power source (e.g., horses); primary & secondary tillage equipment; seeders; crop propagation equipment & supplies; greenhouse(s) & season extension materials (e.g., hoops, row covers, mulches); cultivation equipment; irrigation equipment (e.g., pumps, pipes, drip lines, sprinklers); crop-specific equipment (e.g., planters, transplanters, mowers, tedders, crimpers, balers, combines, manure spreaders, seed cleaners); harvesting equipment (e.g., knives, baskets/crates); livestock handling & watering equipment; post-harvest handling equipment (e.g., hoses, washtubs, knives, scrub brushes, cooling equipment, packaging supplies, storage); lifting equipment (e.g., hand truck, forklift, pallet jack); truck(s) &/or other vehicles (e.g., trailers, wagons, carts, wheelbarrows)
- Hand tools/shop tools & supplies (e.g., hoes, rakes, spading forks, shovels, clippers, post-hole digger; wrenches, pliers, grease gun, tape measure, hammers, saws, nails, nuts & bolts, bench grinder, air compressor, jacks)
- Coolers/freezer lockers
- Shelter/storage (e.g., for livestock, tools & equipment, supplies, packing & storage, repair work)
- Fencing (e.g., permanent & moveable; chargers)
- Sanitary facilities for field crews (e.g., hand washing, toilets)
- Well-equipped office (e.g., phone, FAX, filing cabinets, computer, coffee maker, office supplies)
- Well-equipped farm library (e.g., equipment manuals, production handbooks, field guides for insect, pest & disease ID)
- Farm Stand &/or Farmers' Market set-up
- General farm supplies & materials (e.g., seed, fertilizer, other inputs, stakes, trellises, veterinary supplies, pump sprayer, max/min thermometer, rain gauge, pest traps)
- First aid kits & safety supplies (e.g., dust masks); 2-way & weather radios; rain & cold weather gear; boots & work gloves; insect repellent & bug protection gear

General Knowledge & Skills

- Basic plant & soil science
- Animal science
- General knowledge of ecology
- General knowledge of meteorology
- Whole-systems thinking skills
- Informational research skills
- Regulatory expertise
- Planning skills
- Administrative skills
- Supervisory skills
- “People skills”
- Community-building skills
- Time management skills
- Basic business & bookkeeping skills
- Computer skills
- Marketing skills
- Crop production skills
- Animal husbandry skills
- Equipment operation skills
- Basic mechanical skills
- Basic construction skills (e.g., carpentry, plumbing, electric)
- Basic maintenance & repair skills
- Tool use skills
- Basic first aid knowledge & skills
- Basic physical fitness knowledge & skills

Behaviors

- Well organized
- Persistent
- Flexible
- Attentive
- Observant
- Detail-oriented
- Personable
- Analytical
- Patient
- Prompt
- Entrepreneurial
- Sense of humor
- Humble (in the face of natural systems)
- Environmentally aware
- Endurance
- Tolerance for hard physical labor & long hours
- Self-motivated
- Disciplined
- Resourceful
- Resilient
- Focused
- Able to prioritize
- Creative
- Optimistic
- Positive
- Go-getter
- Self-reliant
- Informed
- Multi-task capable
- Self-confident
- Committed
- Nurturing (to humans, soil, plants & animals)
- Ability & commitment to learn from experience

Future Trends & Concerns

- Urban/suburban sprawl
- Rapid “development” of land
- Rising land costs (including for farmland)
- Disappearing ag infrastructure
- Fewer family farms
- Ageing farmer population
- Farmer burnout
- Population growth
- Increasing govt. regulations
- Corporatization of agriculture
- Globalization of food industry
- New & resistant crop pests
- Increasing deer, coyote & Canada geese populations
- Genetic engineering
- Consumer buying habits
- Convenience foods/more highly processed foods
- Consumer concerns: food safety, urbanization, food system consolidation
- Growing support for “re-localization”, fresh local products & “buy local” initiatives
- Growth of organic food industry
- Growing support for “working landscapes” & open space