

Missouri

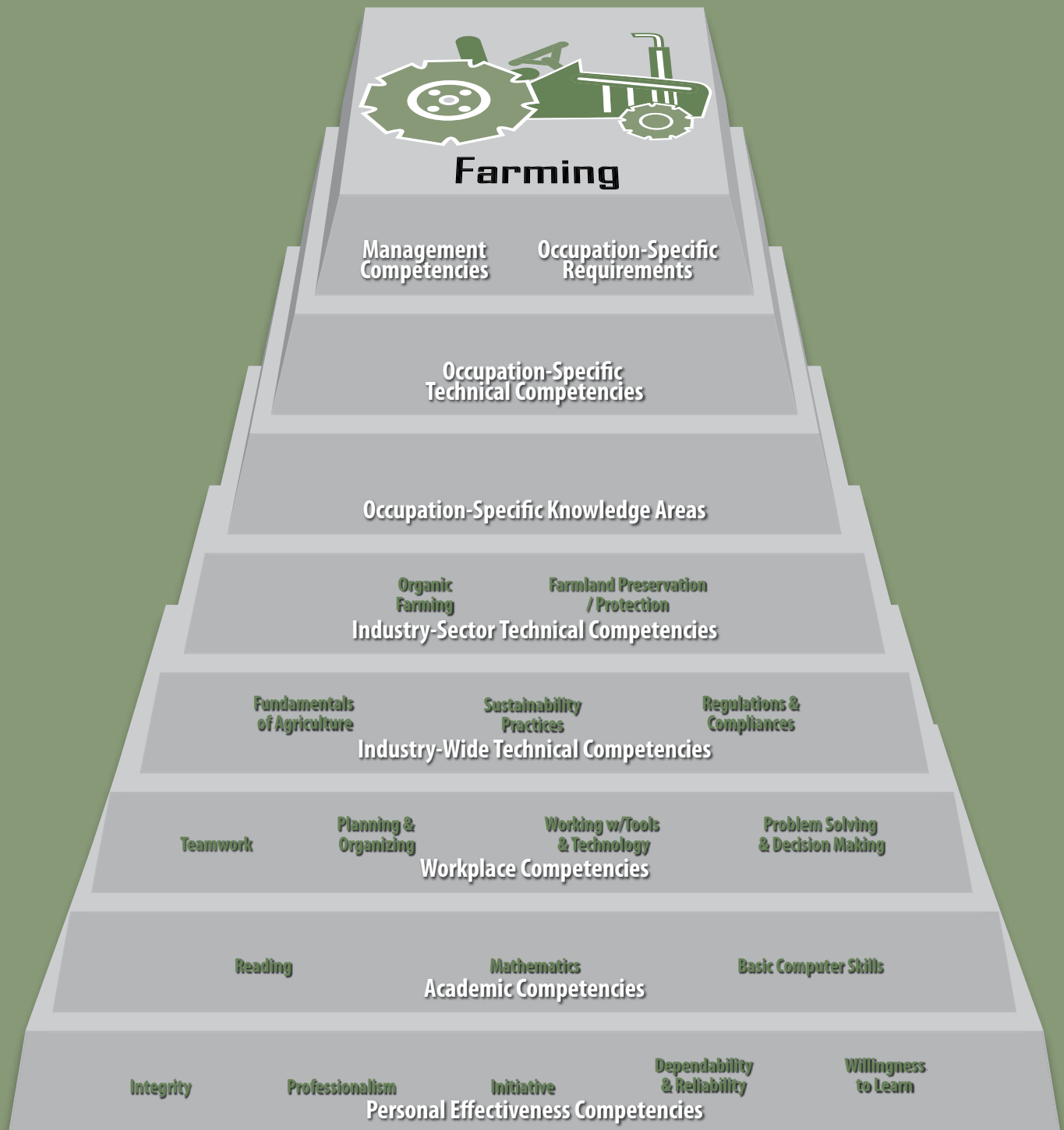
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INDUSTRY

COMPETENCY

MODEL



Green Farming Competency Model



What is Green Farming?

The production of bio-fuel inputs will help to reduce our reliance on fossil fuels in the future. More efficient cellulosic bio-fuel crop sources will expand the available production acreage in Missouri and fuel new farming jobs. In addition, the number of organic farms is on the rise in Missouri. Smaller lots can support niche organic heirloom crops and also add to production acreage in the state resulting in new income to Missourians. Green forestry certification is another opportunity to brand the state as green friendly and can be included in the LEED approved wood products supply chain.

Green Farming



In this section the results of the Green Farming Competency Model analysis are discussed. Each tier lists the most essential competencies and each competency is further described in terms of behavioral attributes.

TIER 1—Personal Effectiveness Competencies

INTEGRITY	PROFESSIONALISM	INITIATIVE	DEPENDABILITY & RELIABILITY	WILLINGNESS TO LEARN
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INTEGRITY

- ▶ Apply ethical standards of the industry to workplace/jobsite conduct
- ▶ Treat others with honesty, fairness and respect
- ▶ Demonstrate respect for property of customers, employer and coworkers
- ▶ Take responsibility for accomplishing work goals within accepted timeframes
- ▶ Accept responsibility for one's decisions and actions

PROFESSIONALISM

- ▶ Take pride in one's work and the work of the organization
- ▶ Demonstrate self-control by keeping emotions in check
- ▶ Accept criticism and deal calmly with stressful situations
- ▶ Dress appropriately for the workplace/jobsite
- ▶ Maintain appropriate personal hygiene
- ▶ Refrain from substance abuse

INITIATIVE

- ▶ Pursue work with energy, drive and effort to accomplish tasks
- ▶ Persist at a task or problem despite interruptions, obstacles, or setbacks
- ▶ Work independently and perform effectively even with little or no supervision
- ▶ Demonstrate the ability to change from one task to another
- ▶ Take initiative to seek out new responsibilities
- ▶ Establish and maintain challenging, but realistic work goals

DEPENDABILITY & RELIABILITY

- ▶ Arrive at work fit and on time each day
- ▶ Avoid absenteeism
- ▶ Work accurately and quickly under pressure
- ▶ Complete assignments and meet deadlines
- ▶ Comply with rules, policies and procedures such as safety, personal hygiene, personal discipline, substance abuse, employee theft and sexual harassment

WILLINGNESS TO LEARN

- ▶ Uses material taught in classroom and on the job training in work situations
- ▶ Treats unexpected circumstances as opportunities to learn and adopt new techniques
- ▶ Desires, shows willingness to learn new assignments, procedures and technologies

TIER 2—Academic Competencies

READING

MATHEMATICS

BASIC COMPUTER SKILLS

READING

- ▶ Read and understand technical and workplace documents such as contracts, regulations, manuals, reports, memos, forms, graphs, charts, tables, calendars, schedules, signs and notices
- ▶ Read and understand operating directions, installation instructions and standard operating procedures
- ▶ Recognize the meaning of specialized words or phrases unique to the industry
- ▶ Apply what is learned from written material to follow instructions and complete tasks
- ▶ Communicate ideas, information and messages which may contain technical material, in a logical manner

MATHEMATICS

- ▶ Adds, subtracts, multiplies and divides with whole numbers, fractions, decimals and percents; calculates average, ratios, proportions and rates
- ▶ Takes measurement of time, temperature, distance, length, width, height, perimeter etc.
- ▶ Correctly converts from one measurement to another
- ▶ Translates practical problems into useful mathematical expressions and uses appropriate mathematical formulas and techniques
- ▶ Solves simple algebraic equations
- ▶ Is able to determine slope, midpoint and distance
- ▶ Calculates perimeters, areas and volumes of basic shapes and solids
- ▶ Reads, tracks and calculates gauge measurements

BASIC COMPUTER SKILLS

- ▶ Understands and efficiently uses basic computer hardware and software to perform tasks and is familiar with fundamental capabilities of computers
- ▶ Enters data into computer with acceptable degree of accuracy
- ▶ Uses word processing programs to create, edit and retrieve files
- ▶ Uses spreadsheet software to enter, manipulate, edit and format text and numerical data
- ▶ Uses electronic mail applications
- ▶ Uses the internet and web based tools to manage basic workplace tasks

TIER 3—Academic Competencies

TEAMWORK	PLANNING & ORGANIZING	WORKING WITH TOOLS & TECHNOLOGY	PROBLEM SOLVING & DECISION MAKING
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TEAMWORK

- ▶ Accepts membership in team and uses best practices for successful team functioning
- ▶ Works effectively in multi-disciplinary teams
- ▶ Gives and receives feedback constructively
- ▶ Leverages the strengths of others to accomplish a common goal
- ▶ Is open to considering new ways of doing things and the merits of new approaches to work

PLANNING & ORGANIZING

- ▶ Prioritizes various competing tasks and performs them quickly and efficiently according to their urgency
- ▶ Finds new ways of organizing work area or planning work to accomplish work more efficiently
- ▶ Estimates resources needed for project completion; allocated time and resources effectively
- ▶ Anticipates obstacles to project completion and develops contingency plans to address them; take necessary corrective action when projects go off-track
- ▶ Plans and schedules tasks so that work is completed on time
- ▶ Makes arrangements that fulfill all requirements as efficiently and economically as possible

WORKING WITH TOOLS & TECHNOLOGY

- ▶ Selects and applies appropriate tools or technological solutions to frequently encountered problems
- ▶ Demonstrates an interest in learning about new and emerging tools and technologies; seeks out opportunities to improve knowledge of tools and technologies that may assist in streamlining work and improving productivity

PROBLEM SOLVING & DECISION MAKING

- ▶ Anticipates or recognizes the existence of a problem
- ▶ Identifies the true nature of the problem by analyzing its component parts
- ▶ Effectively uses both internal and external resources to locate and gather information; examines information obtained for relevance and completeness; recognizes important gaps in existing information and takes steps to eliminate those gaps; recalls previously learned information that is relevant to the problem; organizes information as appropriate to gain a better understanding of the problem
- ▶ Integrates previously learned and externally obtained information to generate a variety of high quality alternative approaches to the problem
- ▶ Skillfully uses logic and analysis to identify the strengths and weaknesses, the costs and benefits and the short and the long-term consequences of different approaches

- ▶ Decisively chooses the best solution after contemplating available approaches to the problem; makes difficult decisions even in highly ambiguous or ill-defined situations; quickly chooses an effective solution without assistance when appropriate
- ▶ Commits to a solution in a timely manner and develops a realistic approach for implementing the chosen solution; observes and evaluates the outcomes of implementing the solution to assess the need for alternative approaches and to identify lessons learned
- ▶ Uses scientific rules and methods to solve problems

TIER 4—Industry-Wide Competencies

FUNDAMENTALS OF AGRICULTURE

SUSTAINABILITY PRACTICES

REGULATIONS AND COMPLIANCES

FUNDAMENTALS OF AGRICULTURE

- ▶ Crop Production activities such as tilling, planting, fertilizing, cultivating, spraying and harvesting
- ▶ Soil and Weather Conditions
- ▶ Farm Equipment Operation and Maintenance

SUSTAINABILITY PRACTICES

- ▶ Land Management practices that include developing, maintaining and protecting cultivatable land and forest.
- ▶ Biodiversity
- ▶ Soil Management, Conservation and Preservation practices
- ▶ Other Natural Resource Management and Conservation
- ▶ Pest Management and Control

REGULATIONS AND COMPLIANCES

- ▶ Compliances with regulations and laws governing health, quality and safety
- ▶ Environmental and Federal Law related to resource usage

TIER 5—Industry-Sector Competencies

ORGANIC FARMING

FARMLAND PRESERVATION / PROTECTION



TARGET OCCUPATIONS

The analysis in the section that follows will be focused on the Target Occupations (does not include the all occupations in this industry) within Green Farming that were identified by creating a custom industry staffing pattern for this industry cluster in Missouri. This was then sorted by each occupation's impact on the economy and then mapped against the US DOL's In Demand occupation list for Green Farming. The Target Occupations for this sector are:

O*NET SOC Code	Title
45-2011	Agricultural Inspectors
11-9012	Farmers and Ranchers
45-4011	Forest and Conservation Workers
19-4099	Precision Agriculture Technicians
19-1031	Soil and Water Conservationists

TIER 6—Occupation-Specific Knowledge Areas

AGRICULTURAL INSPECTORS	FARMERS AND RANCHERS
⇒ Law and Government	⇒ Food Production
⇒ English Language	⇒ Mechanical
⇒ Public Safety and Security	⇒ Administration and Management
⇒ Education and Training	⇒ Economics and Accounting
⇒ Biology	⇒ Production and Processing
⇒ Mathematics	⇒ Biology
	⇒ Law and Government
FOREST AND CONSERVATION WORKERS	PRECISION AGRICULTURE TECHNICIANS
⇒ Mathematics	⇒ Computer and Electronics
⇒ Geography	⇒ Customer and Personal Service
⇒ Biology	⇒ Mathematics
⇒ Administration and Management	⇒ English Language
⇒ Customer and Personal Service	⇒ Biology
⇒ English Language	⇒ Food Production
⇒ Law and Government	⇒ Geography
⇒ Personnel and Human Resources	⇒ Clerical
⇒ Computers and Electronics	⇒ Engineering and Technology
SOIL AND WATER CONSERVATIONISTS	
⇒ Biology	⇒ Mathematics
⇒ Design	⇒ Education and Training
⇒ Engineering and Technology	⇒ Administration and Management
⇒ English Language	⇒ Customer and Personal Service
⇒ Geography	⇒ Computers and Electronics

TIER 7—Occupation-Specific Technical Competencies

AGRICULTURAL INSPECTORS

TOOLS USED IN THIS OCCUPATION

- ⇒ **Calibration weights or weight sets** — Block weights; Counterpoise weights; Sealed baskets; Test weight kits
- ⇒ **Grading machines for seed or grain or dried leguminous vegetables** — Barley pearlers; Dockage testers; Rice sizers
- ⇒ **Mechanical balances** — Beam scales; Equal-arm scales
- ⇒ **Sample holders** — Bean sack triers; Diverter samplers; Tapered bag triers; Truck probes
- ⇒ **Sorting machines for seed or grain or dried leguminous vegetables** — Agricultural dividers; Blust drum samplers; Boerner dividers; Rotary dividers

TECHNOLOGY USED IN THIS OCCUPATION

- ⇒ **Data base user interface and query software** — Microsoft Access
- ⇒ **Graphics or photo imaging software** — Image processing software
- ⇒ **Presentation software** — Microsoft PowerPoint
- ⇒ **Spreadsheet software** — Microsoft Excel
- ⇒ **Word processing software** — Microsoft Word

FARMERS AND RANCHERS

TOOLS USED IN THIS OCCUPATION

- ⇒ **Not Applicable**

TECHNOLOGY USED IN THIS OCCUPATION

- ⇒ **Not Applicable**

FOREST AND CONSERVATION WORKERS

TOOLS USED IN THIS OCCUPATION

- ⇒ **Dibblers**
- ⇒ **Forestry saws** — Epicormic knives; Pruning saws
- ⇒ **Mowers** — Brush hogs
- ⇒ **Planters** — Planting drills
- ⇒ **Screwdrivers** — Phillips head screwdrivers; Straight screwdrivers
- ⇒ **Sprayers** — Backpack sprayers; Herbicide sprayers
- ⇒ **Weeders** — Weed eaters

TECHNOLOGY USED IN THIS OCCUPATION

- ⇒ **Map creation software** — ESRI ArcGIS software; Geographic information system GIS software; Leica Geosystems ERDAS IMAGINE
- ⇒ **Spreadsheet software** — Microsoft Excel
- ⇒ **Word processing software** — Microsoft Word

PRECISION AGRICULTURE TECHNICIANS

TOOLS USED IN THIS OCCUPATION

- ⇒ **Complex controlling devices** — Automatic land leveling systems; Autosteering systems; Lightbar guidance systems
- ⇒ **Fertilizer spreaders or distributors** — Fertilizer spreading equipment
- ⇒ **Seed drills**
- ⇒ **Seeder attachment** — Air clutches
- ⇒ **Sprayers** — Automatic boom control systems; Sprayer application equipment; Variable rate applicators

TECHNOLOGY USED IN THIS OCCUPATION

- ⇒ **Analytical or scientific software** — AGCO GTA Software Suite; Farm Works Site Pro; MapShots EASi Suite; SST Development Group SSToolbox
- ⇒ **Data base user interface and query software** — Ag Leader Technology SMS Advanced; John Deere Apex Farm Management; Microsoft Access; Novariant AutoFarm AF Viewer
- ⇒ **Map creation software** — ESRI ArcView; GeoAgro GIS; Trimble AgGPS EZ-Map; Trimble AgGPS MultiPlane
- ⇒ **Presentation software** — Microsoft PowerPoint
- ⇒ **Word processing software** — Microsoft Word

TIER 7—Occupation-Specific Technical Competencies

SOIL AND WATER CONSERVATIONISTS

TOOLS USED IN THIS OCCUPATION	TECHNOLOGY USED IN THIS OCCUPATION
⇒ Laser measuring systems — Laser distance measurement systems	⇒ Analytical or scientific software — Clover Technology GALENA; CropSyst Suite *; Water Soil and Hydro-Environmental Decision Support System WATERSHEDSS *; WinEPIC *
⇒ Levels — Dumpy levels	⇒ Data base user interface and query software — CroPMan *; Microsoft Access; State Soil Geographic STATSGO Database *; Water resources databases
⇒ Soil core sampling apparatus — Dutch augers	⇒ Map creation software — ESRI ArcGIS software; ESRI ArcInfo; ESRI ArcView
⇒ Theodolites — Total stations	⇒ Spreadsheet software — Microsoft Excel
⇒ Water samplers — Water sampling devices	⇒ Word processing software — Microsoft Word

* Software developed by a government agency and/or distributed as freeware/shareware.

TIER 8—Occupation Specific Requirements

SOC CODE	OCCUPATION	CIP CODE	CIP TITLE
45-2011	Agricultural Inspectors	01.0401	Agricultural and Food Products Processing
11-9012	Farmers and Ranchers	01.0101	Agricultural Business and Management, General
		01.0102	Agribusiness/Agricultural Business Operations
		01.0104	Farm/Farm and Ranch Management
		01.0301	Agricultural Production Operations, General
		01.0302	Animal/Livestock Husbandry and Production
		01.0303	Aquaculture
		01.0304	Crop Production
		01.0306	Dairy Husbandry and Production
		01.0399	Agricultural Production Operations, Other
		01.0603	Ornamental Horticulture
		01.0604	Greenhouse Operations and Management
		01.0606	Plant Nursery Operations and Management
		01.0901	Animal Sciences, General
		01.0902	Agricultural Animal Breeding
		01.0904	Animal Nutrition
		01.0905	Dairy Science
		01.0906	Livestock Management
		01.0907	Poultry Science
		01.1101	Plant Sciences, General
		01.1102	Agronomy and Crop Science
		01.1103	Horticultural Science
		01.1105	Plant Protection and Integrated Pest Management
		01.1106	Range Science and Management
45-4011	Forest and Conservation Workers	03.0101	Natural Resources/Conservation, General
		03.0299	Natural Resources Management and Policy, Other
		03.0501	Forestry, General
		03.0502	Forest Sciences and Biology

(continued on next page)

TIER 8—Occupation Specific Requirements

SOC CODE	OCCUPATION	CIP CODE	CIP TITLE
45-4011	Forest and Conservation Workers <i>(continued from previous page)</i>	03.0506	Forest Management/Forest Resources Management
		03.0508	Urban Forestry
		03.0509	Wood Science and Wood Products/Pulp and Paper Technology
		03.0510	Forest Resources Production and Management
		03.0599	Forestry, Other
		03.9999	Natural Resources and Conservation, Other
19-4099	Precision Agricultural Technicians	01.0106	Agricultural Business Technology
		41.0101	Biology Technician/Biotechnology Laboratory Technician
19-1031	Soil and Water Conservationists	03.0101	Natural Resources/Conservation, General
		03.0201	Natural Resources Management and Policy
		03.0205	Water, Wetlands and Marine Resources Management
		03.0206	Land Use Planning and Management/Development
		03.0299	Natural Resources Management and Policy, Other
		03.0501	Forestry, General
		03.0502	Forest Sciences and Biology
		03.0506	Forest Management/Forest Resources Management
		03.0599	Forestry, Other
		03.0601	Wildlife and Wildlands Science and Management
03.9999	Natural Resources and Conservation, Other		



TIER 9—Management Competencies

- ⇒ Manpower Planning
- ⇒ Delegating
- ⇒ Managing Work Flow
- ⇒ Entrepreneurship
- ⇒ Leadership
- ⇒ Developing & Monitoring
- ⇒ Preparing and Managing Budgets
- ⇒ Team Building
- ⇒ Developing an Organizational Vision
- ⇒ Managing Resources





Department of Economic Development

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