

HEAR FROM PROFESSIONALS. LEARN FROM EXPERIENCE.



## AGRICULTURE, FOOD, AND NATURAL RESOURCES

This career cluster prepares learners for careers in planning, implementation, production, management, processing and/or marketing of agriculture commodities and services, distribution, financing, and development of agricultural commodities and resources including food, fiber, wood products, natural resources, horticulture, and other plant and animal products. It also includes related professional, technical, and educational services.



Learning that works  
for Nebraska

### WHAT TO EXPECT IN THIS GUIDE



#### INTERVIEWS

Each video contains interviews with employees and business representatives discussing work requirements, education levels, salary and job prospects.



#### TOURS

Experience virtual industry tours that provide a unique opportunity to get a glimpse inside Nebraska-based companies without leaving your home or classroom.



#### INFORMATION

Throughout the videos you will find valuable information regarding job markets, salaries, and educational requirements to help you identify a possible career path.

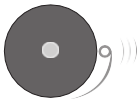
### **NOTE TO INSTRUCTOR:**

These are suggested activities and questions to accompany the virtual industry tour. Each component may be used individually or modified to fit the needs of the classroom. Use these websites for more information on this career cluster:

- [www.education.ne.gov/nce/career-clusters](http://www.education.ne.gov/nce/career-clusters)
- <https://www.education.ne.gov/nce/careerdevelopment/>
- [Nebraska H3 Reports](#)
- [www.nebraskacareerconnections.org](http://www.nebraskacareerconnections.org)

In addition, NEworks has an array of resources, including Nebraska Workforce Trends magazine, Labor Market Regional Reviews, Occupational Profiles, and Career Ladder Posters, available at <https://networks.nebraska.gov> under Labor Market Information>Additional Services>Publications.

### **BELL RINGER:**



Display the United States and World Population Clock website for students to view as they enter the room. If Internet service is not available, use an estimated population by looking at the website <https://www.census.gov/popclock/> prior to the lesson. Post the prompt on the writing surface for students to answer as they enter the room. Each will respond individually in their notes.

#### **As the world population continues to increase, what will be needed to meet the needs of a growing population?**

Have students share responses with the class. Discuss the basic needs of humans including food, shelter, water, and clothing.

Point out that the Agriculture, Food, and Natural Resources career cluster prepares students for careers in planning, implementing, producing, managing, processing, and marketing agricultural services and commodities which include food, fiber, wood products, natural resources, horticulture and other plant and animal products. These careers produce the food we eat and the clothes we wear.

*Note to instructor:* At the end of class, revisit the website to see how much population growth has occurred during the class period.

### **ANTICIPATORY SET:**



Guide students to think about the importance of careers in this career cluster by facilitating a team activity. Divide students into groups of four. Post this scenario on the writing surface or read aloud:

- **You and a group of friends have been selected to be on a new reality television show. You will be taken to a desert island in the middle of the ocean and expected to survive without contact from the outside world for one year.**
- **Make a list of 8 items you would take with you to the island.**
- **You have six minutes to discuss and create your list.**

After six minutes, bring the students back together. Facilitate a discussion by asking these questions:

- **How did you decide what to include on your list?**
- **Which items will help you secure future supplies?**
- **When have you had to make challenging decisions at home? In school? In the workplace?**
- **What are the minimum requirements for human survival?**

Point out that food, water, clothing, and shelter must be at the top of the list. These items are supplied to us through careers in the Agriculture, Food, and Natural Resources career cluster.

#### INTRODUCTORY QUESTIONS:



Ask the following questions to students and have them respond in journals or aloud. If asking aloud, have students share with a partner first, then ask two or three students to share. Responses will vary and are based on the students' knowledge prior to watching the virtual tour.

- **When you think of Agriculture, Food, and Natural Resources, what types of jobs come to mind?**
- **Are these careers YOU might be interested in? Why or why not?**

#### CONTENT:



Show the 16-minute virtual industry tour at <https://bit.ly/CTAGR>, which features three companies: Central Valley Ag, HDR and Omaha Steaks. Or have students individually view the online video. Students will complete the Student Viewing Guide worksheet as they learn about the career cluster. Introduce the virtual tours by saying:

- **Today we will watch a video highlighting three different businesses in the Agriculture, Food, and Natural Resources career cluster.**
- **Each professional in the video will describe his or her involvement in the industry, as well as the skills necessary for success.**
- **Different careers associated with this career cluster will also be described.**

FOLLOW-UP  
QUESTIONS:



Ask the following questions after students view the virtual industry tour. Questions can be assigned as journal questions, asked aloud or discussed in small groups.

**1. How would you define this career cluster?**

- The Agriculture, Food, and Natural Resources Cluster involves careers that plan, implement, produce, manage, process, and market agricultural services and commodities which include food, fiber, wood products, natural resources, horticulture, and other plant and animal products.

**2. What surprised you about this career cluster?**

- Answers will vary

**3. What types of careers are included in this career cluster?**

- Agronomist, biologist, culinologist, engineering technician, environmental scientist, environmental technician, executive chef, field sales agronomist, food scientist, global positioning technician, HR resource manager, president of engineering, recruiting specialist, science teacher and supervisor of talent acquisition.
- Other careers not mentioned in the video: agricultural loan officer, agriculture engineer, agriculture manager, animal geneticist, animal physiologist, biochemist, biomaterials engineering, conservation officer, diesel mechanic, entomologist, farm equipment mechanic, farm and ranch manager, financial manager, fisheries scientist, forest scientist, food broker, food engineer, golf course superintendent, hazardous material handler, health and safety sanitarian, international agri-marketing specialist, landscape architect, quality assurance specialist, plant scientist, solid waste disposer, toxicologist, water quality manager, welder, wildlife manager and veterinarian, and welder.

**Note to instructor:** Explain to students that this career cluster can be divided into seven Career Pathways including:

- Agribusiness systems
- Animal systems
- Environmental service systems
- Food products and processing systems
- Natural resources systems
- Plant systems
- Power, structural, and technical systems

Each Career Pathway has a narrower skill set for the occupations within this career cluster.

For more information about Agriculture, Food, and Natural Resources (AFNR) careers and education pathways, go to <http://bit.ly/AFNRcc>.

For more information and downloadable tools for each career cluster, go to: <http://bit.ly/nceCareerFields>.

Additionally have students access Nebraska Career Connections at [www.nebraskacareerconnections.org](http://www.nebraskacareerconnections.org). Nebraska Career Connections provides education and career planning resources to bring Nebraskans together – students, parents, educators, adults, and employers.

#### **4. What careers and jobs in this career cluster could be obtained immediately after high school graduation?**

- Most jobs in the virtual tour required some type of degree or certificate.
- Other examples: Farm and ranch worker, animal caretaker, feed sales, refuse and recyclable material collection, butcher and meat cutter, meat processing slaughter and meat packer, nursery and greenhouse worker, tree trimmer and pruner.
- For more information about these careers: <http://bit.ly/AFNRcc>, <http://bit.ly/AFNRccPDF>, and <https://onetonline.org//find/career?c=1>.

#### **5. List and describe the pathways of this career cluster.**

- Agribusiness: Uses technology to coordinate all activities that contribute to production, processing, marketing, distribution, financing, and development of agricultural commodities
- Animal systems: Studies genetics, nutrition, reproduction, growth and development of food and companion animals. Includes the inspecting and grading of livestock food products, purchasing livestock, and working in sales or marketing.
- Environmental service systems: Involves pollution control, recycling, waste disposal and public health. Includes hazardous-waste management studies, analysis, and research environmental projects.
- Food products and processing systems: Includes finding new food sources, analyzing, and developing ways to process, preserve, package and store food. Includes creating new food products and inspecting food-processing to ensure sanitation, safety, quality, and waste management standards are met.

- Natural resources systems: Includes developing, maintaining, and managing the forest and natural environment.
- Plant systems: Includes developing new ways to improve the nutritional value and aesthetic of plants and quality of seeds. Uses genetic engineering to develop pest and drought resistant plants helping producers while conserving natural resources and maintaining the environment.
- Power, structural, and technical systems: Applying knowledge of engineering, hydraulics, pneumatics, electronics, power, structures, and controls to the field of agriculture. Developing conservation of soil and water to improve the processing of agricultural products.

**6. The professions of environmental and engineering technicians are considered high skill, high wage, and high demand. What does this mean?**

- High skill occupations require some form of training and education beyond high school.
- High wage occupations are those in which wages are at or above the median average wage of all occupations in Nebraska.
- High Demand jobs are determined by the number of annual openings, the net change of employment and the growth rate of the occupation. Determine the high demand rating.

**7. Eighty-eight different careers use GIS (geographic information systems) map creation software. What are some of those jobs and how do they use GIS?**

- Job titles include: Cartographer, GIS analyst, County GIS Analyst, GIS Election Manager and GIS Operations Real Estate Manager.
- Making maps, deciding the best location for cell phone towers, storing and maintaining global climate change information, finding the most energy-efficient route for a mail carrier, helping the government figure out how to get aid to storm victims, and assessing vulnerability of areas to pollution.
- For more information:  
[http://www.cartogis.org/docs/cartogis\\_careers.pdf](http://www.cartogis.org/docs/cartogis_careers.pdf).

**8. Core academic skills include reading, written communication, listening, speaking, and mathematical reasoning with problem solving. How might these core academic skills be used in this career cluster?**

- Answers will vary.
- Here are a few examples:
  - Agronomists must be proficient at reading chemical and seed labels for best practices including planting depth, soil type, herbicide and pesticide use, and more.
  - A culinologist must write well and accurately so their research and discoveries of new products are properly recorded, and the successes can be re-created.
  - Being an executive chef requires listening and speaking skills so good communication with the staff and public take place. Knowing and understanding what the customer wants is key to putting the right product on the plate.
  - Environmental scientists use math and problem solving while they conduct surveys of protected species.
  - Scientists calculate the current population, population increase or decrease, and make predictions for future populations of the species. These calculations help them make recommendations about land use and conservation practices.

**9. A Career Ready individual makes sense of problems and perseveres in solving them. When have you demonstrated this Career Readiness skill?**

- Answers will vary.
- Explain to students that this is a sample behavioral interview question that they may be asked in a job interview. Employers use past experiences as a way to predict future performance.
- One technique used to respond to behavioral questions is the STAR response: **S**ituation, **T**ask, **A**ction, and **R**esult. Example sources for more information include:  
[https://bit.ly/STAR\\_technique1](https://bit.ly/STAR_technique1) and  
[https://bit.ly/STAR\\_technique2](https://bit.ly/STAR_technique2).

**10. The virtual industry tour mentioned traits employers seek when hiring. What Career Readiness Skills should a desirable applicant possess?**

- Answers will vary.
- For more information:  
<http://education.ne.gov/nce/careerreadinessstandards>.

**11. More than half of young people that participate in internships become full-time employees. What is an internship? Why are internships beneficial?**

- An internship is a position for a student or trainee who works, sometimes without pay (the CVA internships are paid 12-week experiences).
- Intern benefits include: work experience to include on a resume and for future jobs, increased knowledge and experience, exposure to real tasks of the job to help determine if this is a future career option, some internships are paid, the potential to earn college credit, opportunities to network with professionals in the career field and the chance to develop confidence.
- The benefit for the business is that it is very expensive to hire people for jobs. Companies like the opportunity to “try out” an employee without hiring them on a full-time basis. If the intern fits into the culture of the company, they are more likely to hire them.

**12. Which pathways are represented in the virtual tour?**

- Plant Systems: Central Valley Ag
- Environmental Service Systems: HDR
- Food Products and Processing Systems: Omaha Steaks

**13. How has the Agriculture, Food and Natural Resources career cluster changed to meet the needs of a growing population (as we observed in the bell ringer)? What must be done in the future to continue to meet those growing needs?**

- Answers will vary but should include: Shifting from a hunting/gathering mentality to settlements and farming, enhanced productivity because of irrigation and fertilizer, increased productivity because of improved farm machinery and precision ag, advanced transportation and storage and improved genetics.
- Answers will vary for the future, but should include: Protection of land, clean water and air, elimination of waste, increased productivity, improved genetics and adaptability, sustainable agriculture, and food distribution worldwide.

**EXTENDED LEARNING  
ACTIVITIES:**



**The following are suggested activities to increase student learning and exposure to this career cluster.**



- Join a Career and Technical Student Organization such as FBLA, FFA, SkillsUSA, DECA, or FCCLA. Student members have the chance to apply lessons and information learned in the classroom in real hands-on experiences and competitive events.
- Have each student put together a portfolio of tangible materials that showcase his or her skills and work experience. Use the digital portfolio available at [www.NebraskaCareerConnections.org](http://www.NebraskaCareerConnections.org) under the Students Tab in the High School section.
- Show a Modern Marvels video from the History Channel. Applicable topics to this career cluster include: Welding, corn, farming technology, cattle ranches, harvesting, coffee, sugar, more snack food tech, cotton, candy, renewable energy, the supermarket, breakfast tech, harvesting 2, cheese, environmental tech II, fast food tech, milk, bread, ice cream, wheat, the horse, the turkey, the pig, the butcher, eggs, the potato, rice, and food trucks.
- Some videos can be found online while others must be purchased.
- Have students answer a guided note worksheet during the video or write a short reflection paper.
- Obtain certification in Beef Quality Assurance (BQA, [www.bqa.org](http://www.bqa.org)), Dairy QA ([www.bqa.org/programs/dairy-bqa](http://www.bqa.org/programs/dairy-bqa)), Pork Quality Assurance (PQAPlus <https://porkcheckoff.org/certification-tools/training-certification/pqa-plus/>) or other similar animal production certificate programs.
- Start a school-wide recycling program or promote a current recycling program.
- Provide several ingredients for making salsa. In small groups, have students create their own salsa including an ingredient label. For a marketing twist, have students create commercials or advertisements for their salsa.
- Make a list of the Career Readiness Skills that are personal strengths. Then make a list of the skills and behaviors required for a career in Agriculture, Food, and Natural Resources. Compare the list to determine which Career Readiness Skills need to be strengthened for employment in this career cluster.
- Perform basic maintenance on a lawn mower including changing the oil, checking tire pressure, replacing air filters, and possibly sharpening the blades.
- Meet with the school counselor to discuss classes that would help prepare a student for careers in this career cluster. Also, discuss valuable certifications that can be obtained during high school.
- Identify a postsecondary institution that is offering certifications or degrees that would help prepare a student for a career in this career cluster. Obtain and complete admissions and scholarship applications for the school or program.
- Visit a local restaurant for a kitchen tour, meet with the chef and eat a meal. Write a review of the food.
- Plant and care for a school or community garden. Donate the food produced or sell it at a local farmer's market.

**THERE ARE MANY RESOURCES THAT CAN BE USED BY TEACHERS, PARENTS AND JOB SEEKERS FOR CAREER EXPLORATION.**

Some resources are tailored for Nebraska and some are national, but all provide valuable information and many incorporate information from the Nebraska Department of Labor Market Information (LMI). This list is not comprehensive, and only represents a sampling of the many resources available. Share the Career Exploration/ Planning resources table with students and have them do a review of what each offers them as a tool for finding the right career fit. Nebraska Career Connections is a totally FREE resource that is highly recommended for use by career and technical education students and teachers.

CAREER EXPLORATION & PLANNING		
Website	Type of Resources Available	Produced & Sponsored By
Nebraska Career Connections <a href="http://www.nebraskacareerconnections.org">www.nebraskacareerconnections.org</a>	Education and career planning resources for students, parents, educators, adults and employers. Students can explore career options, search for colleges, find out about applying for college, tuition, scholarships & financial aid, and create an e-portfolio and resume.	Nebraska Departments of Education and Labor, Nebraska VR, and Partnerships for Innovation.
Nebraska H3 Reports: <a href="https://bit.ly/neH3">https://bit.ly/neH3</a>	Information on High Wage, High Demand, High Skill jobs in Nebraska. Top H3 occupations are identified on the home page. Reports can be generated by each Nebraska Economic Development Region and also statewide. Reports include H3 Report, Nebraska Economic Industry Report and All Career Clusters Report, Jobs can be searched by Job Title or SOC Code.	Nebraska Departments of Education, Labor and Economic Development
O*NET OnLine <a href="http://www.onetonline.org">www.onetonline.org</a>	Occupation information: knowledge, skills, abilities, Career Interest profile, job outlook and wages	U.S. Department of Labor, Employment and Training Administration (sponsor)  Developed by the National Center for O*NET Development
My Next Move <a href="http://www.mynextmove.org/">www.mynextmove.org/</a>	Condensed version of information from O*NET OnLine	
Occupational Outlook Handbook <a href="http://www.bls.gov/ooh/">www.bls.gov/ooh/</a>	Nationwide data on occupation pay, work environment, job outlook, similar occupations, and more	Bureau of Labor Statistics
Nebraska Reality Check <a href="https://www.education.ne.gov/nce/career-readiness-videos/">https://www.education.ne.gov/nce/career-readiness-videos/</a>	Lifestyle cost information and occupations in corresponding wage range	Nebraska Department of Education

IN-DEPTH		
Website	Type of Resources Available	Produced & Sponsored By
CareerOneStop <a href="http://www.careeronestop.org">www.careeronestop.org</a>	Variety of resources related to career planning, job training, and job searches	U.S. Department of Labor, Employment and Training Administration (sponsor)
GetMyFuture (section of the CareerOneStop website) <a href="http://www.careeronestop.org/GetMyFuture">www.careeronestop.org/GetMyFuture</a>	IResources tailored to students and young adults such as career exploration, information on finding education and training programs, and how to conduct a successful job search.	U.S. Department of Labor, Employment and Training Administration (sponsor)

Instructions: Questions 1 and 2 should be answered after watching **all** three sections of the virtual industry tour.

1. List six careers mentioned during the virtual industry tour:

- |                        |                                    |
|------------------------|------------------------------------|
| 1. <b>Agronomist</b>   | 4. <b>Engineering technician</b>   |
| 2. <b>Biologist</b>    | 5. <b>Environmental technician</b> |
| 3. <b>Culinologist</b> | 6. <b>Environmental</b>            |

2. Where is each business located?

<b>BUSINESS</b>	<b>LOCATION</b>
<b>CVA (Central Valley Ag)</b>	<b>Hooper, Nebraska</b>
<b>HDR</b>	<b>Omaha, Nebraska</b>
<b>Omaha Steaks</b>	<b>Omaha, Nebraska</b>

Instructions: The following questions are specific to the Central Valley Ag section of the virtual industry tour.

3. What is an ag cooperative?

- **Cooperatives allow farmers to pool resources to realize joint economic benefits related to agronomy, grains, feed, and energy.**

4. Describe the responsibilities of an agronomist:

- **Manage, improve, and protect natural resources. This includes fertilizer, fungicide, scouting and making recommendations.**

5. Describe how CVA internships are structured:

- **CVA internships are paid, 12-week experiences to explore career paths and job duties.**

6. What percent of young people that participate in internships become full-time employees?

**Over half (50%)**

*Note: The source of this is InternNE and the Nebraska Department of Economic Development.*

<https://opportunity.nebraska.gov/>

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*Instructions: The following questions are specific to the HDR section of the virtual industry tour.*

7. How many offices does HDR have worldwide?

**Over 200**

8. Describe what HDR does:

- **HDR saves natural resources through engineering, architecture, consulting, and environmental science.**
- **The company rebuilds environments that have had problems including flooding.**

9. In Nebraska, environmental and engineering technician occupations are considered H3. What do the three Hs stand for?

- 1. High skill**
- 2. High wage**
- 3. High demand**

10. Describe the job responsibilities of an environmental scientist:

- **Duties vary day-to-day including collecting surveys of protected species, mapping in the field, environmental assessments and issuing permits to ensure the environment is not harmed during building and development projects.**

*Instructions: The following questions are specific to the Omaha Steaks section of the virtual industry tour.*

11. What food items does Omaha Steaks market?

- |                       |                         |
|-----------------------|-------------------------|
| 1. <b>Beef steaks</b> | 4. <b>Seafood</b>       |
| 2. <b>Pork</b>        | 5. <b>Desserts</b>      |
| 3. <b>Chicken</b>     | 6. <b>Skillet meals</b> |

12. How many full time and temporary holiday employees does Omaha Steaks employ?

**2,000 full-time and 4,000 seasonal**

13. Describe the job responsibilities of an executive chef:

- **Executive chefs complete public relations appearances, develop new products and cooking methods, develop recipes, oversee social media content, and serve as the face of the company.**

14. Describe a culinologist:

**A culinologist is a specialized food scientist who develops new food products for food companies.**

15. Which university in Nebraska offers a Bachelor of Science degree in culinology?

**University of Nebraska - Lincoln**

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*Instructions: Respond to Question 16 after watching all three sections of the virtual industry tour.*

16. Which of the careers introduced in the virtual industry tour best fits your skill set and interests? Explain.

- **Answers will vary**



## ABOUT THIS PROJECT

The virtual industry tours provide a unique opportunity for students, parents and job-seekers to experience Nebraska-based industries without leaving the home or classroom.

The videos showcase different businesses and industries in each of the sixteen Career Clusters plus Entrepreneurship in the Nebraska Career Education Model. In addition to the tour of the business or industry, the videos also contain interviews with employees and managers discussing work requirements, education levels, salary and job prospects. The videos provide an accurate picture of today's workplace, breaking down stereotypes and assumptions while emphasizing the knowledge and skills required to be successful.

The teacher and student guides are designed to enhance student learning for each virtual tour. For the students, a guided notes worksheet is included to help them record important information about the career cluster. The teacher's guide includes a lesson plan complete with anticipatory set, introductory questions, and discussion questions to follow the virtual tours.

Discussion Guides and Career Readiness Resources are available at:  
**[WWW.NEBRASKACAREERCLUSTERS.COM/RESOURCES](http://WWW.NEBRASKACAREERCLUSTERS.COM/RESOURCES)**



It is the policy of the Nebraska Department of Education not to discriminate on the basis of sex, disability, race, color, religion, marital status, age, national origin, or genetic information in its educational programs, admission policies, employment, or other agency programs.

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