SUSTAINABLE BIOECONOMY
FOR ARID REGIONS

SBAR

EXCEL FOR AGRIBUSINESS: INTRODUCTION

ABSTRACT

This Excel video lesson is an introduction to Excel concepts and functions with a focus on agribusiness. The lesson includes defining and using workbooks, worksheet, cell, cell reference, range and formats. The lesson includes a crop production case study.

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Excel for Agribusiness: Introduction

STUDENT LEARNING OBJECTIVES:

After completing this lesson, students will:

1. Understand ways to use Excel for agribusiness.
2. Understand the importance of Excel in agribusiness.
3. Become familiar with basic concepts used in Excel.
4. Learn how to use simple Excel formulas.

TIME REQUIRED:

45 to 60 minutes
15 minutes teacher preparation

RESOURCES:

1. Excel for Agribusiness Lesson Plan
2. Excel for Agribusiness: Introduction Video (https://www.youtube.com/watch?v=ThN4uQTR084)
3. Excel for Agribusiness Case Studies Workbook

EQUIPMENT AND SUPPLIES NEEDED:

1. Computer with Excel software
2. Device with access to YouTube Videos (https://www.youtube.com/watch?v=ThN4uQTR084)
3. Copies of Introduction to Excel Quiz (page 5) for all students
4. Copies of 6 Year Green Chili Case Report (page 7) for all students

THIS LESSON WOULD WORK WELL AS PART OF:

- Math curriculum
- Computer science curriculum
- Agribusiness curriculum
- Agriculture curriculum

THIS LESSON IS ALIGNED TO AFNR, FFA, COMMON CORE MATHEMATICS AND NGSS STANDARDS. Expanded standards listed on page 9.

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LESSON PLAN:

1. Introduction to Excel (5 minutes)

Have students work in pairs. Ask students if they know what Excel is? (*A software program created by Microsoft that uses spreadsheets to organize numbers and data with formulas and functions.*) Ask students:

- Have you ever used Excel or similar software? What for?
- How can we use Excel in agriculture?

2. Watch Excel for Agribusiness: Introduction video (15 minutes)

Students will watch Excel for Agribusiness: Introduction lesson video, stopping at 12:40. This section explains basic concepts and formulas. Pause video to check for comprehension. Concepts covered are:

- Workbook
- Worksheet
- Cell
- Cell Reference
- Range
- Excel Format: Number, currency, or percentage
- Formulas: addition, subtraction, division, multiplication, SUM, and average
- Table

3. Complete Introduction to Excel Quiz (10 minutes)

After students watch the video, complete Introduction to Excel Quiz on page 5. Have students correct their quiz using the answers key on page 6, using the timestamps to check for comprehension.

4. Complete Six Year Green Chile Case Report (5 minutes)

Open Excel for Agribusiness Case Studies Workbook. Open the Case 1 worksheet with the 6 Year Green Chile Production table. Students need to read the three questions asked at the bottom of the table and fill the blanks with the appropriate formula. Students will write their answers on the 6 Year Green Chili Case Report (page 7).

5. Watch Excel for Agribusiness Video (5 minutes)

Have students watch the video from 12:41 to 15:33. This section will go through the procedures to complete the 6 Year Green Chile Production Case.

6. Leveling Up Questions (5 minutes)

- Ask students where and how they can use Excel (*4H projects, FFA, schoolwork, budgets).*
- Ask your students how Excel could improve efficiency in farm management.

7. Exit Ticket Discussion (5 minutes)

Ask students to discuss other aspects of Excel they would like to learn more about. Students can also discuss what problems (small or large) they could imagine using Excel to help solve.

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DEFINITIONS:

Acre: Unit of land area (66 by 660 feet).

Cell: The rectangular area located in the worksheet.

Cell Reference: Area that shows name of cell.

Crop Yield: Refers to the amount of agricultural (crop) production harvested.

Format: The top bar where we can modify number formats, align your numbers/content, or modify the font for text.

Formulas: A formula category that includes addition, subtraction, division, multiplication, SUM, and average.

lbs.: Abbreviation for pounds. This is the unit of mass used in yield to indicate amount of crop harvested.

Range: A group of selected cells/tables.

Table: A tool used to group data together in the Excel program.

Workbook: Excel program file.

Worksheet: Worksheet within the excel file.

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Introduction to Excel Quiz

Name:

Directions: Answer each question

1. Excel is software that can be used for data management.
   a. True
   b. False

2. What is the correct Excel function If you want the add several numbers or results?
   a. =Plus
   b. =Max
   c. =SUM
   d. =ADD

3. If you have a list of numbers and you need the average of those numbers, what function do you use in Excel?

4. What is the difference between a cell and cell reference?

5. What is the difference between an Excel workbook and an Excel worksheet?

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Answer Key for Introduction to Excel Quiz

1. Excel is software that can be used for data management. (Minute 1:00)
   a. True

2. What is the correct Excel function If you want to add several numbers or results? (Minute 5:50)
   c. =SUM

3. If I have a list of numbers and want to get the average of those numbers, what is the right function used in Excel? (Minute 6:07)
   Right function: =AVERAGE(number range)

4. What is the difference between cell and cell reference? (Minute 3:16)
   Cell is the box where you can insert data.
   Cell reference represents the value of a cell or cell range.

5. What is the difference between Workbook and a worksheet? (Minute 2:30)
   Workbook is the excel file that contains one or more worksheets.
   Worksheet is the place of work.

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6 Year Green Chile Case Report
Excel for Agribusiness Case Studies Workbook

Name:

Directions: Answer each question

1. Download and open Excel for Agribusiness Case Studies Workbook. Open Case 1 worksheet, located in the workbook bottom left side. The 6 Year Green Chile Production table is on this worksheet. Review the information in the table and the questions at the bottom.

2. Calculate your answers in Excel, using the Excel functions in this lesson.

3. Write your answers into the table below.

Activity Part 2	
What is the yield difference between year 1 and 2?	
What is the total yield of all 6 years of production?	
What is the yield average in the 6 years of production?	

4. Write a short paragraph explaining your answers.

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ANSWER KEY: 6 Year Green Chile Case (Case 1)

Question 2	
What is the yield difference between year 1 and 2?	**=O9-N9**
What is the total yield in the 6 years of production?	**=SUM(N9:R9)**
What is the yield average in the 6 years of production?	**=AVERAGE(N9:R9)**

Question 3	
What is the yield difference between year 1 and 2?	3,000 lbs.
What is the total yield in the 6 years of production?	137,000 lbs.
What is the yield average in the 6 years of production?	27,400 lbs.

4.Write a short paragraph explaining your answers.

I calculated my results by analyzing the Green Chili Production table, using formulas and answering the 3 questions. The difference between year 1 and year 2 was 3,000 lbs. per acre. The total yield in the 6 years of green chili production was 137,000 lbs. per acre. Finally, the average yield of green chili production was 27,400 lbs. per acre.

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STANDARDS DETAILS (AFNR, FFA, COMMON CORE MATHEMATICS, NGSS)

AFNR Career Ready Practices

CRP.02: Apply appropriate academic and technical skills. Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive.
CRP.02.01. Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.
CRP.02.02. Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.
CRP.03.02 Design and implement a personal financial management plan.
CRP.04: Communicate clearly, effectively, and with reason. Career-ready individuals communicate thoughts, ideas and action plans with clarity, whether using written, verbal and/or visual methods.
CRP.07: Employ valid and reliable research strategies. Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies.
CRP.08: Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.11. Use technology to enhance productivity

AFNR Agribusiness Systems Career Pathway

ABS.02. Use record keeping to accomplish AFNR business objectives, manage budgets and comply with laws and regulations.
ABS.02.01.02.c. Recommend and select tools and services to track, record and audit AFNR business transactions that meet business needs and priorities (e.g., electronic and paper based systems, etc.).

FFA Precept

FFA.PL-A. Action: Assume responsibility and take the necessary steps to achieve the desired results, no matter what the goal or task at hand.
FFA.PL-E. Awareness: Understand personal vision, mission and goals.
FFA.PL-F. Continuous Improvement: Accept responsibility for learning and personal growth.
FFA.PG-J. Mental Growth: Embrace cognitive and intellectual development relative to reasoning, thinking, and coping.
FFA.CS-M. Communication: Effectively interact with others in personal and professional settings.
FFA.CS-N. Decision Making: Analyze a situation and execute an appropriate course of action.
FFA.CS-O. Flexibility/Adaptability: Be flexible in various situations and adapt to change.

Common Core Mathematics with NGSS connections

Middle School:

MP.4: Model with mathematics (NGSS MS-LS2-5)
6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems. (NGSS MS-LS2-5)
6.SP.B.5 Summarize numerical data sets in relation to their context. (NGSS MS-LS2-2)
7.EE.B.3 Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (NGSS MS-LS2-5)

High School:

MP.2 Reason abstractly and quantitatively. (HS-ESS3-1),(HS- ESS3-2),(HS-ESS3-3),(HS-ESS3-4),(HS-ESS3-6)
MP.4 Model with mathematics. (HS-ESS3-3),(HS-ESS3-6)

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HSN.Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. (HS-ESS3-1),(HS-ESS3-4),(HS-ESS3-6)
HSN.Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. (HS-ESS3-1),(HS-ESS3-4),(HS-ESS3-6)

NGSS
HS-ETS1-4. Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.
HS-ESS3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

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