A farmer in Union County, North Carolina, is exploring ways that spatial analysis can help the farm. The farmer has two questions:

- How big is the wheat field?
- Which farmers market locations are within 20 miles of the farm?

In this exercise, you will follow the analysis workflow and use spatial analysis tools to answer the farmer's questions.

Estimated completion time: 10 minutes

To complete exercises, you need the following:

- ArcGIS Pro 2.9 (Basic, Standard, or Advanced)

① Download the data

To complete the exercise, you must download the data. If you have already downloaded and installed the data, continue to the next step.

Unable to find the data you downloaded?

After you have downloaded the data ZIP file, extract it to the C:\EsriTraining folder. The unzipped folder will have the same name as the ZIP file.

If you unzipped the data to a location other than C:\EsriTraining, browse to that location and locate the folder. You can also try searching for the folder in one of the following ways:

- Start > Search Programs And Files (Windows 7)
- Start > File Explorer (Windows 8, 10 or 11)

2 Open an ArcGIS Pro project

To begin, you will open an existing ArcGIS Pro project.

a. Start ArcGIS Pro.

b. If necessary, sign in to ArcGIS Pro using your ArcGIS Online organizational account.

c. On the bottom-left side of the screen, click Open Another Project.

d. Browse to **C:\EsriTraining\StartAnalytics\Data,** select FarmAnalysis.aprx, and click OK to open the project.

e. Make sure that the Farm map is enabled.

> **Note:** Your image may look slightly different based on your map view extent.

3 Examine the data

a. If necessary, from the View tab, click Catalog Pane to open it.

b. In the Catalog pane, expand Databases, and then expand FarmAnalysis.gdb.

What data is in the FarmAnalysis.gdb?

Show answer

Farm point feature class and FarmersMarkets point feature class

This data is used within the project maps and was selected based on the farmer's questions.

> **Note:** The data has already been collected and prepared for your use. This step is the explore and prepare data step in the analysis workflow.

Learn more about how to explore and prepare data

Learn more about how to explore and prepare data by enrolling in the ArcGIS Pro Fundamentals learning plan.

4 Measure the wheat field area

Now that you have the FarmAnalysis project open, you will use a bookmark to zoom to the wheat field. The farmer would like to know the size of this field in acres.

a. On the Map tab, in the Navigate group, click Bookmarks and choose the Wheat Field bookmark.

The wheat field is now in view. You will use the Measure Area tool to determine the area of the field.

b. On the Map tab, in the Inquiry group, click the Measure down arrow and select Measure Area .

The Measure Area dialog box appears at the top of the map view.

c. In the Measure Area dialog box, verify that the geometry is Planar, and then click the measuring unit down arrow and choose Acres.

d. Click along the perimeter of the field to create a polygon.

The measure information box shows that the wheat field is about 7 acres. Your results may differ based upon how you drew your measure polygon.

By using the Measure Area tool, you were able to answer the question, "How big is the wheat field?"

> **Question:** Which step in the spatial analysis workflow did you follow by measuring the wheat field?
>
> Show answer
>
> Analyze and model

e. Close the Measure Area dialog box.

5 Find the nearest farmers markets

Now you will use spatial analysis to answer the question, "Which farmers market locations are within 20 miles of the farm?"

a. Activate the Farmers Markets map tab.

b. On the Analysis tab, click Tools to open the Geoprocessing pane.

c. In the Search field, type **Select Layer By Location**.

d. From the search results, click Select Layer By Location (Data Management Tools) to open the tool.

e. Set the following parameters:

- Input Feature Layer: Choose FarmersMarkets.
- Relationship: Choose Within A Distance.
- Selecting Features: Choose Farm.
- Search Distance: Type **20** and choose Miles.
- Selection type: Choose New Selection.

f. Click Run.

A few farmers market locations will be selected in the map.

g. Explore the map.

h. In the Contents pane, right-click the FarmersMarkets layer and choose Attribute Table.

This step is the interpret results step from the analysis workflow.

i. Review the selected markets and the information about them.

How many farmer markets are within 20 miles of the farm?

Show answer

Seven farmers markets are selected.

Through the use of spatial analysis, you are able to present information to the farmer to make decisions about the farm. These steps are the final two steps in the analysis workflow.

j. Save your project and exit ArcGIS Pro.