My thought is to create a portal that includes the following parameters. However, since I did not look at Quick Stats carefully to find out the availability of all the needed datasets to do them, please consider them just as an initial thought. Please feel free to adjust or change, or please add any other ideas, suggestions, or comments if you have.

The following parameters can be useful for visualization:

1. **Crop Production and Yield**:
   * **Parameters**: Crop type, year, state/county, planted/harvested area, average yield per acre, production totals.
   * **Visualization**: Bar charts, line graphs, maps.
2. **Livestock Inventory and Production**:
   * **Parameters**: Livestock type (e.g., cattle, hogs, poultry), year, state/county, inventory numbers, production quantities.
   * **Visualization**: Bar charts, pie charts, line graphs.
3. **Economic Data**:
   * **Parameters**: Farm income, expenses, price received, price paid, value of production.
   * **Visualization**: Bar charts, line graphs, pie charts.
4. **Acreage and Land Use**:
   * **Parameters**: Type of land use (e.g., cropland, pastureland), year, state/county, total acreage.
   * **Visualization**: Maps, bar charts, pie charts.
5. **Farm Demographics**:
   * **Parameters**: Number of farms, farm size, operator age, operator gender, year, state/county.
   * **Visualization**: Bar charts, pie charts, line graphs.

Also, comparing parameters for two states or counties using visualizations like scatter plots, bar charts, or line graphs is an excellent approach. Here are a few ways to do it:

1. **Scatter Plots**:
   * **Usage**: Compare two variables (e.g., average yield per acre vs. total production) between two states or counties.
   * **Example**: Scatter plot showing the relationship between corn yield and production in Iowa and Illinois over several years.
2. **Bar Charts**:
   * **Usage**: Compare quantities (e.g., total acreage, production totals) side by side for two states or counties.
   * **Example**: Bar chart comparing soybean production in Indiana and Illinois for each year from 2000 to 2022.
3. **Line Graphs**:
   * **Usage**: Compare trends over time for two states or counties.
   * **Example**: Line graph showing the trend in milk production in Indiana and Missouri over the past decade.
4. **Box Plots**:
   * **Usage**: Compare the distribution and variability of data between two states or counties.
   * **Example**: Box plots showing the distribution of wheat yields in Illinois and Missouri.
5. **Pie Charts**:
   * **Usage**: Compare the proportion of different categories (e.g., types of crops grown) between two states or counties.
   * **Example**: Pie charts showing the proportion of different livestock types in Indiana and Michigan.

In addition, I think it would be beneficial for farmers if we included some more information or the mentioned information differently. I am unsure about the availability of the data and about how to present them (for some of them, maybe the mentioned plots are enough). My thoughts are as follows.

1. **Crop Yield and Production Data**:
   * Historical and current yield data for various crops.
   * Production totals to understand market supply.
2. **Price Information**:
   * Prices received for crops and livestock.
   * Price trends over time to aid in market timing and financial planning.
3. **Weather and Climate Data**:
   * Historical weather data and climate trends.
   * Impact of weather on crop yields to optimize planting and harvesting times.
4. **Soil and Land Use Data**:
   * Soil quality and type information.
   * Land use patterns to improve crop rotation and land management.
5. **Economic Indicators**:
   * Farm income and expense data to benchmark against peers.
   * Economic forecasts to aid in budgeting and financial planning.
6. **Agricultural Practices**:
   * Data on conservation practices and their adoption rates.
   * Information on effective farming techniques and their outcomes.
7. **Pest and Disease Reports**:
   * Incidence of pests and diseases affecting crops and livestock.
   * Effective pest and disease management strategies.
8. **Input Costs**:
   * Data on the cost of seeds, fertilizers, pesticides, and other inputs.
   * Cost trends to aid in budgeting and purchasing decisions.
9. **Market Trends**:
   * Demand and supply trends for various agricultural products.
   * Export and import data to understand international market dynamics.
10. **Livestock Data**:
    * Inventory and production data for various livestock.
    * Trends in livestock health and productivity.
11. **Environmental Impact**:
    * Data on the environmental impact of various farming practices.
    * Information on sustainable and eco-friendly farming practices.

We can set some filters in the portal so that users can get the desired plots and information. We can also offer users the option to download both the plots and the data used to create them.