As a high-quality graduate statistics student, I must consider the appropriateness of using a linear regression model for extrapolation into the future, especially when the prediction year (2050) is far beyond the range of the original data (1910 to 2000).

\*\*Answer: (C) Neither method is appropriate for making a prediction for the year 2050 based on these data.\*\*

Justification:

1. The regression model was constructed based on data from 1910 to 2000. Predicting for the year 2050 involves extrapolating far beyond the range of the data. In general, extrapolation outside of the range of observed data using a linear model can lead to unreliable predictions because the assumption that the same linear trend will continue indefinitely is not justified without further evidence or understanding of the underlying processes.

2. Changes in technology, economics, policies, and demographics can significantly affect farm populations and such factors may not have been accounted for in the regression model.

3. For accurate predictions, it might be necessary to develop a model with additional variables or obtain new data that reflects changes expected to occur by 2050. Additionally, other methods such as time series analysis with updated data or domain-specific expertise might provide better forecasting in such a case.

Thus, neither substituting the year 2050 into the regression equation (Option A) nor using a scatterplot regression line for prediction (Option B) is appropriate without the assurance that the model's assumptions and the linear trend will hold far beyond the original data.