Statistical Analysis Report: Tillage Depth vs. Fuel Efficiency

This report presents the statistical analysis on the relationship between tractor tillage depth and specific fuel consumption (Liters per Hectare).

# 1. Raw Data

|  |  |
| --- | --- |
| Tillage Depth cm | Fuel Consumption L ha |
| 10.00 | 15.000 |
| 15.00 | 19.670 |
| 20.00 | 24.000 |
| 23.00 | 24.720 |
| 25.00 | 27.000 |
| 30.00 | 28.650 |

# 2. Linear Regression Results

\*\*Regression Equation:\*\*  
Fuel Consumption (L/ha) = (0.690 \* Tillage Depth (cm)) + 9.019  
  
\*\*Statistical Metrics:\*\*

|  |  |
| --- | --- |
| R-Squared ($R^2$) | 0.9682 |
| P-value | 0.00038 |
| Standard Error of Slope | 0.0626 |

# 3. Interpretation

The \*\*Coefficient of Determination ($R^2$) is 0.9682\*\*, which is very high. This indicates that approximately \*\*{r\_squared\*100:.2f}%\*\* of the variability in Fuel Consumption can be explained by the Tillage Depth using this linear model. The \*\*P-value is {p\_value:.5f}\*\*, which is far below the significance level of 0.05, confirming that Tillage Depth has a statistically significant positive effect on Fuel Consumption.Specifically, the slope of {slope:.3f} suggests that for every \*\*1 cm increase in Tillage Depth\*\*, the Fuel Consumption increases by approximately \*\*{slope:.3f} Liters per Hectare\*\*.

# 4. Visualization

