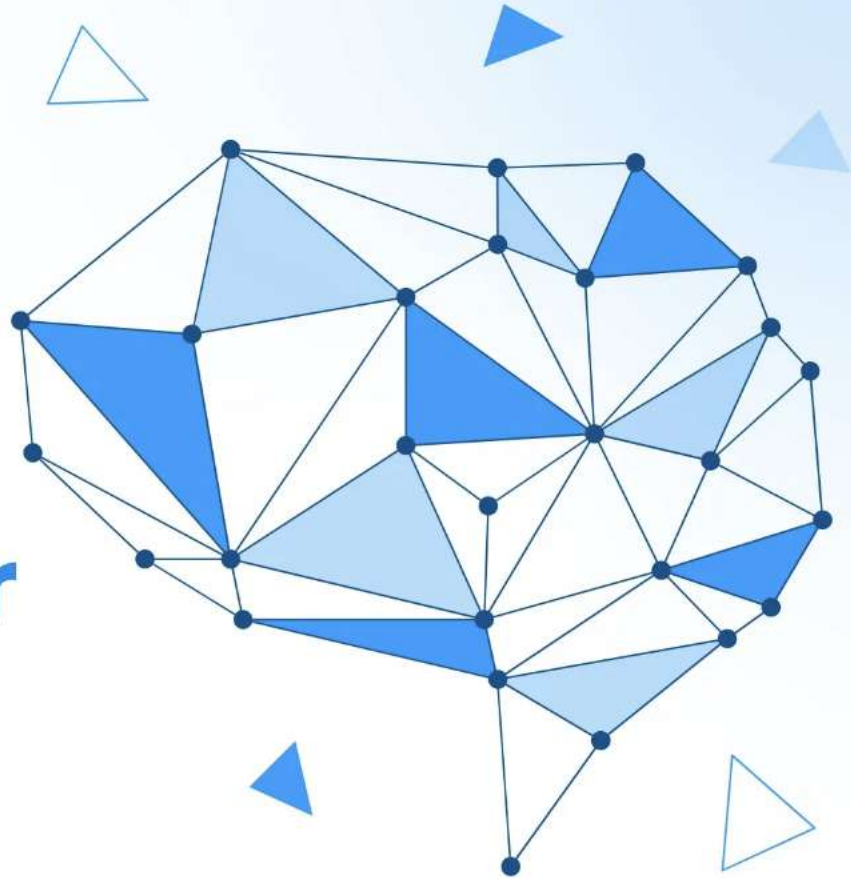


Multiple Linear Regression



Multiple Linear Regression



$$\hat{y} = b_0 + b_1X_1 + b_2X_2 + \dots + b_nX_n$$

Dependent variable

y-intercept
(constant)

Independent variable 1

Slope coefficient 1

Independent variable 2

Slope coefficient 2

Independent variable n

Slope coefficient n

Multiple Linear Regression



~



$$Potatoes[t] = 8t + 3 \frac{t}{kg} \times Fertilizer[kg] - 0.54 \frac{t}{^\circ C} \times AvgTemp[^\circ C] + 0.04 \frac{t}{mm} \times Rain[mm]$$

Additional Reading



The Application of Multiple Linear Regression and Artificial Neural Network Models for Yield Prediction of Very Early Potato Cultivars before Harvest

Magdalena Piekutowska et. al. (2021)

Link:

<https://www.mdpi.com/2073-4395/11/5/885>

Quantitative Yield Forecast		
Models RY1 and NY1	Yield Forecast before Harvest (40 Days from Full Emergence)	Data Range
INSO	insolation sum [h] in the periods: planting—June 20,	275.3–711.7
TEMP	average daily air temperature [°C] in the periods: planting—20 June	10.8–15.7
PREC	precipitation [mm] in the periods: planting—20 June	38.7–258.2
NITRO	sum of nitrogen fertilization [kg·ha ⁻¹] in the periods: planting—20 June	80–155
PHOSP	sum of phosphorus fertilization [kg·ha ⁻¹]	28.2–150
POTAS	sum of potassium fertilization [kg·ha ⁻¹]	80–306.5
PLANT	planting date [number of days since the beginning of the year]	107–127
EMERG	date of emergence [number of days since the beginning of the year], yield forecast 20th of June	130–151
DENST	densification [plants/plot], yield forecast June 20	35–60
PH	Soil pH [in 1 mol KCl]	5.8–7
SFERTP	soil fertility in phosphorus [mg P ₂ O ₅ ·100 g ⁻¹ soil]	14–26.2
SFERTK	soil fertility in potassium [mg K ₂ O·100 g ⁻¹ soil]	11.7–19.2
SFERTM	soil fertility in magnesium [mg Mg·100 g ⁻¹ soil]	3–9.1
YIELDP1	tuber yield [t·ha ⁻¹], harvest 40 days from full emergence	11.6–41.3