



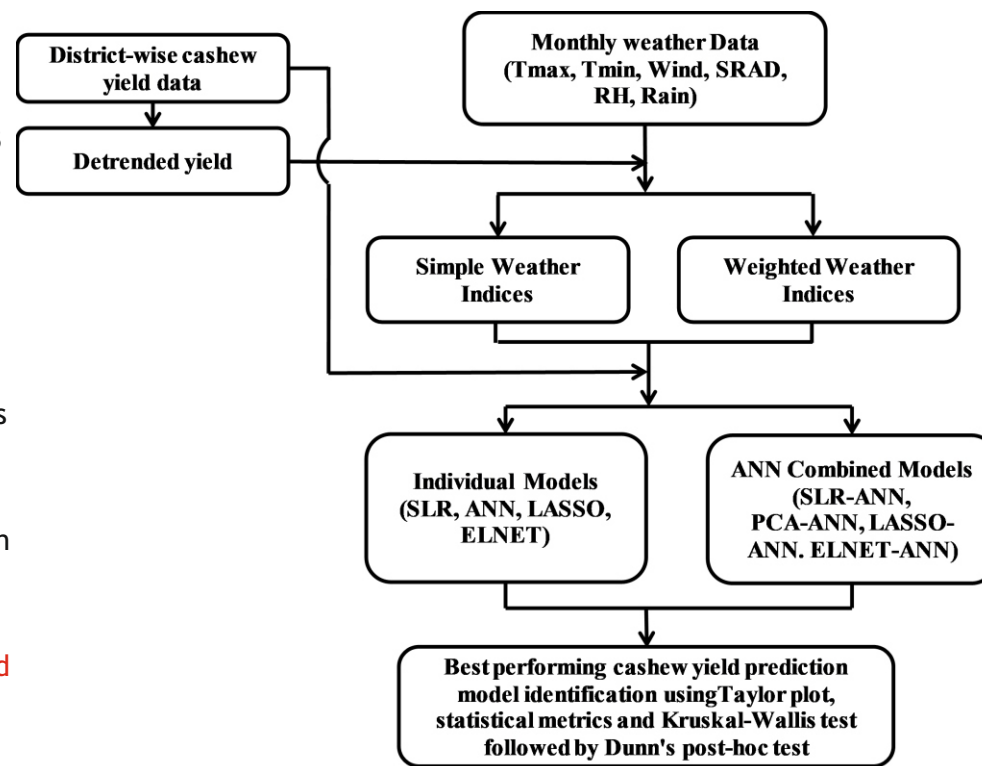
## MODELS FOR YIELD PREDICTION OF CASHEW

Lead Developer : **Dr. Bappa Das**  
Associate Developers : Parveen Kumar

### TECHNOLOGY DETAILS

- Annual cashew yield and monthly weather data of maximum and minimum temperature, relative humidity, wind speed, solar radiation for 2000 to 2018 (19 years) were compiled for **14 coastal districts of India**.
- Various models like stepwise linear regression (SLR), least absolute shrinkage and selection operator (LASSO), elastic net and artificial neural network (ANN) individually against the ANN model combined with SLR, LASSO, elastic net and principal components analysis (PCA) were tested.
- LASSO model provided the best performance with  $R^2$  ranging from 0.717 to 0.997 and normalized root mean square error ranging from 1.619 to 58.167%.
- Timely and reliable estimate of crop yield estimation using the best performing model helps to develop food policies, economic plans and food security programs for a country. The model predicted the cashew yield for Goa with 13.66% error.**

Overall flowchart for cashew yield prediction



### PUBLICATION

- Das B, et al. 2022.** Novel combination artificial neural network models could not outperform individual models for weather-based cashew yield prediction. International Journal of Biometeorology. 66, 1627-1638. (NAAS Rating: 9.45)



## INDIAN COUNCIL OF AGRICULTURAL RESEARCH

Certified that  
**Bappa Das**  
(Lead Developer)

Associate Developer  
**Parveen Kumar**

of

**ICAR-Central Coastal Agricultural Research Institute  
Old Goa**

has developed the technology

**Models for yield prediction of cashew**

16th July, 2023  
New Delhi

(Rajbir Singh)  
Assistant Director General (A&AF)

(S.K. Chaudhari)  
Deputy Director General (NRM)