



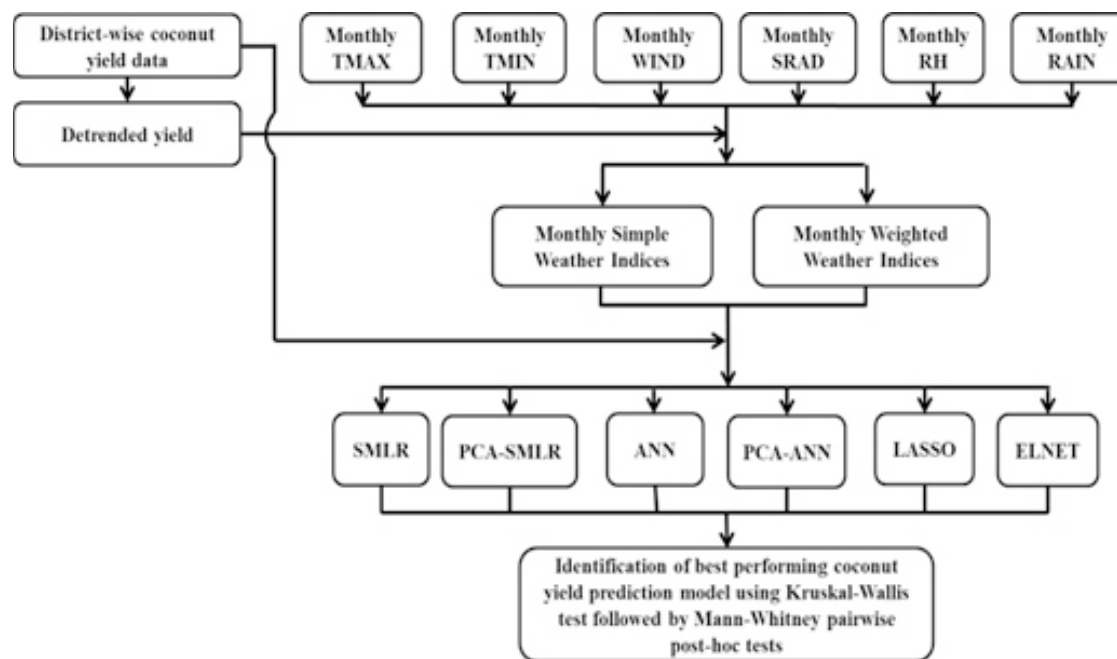
WEATHER-BASED MODEL FOR YIELD PREDICTION OF COCONUT

Lead Developer : **Dr.Bappa Das**

Associate Developers : V. Arunachalam, Viswanatha Reddy, K., Paramesh V, Debashis Chakraborty, Sujeet Desai

TECHNOLOGY DETAILS

- Annual coconut yield and monthly weather data of maximum and minimum temperature, relative humidity, wind speed, solar radiation for 2000-2015 were compiled for **fourteen districts of the west coast of India**
- Different linear models like stepwise multiple linear regression (SMLR), principal component analysis together with SMLR (PCA-SMLR), least absolute shrinkage and selection operator (LASSO), and elastic net (ELNET) with nonlinear models namely artificial neural network (ANN) and PCA-ANN were tested
- ELNET model provided the best performance with R^2 ranging from 0.74 to 0.99 and absolute percentage error ranging from 0.21 to 33.98%
- These forecast models enable planners and decision-makers to predict and plan for how much to import or export depending upon the case of shortfall or surplus production. Predicted the coconut yield for Goa with 6.05% error.



Steps in coconut yield prediction model development

PUBLICATION

- Das, B.*, Nair, B., Arunachalam, V., Reddy, K. V., Venkatesh, P., Chakraborty, D., & Desai, S. (2020). Comparative evaluation of linear and nonlinear weather-based models for coconut yield prediction in the west coast of India. International Journal of Biometeorology, 64(7), 1111-1123. <https://doi.org/10.1007/s00484-020-01884-2> (NAAS Rating: 9.45)



INDIAN COUNCIL OF AGRICULTURAL RESEARCH

Certified that

Bappa Das

(Lead Developer)

Associate Developers

Vadivel Arunachalam

Viswanatha Reddy K.

Paramesh V.

Debashis Chakraborty

Sujeet Desai

of

ICAR-CCARI, Goa

has developed the technology

**Weather-based model for
yield prediction of coconut**

16th July, 2024
New Delhi

(Rajbir Singh)
Assistant Director General (AAF&CC)

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