DOI: https://doi.org/10.36094/sc.v92.2026.Farm_Trust_AI_an_Explainable_Deep_Learning.Malik.599

ARTICLE

Sci. and Cult. 92 (9–10) : 599-606 (2026)

FARM TRUST AI: AN EXPLAINABLE DEEP LEARNING FRAMEWORK FOR CROP DISEASE DETECTION

RAHUL MALIK, SATYABRATA SHIT, PRANAGYA DEY, ARPAN BISWAS, SUSHMITA CHAUDHARI* AND AYANTIKA DAS

Crop diseases of smallholder farmers (86% of community) are a threat to agricultural productivity in developing nations, including India (INR 29,000 crores lost annually). FarmTrust AI will be an explainable AI ecosystem that consists of EfficientNet-B3 (93.73% top-1 accuracy on 87,867 images, 38 classes), multilingual (English/Hindi/Bengali) treatment suggestions, outbreak mapping (10-km radius), and a conversational assistant. It builds trust and knowledge gap between research and farmer (45.2 MB, <3s inference), and is deployable.