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CABI: Bridging Knowledge and Technology for Sustainable Agriculture

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Agriculture in developing countries faces serious challenges such as crop losses due to pests and diseases, lack of timely advisory services, and limited access to scientific information. The Centre for Agriculture and Bioscience International (CABI) has emerged as a globally recognised, knowledge-based organization working to improve agricultural productivity and livelihoods through science, data, and digital innovations. CABI integrates research, information management, and extension services to strengthen plant health systems and reduce crop losses. Its flagship programme, Plantwise, uses plant clinics, digital tools, and knowledge banks to provide practical solutions directly to farmers. By combining modern information and communication technologies with field-level extension, CABI plays a crucial role in food security, climate resilience, and sustainable agricultural development. This article highlights the origin, functions, major programmes, and global significance of CABI in strengthening agricultural systems.

Keywords: CABI, Plantwise, Knowledge transfer, Plant health, Food security, Digital agriculture

Introduction

Agriculture is the backbone of livelihood for millions of farmers, especially in developing countries like India. However, farmers often suffer heavy crop losses due to pests, diseases, climate variability, and lack of timely technical guidance. One of the major gaps in agriculture is the disconnect between scientific research and its practical application in farmers' fields. In this context, the Centre for Agriculture and Bioscience International (CABI) plays a vital role in bridging this gap through knowledge dissemination, scientific research, and digital extension services. CABI is a not-for-profit, science-based international organization dedicated to improving livelihoods by solving problems in agriculture and the environment through information and scientific expertise. Headquartered in the United Kingdom with a global network, it works with member countries and development partners to promote sustainable agriculture and food security.

History and Evolution of CABI

CABI has a long and rich history in agricultural knowledge services. It was originally founded in 1910 as an entomological research initiative and later evolved into the Commonwealth Agricultural Bureaux. In 1986, it was renamed CAB International (CABI) to reflect its global presence and expanded role in agricultural development. Over time, CABI has transformed into a digitally powered organization focusing on plant health, invasive species management, and sustainable agricultural development. The launch of the Plantwise programme marked a major milestone in strengthening global plant health systems.

Mission and Global Presence

The core mission of CABI is to improve people's lives worldwide by providing scientific information and applying expertise to solve agricultural and environmental problems. It operates through a network of centres across different regions and is owned by multiple member countries, working on a cost-recovery and development-oriented model. CABI's work directly supports global development goals such as food security, poverty reduction, climate action, and sustainable agriculture.

Core Functions of CABI in Agriculture

1. Scientific Research and Sustainable Solutions

CABI applies strong scientific expertise in biological control, plant health, and invasive species management to develop sustainable agricultural solutions. Its research focuses on reducing crop losses, improving productivity, and promoting eco-friendly pest management practices that are safe for farmers and the environment.

2. Information Management and Knowledge Sharing

One of the unique strengths of CABI is its knowledge management system. It collects, curates, and publishes scientific data into global databases and compendia, making validated agricultural information accessible to researchers, extension workers, and farmers. This helps in bridging the gap between scientific knowledge and practical field application.

3. Development and Extension Services

CABI implements large-scale development programmes that deliver scientific knowledge directly to farming communities. Through training, extension activities, and advisory services, it empowers farmers, extension workers, and local institutions for long-term agricultural sustainability.

4. Capacity Building and Digital Literacy

Capacity building is another key pillar of CABI. It trains plant doctors, extension personnel, and farmers to use digital tools, diagnose crop problems, and adopt sustainable agricultural practices, ensuring long-term impact and improved decision-making at the farm level.

Plantwise: A Flagship Programme for Crop Loss Reduction

Plantwise is one of CABI's most impactful global programmes aimed at reducing crop losses caused by pests and diseases. The programme operates through plant clinics where trained 'Plant Doctors' provide diagnosis and advisory services to farmers. These clinics serve as meeting points where farmers can bring affected plant samples and receive scientific recommendations for pest and disease management. The programme integrates traditional extension methods with modern digital tools such as tablets, mobile apps, and knowledge banks. This approach improves the accuracy of diagnosis, speed of advisory services, and outreach to a larger number of farmers. By strengthening national plant health systems, Plantwise helps farmers lose less and produce more.

Role of Digital Technology and Data in CABI

Modern agriculture increasingly depends on data and digital tools. CABI uses mobile technology, knowledge banks, and data platforms to collect and analyse field-level crop information. The use of tablets and e-clinics has enabled faster data collection, better communication among extension workers, and more accurate recommendations for farmers. Digital tools also help in early detection of pest outbreaks, predictive analysis, and climate-resilient agricultural planning.

Key Publishing and Knowledge Resources

CABI is also a leading academic publisher in agriculture and life sciences. Its major knowledge products include CAB Abstracts, Crop Protection Compendium, Invasive Species Compendium, Global Health database, and a wide range of books and eBooks in agriculture and environmental sciences. These resources provide evidence-based information that supports research, policy formulation, and extension services worldwide.

Contribution to Food Security and Sustainable Development

CABI's work significantly contributes to global food security by reducing crop losses, improving farmer incomes, and enhancing sustainable agricultural practices. Its programmes support climate change adaptation, biodiversity conservation, gender and youth empowerment, and knowledge transfer in agriculture. By promoting open data and collaborative initiatives, CABI encourages wider access to agricultural knowledge for sustainable development.

Relevance of CABI for Indian Agriculture

India faces several agricultural challenges such as pest outbreaks, climate stress, declining soil health, and limited access to timely advisory services. CABI's model of plant clinics, digital advisory systems, and integrated crop management can be highly beneficial for Indian farming systems. Its focus on knowledge transfer, safe pest management, and capacity building aligns well with the goals of sustainable and climate-resilient agriculture in India.

Challenges and Future Prospects

Despite its global success, challenges remain in scaling digital agriculture, ensuring data accessibility, and building digital skills among farmers. Limited infrastructure and awareness in rural areas may restrict the adoption of advanced technologies. Future efforts should focus on expanding digital advisory services, strengthening plant health systems, and enhancing farmer training programmes to make agriculture more knowledge-driven and resilient.

Conclusion

The Centre for Agriculture and Bioscience International (CABI) acts as a vital bridge between scientific research and practical agriculture. Through innovative use of technology, knowledge management, and extension services, it helps farmers reduce crop losses, improve productivity, and adopt sustainable farming practices. Programmes like Plantwise clearly demonstrate how the integration of science, data, and digital tools can transform plant health systems and farmer livelihoods. In the era of climate change and food insecurity, strengthening collaboration with organizations like CABI can significantly enhance sustainable agricultural development and ensure long-term food security.