

Rice Doctor



App-based diagnostic tool that provides accurate and timely diagnosis and management recommendations

✓ Background

Effective agricultural extension and access to knowledge is essential to facilitate improvements and productivity gains in the agricultural sector. Science-based information can inform sound decision-making that empowers everyone along the agricultural value chain. Utilizing information and communication technology (ICT)-based tools such as the internet, tablets and mobile phones is one way to access information directly.

The International Rice Research Institute (IRRI) seeks to take research to impact by enhancing the capacity of extension workers and farmers; however, rice production continues to become more complex as it is threatened by climate change, land and water scarcity, growing populations and a demanding market.

Rice Doctor is a mid-season diagnostic tool that helps agricultural extension workers and farmers have accurate and timely diagnosis of more than 80 crop problems caused by pests, diseases and abiotic stresses due to agronomic mismanagement, nutritional imbalance or the environment. The Rice Doctor helps to visually diagnose the cause of the problem and provides actionable cultural and mechanical advice for the prevention and management of the problem.

Rice Doctor seeks to enable its users to diagnose and manage rice crop problems better. It aims to reduce the incidence of mismanagement of rice crop problems by minimizing misdiagnosis of causes and lack of knowledge about the correct management options. This includes the incorrect and inefficient use of plant protection methods (i.e. using the wrong product and target pathogen combination).

✓ The Challenge

Rice grown under tropical conditions is subject to a variety of pest and diseases which, if left untreated, can lead to significant yield losses, and therefore a reduction in farmer profits. In a study conducted by IRRI, it was found that, on average, farmers lose 37% of their rice yield to pests

and diseases, and that these losses can range between 24% and 41% depending on the production situation.

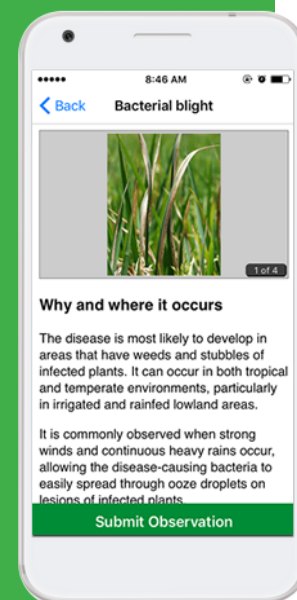
To be able to manage yield limiting factors effectively, the most important step is the early and correct diagnosis of the problem. Once a diagnosis is established, managing the problem is critical to avoid production losses. The right management techniques must be applied correctly and at the appropriate times.

► Results

- 11,147 downloads from Google Play Store
- 1,094 downloads from the Apple App Store
- Average 4.5 rating (on a scale of 1-5, 5 being the highest) from various app reviewers, gaining praise for its usefulness

“It’s a huge help since our farming expenses decreased because we do not use insecticide anymore. If we ever spray, in a hectare, we’ll spend more or less about USD 60 in a cropping season. But now, since we got to know the beneficial insects and the insect pests, we don’t use insecticide anymore.”

- Jun Estrella Jr., Farmer



✓ How does it work?

This interactive application allows users to identify and diagnose possible problems in their rice fields. The tool includes over 80 pests, diseases and other disorders. The combination of text descriptions and images helps users in the process of diagnosing their problems.

1. Download the Rice Doctor application from Google Play Store or the Apple App Store.
2. Answer a series of questions about rice crop symptoms, observations, growth phase, insects and pests that narrow the list of potential problems the farmer is encountering.
3. Submit a new report on the identified pest or disease. This step is optional.
4. Fact sheets on each possible disorder provide brief descriptions of the signs and symptoms of the specific problems, together with details of any available management options. A keyword search function enables users to directly access specific fact sheets.

For further information on these disorders, users can link to full fact sheets on the IRRI Rice Knowledge Bank (www.knowledgebank.irri.org) website.

Rice Doctor is intended for use of anyone who requires assistance diagnosing a rice crop problem and advice on its management, including, but not limited to, rural advisors, extension agents, non-government organizations, plant clinics and farmers and farmer organizations.

✓ Lessons Learned and Recommendations

Based on Rice Doctor usability testing and an evaluation conducted in the Philippines, we learned that:

- **Rice Doctor is complementary to experience and not a replacement for it:** Agricultural Extension Workers (AEWs) still prefer to use visual identification solely as their method of diagnosis. However, they did express their need to consult with informational materials to be more confident about diagnoses and for additional proper training.
- **Technology-enabled interface is preferred:** Users preferred using Rice Doctor over printed materials as they see RD's potential as a handy, all-in-one reference material in verifying crop problems.



- **Timely updates and iterations are important:** Although Rice Doctor has sufficient information housed in the application, it still requires revisions and updates. These updates include additional photos, detailed descriptions, rearrangement of the diagnostic questions, and more training activities and workshops in order to improve their user experience. These updates will decrease confusion about the interface and allow users to arrive at more accurate results.

▶ Next Steps

- **Build out content development plan:** Our usability research identified areas of improvement for Rice Doctor development and scale that will increase the usability and reach of the tool. There is also a need to reevaluate Rice Doctor with crop protection specialists to improve the accuracy of its diagnostic keys. The inclusion of rice varieties are also important for diagnosis.
- **Develop an updated business model to increase utilization:** A number of actors in the rice value chain have not been engaged in the dissemination of Rice Doctor, including farmer's groups, production services providers, seed growers and rice technicians. Including these stakeholders as well as refining the channels for delivery will be key for increased uptake of the app.
- **Targeted outreach and dissemination strategy:** In order to reach new and traditional stakeholders for Rice Doctor, a holistic communications strategy is required to get the products to key stakeholders. Training modules, success stories, fact sheets and pest and disease calendars could be valuable tools in Rice Doctor dissemination.

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