



## Rice leaf app for smarter farming

**A Thai research team has developed an app to help farmers estimate more accurately the amount of nitrogen-based fertilisers needed in rice fields.**

The app could help to reduce the cost of rice crops by cutting excess fertiliser usage, improve the recovery of fertiliser and prevent nitrogen oxide pollution in water.

The simplest way of estimating the amount of fertiliser needed in rice fields is to visually inspect the rice leaves and compare their colours to a standard leaf colour chart. However, an incorrect reading of the chart often leads to an incorrect application of fertiliser. The new app, developed by researchers at the National Electronics and Computer Technology Center in Thailand, effectively turns a smartphone or tablet into a colorimeter that can measure the colour of leaves and recommend the amount of fertiliser to use.

The app uses the device's camera to capture an image of a rice leaf and analyse its colour. Accuracy is achieved by comparing the colour of the leaf to a white reference, such as a piece of paper, that the user holds directly behind the leaf during image capture. The colour

is then equated to a standard level on the leaf colour chart and the app displays the amount of fertiliser needed. It can also estimate potassium deficiency. In field tests, the app achieved over 93% accuracy in estimating leaf colours.

Called BaiKhaoNK (after the Thai word BaiKhao, meaning rice leaf), the app is currently compatible with Android 2.2 smartphones and above. This year, the researchers are planning to work with the Department of Rice in Thailand's Ministry of Agriculture and Cooperatives and the National Center for Genetics Engineering and Biotechnology to promote the use of the app with farmers.

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