

Leaf colour chart and SPAD meter in nitrogen management

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The Leaf color chart (LCC) had been jointly developed by International Rice Research Institute (IRRI) and Philippines Rice Research Institute (PhilRice) from a Japanese prototype, for the purpose of measuring the required quantity of nitrogen to be applied in Rice field and thereby to get a maximum productivity. The leaf color chart (LCC) is an innovative cost effective tool for real-time or crop-need-based N management in Rice, Maize and Wheat. LCC is a visual and subjective indicator of plant nitrogen deficiency and it is an inexpensive, easy to use. It measures leaf color intensity that is related to leaf N status. LCC is an ideal tool to optimize N use in Rice.

How to measure leaf colour?:

- Take reading in the morning (8-10AM) or in the afternoon (2-4PM) preferably by the same person from randomly selected fully expanded new leaves.
- Under the shade, measure the color of each leaf by holding the LCC and placing the middle part of the leaf on the top of the color stripe for comparison.
- If the color of the leaf falls between the two shades, then take mean of the two values.
- Take reading at an interval of 7-10 days string from 2 weeks after transplanting up to start of flowering.
- Generally critical value for semi dwarf high yielding varieties is 4.0. If the average value fall below 4.0, top dress N fertilizer (20-30 kg/ha) to correct N deficiency.

Alternately, if more than five leaves show reading below the set critical value, top dress N fertilizer to correct N deficiency.

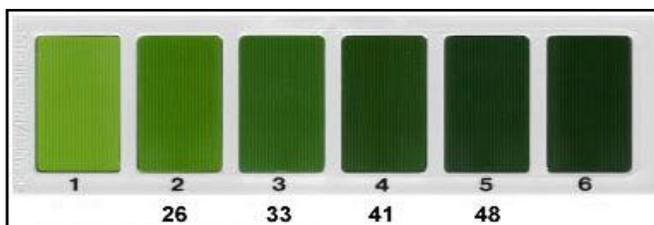


Fig. : Chlorophyll meter readings

Purpose of LCC:

Purpose of using LCC is to apply adequate amount of nitrogen and avoid application of fertilizer more than required. Use of LCC helps to determine nitrogen demand of the crop and guide right time of fertilizer nitrogen application so as to prevent unwanted nitrogen losses and

their serious impact on the ecosystem. The excessive dose of urea increases insect-pest attack and thus leads to consumption of high doses of insecticides and pesticides, thereby, resulting in increased cost of production, environmental pollution and deterioration of the quality of produce.

Advantages of using LCC :

- More Crop areas managed with little time
- Less Cost
- Diseases are controlled by LCC use
- Reduction of GHG Emission

Green house gas reduction by using LCC:

As the use of LCC, leads to the application of optimum and précised quantity of nitrogen to rice as and when required, there is a considerable reduction in the Green House Gas Emission from Rice fields.

SPAD 502 plus chlorophyll meter:

The SPAD 502 Plus Chlorophyll Meter instantly measures chlorophyll content or “greenness” of plants to reduce the risk of yield-limiting deficiencies or costly overfertilizing. The SPAD 502 Plus quantifies subtle changes or trends in plant health long before they’re visible to the human eye. Non-invasive measurement; simply clamp the meter over leafy tissue, and receive an indexed chlorophyll content reading (-9.9 to 199.9) in less than 2 seconds. Assess nitrogen needs by comparing in-field SPAD readings to university guidelines or to adequately fertilized reference strips. Research shows a strong correlation between SPAD measurements and leaf N content.



Fig. : SPAD 502 Plus meter

Received : 29.10.2012

Revised : 07.11.2013

Accepted : 30.11.2013