PROJECT PRESENTATION
ON
'SMART LCC DEVICE WITH IOT FEATURES'

PRESENTED BY
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Contents, I am going discuss:

- What is SMART LCC DEVICE and LCC DEVICE DATA WEBSITE?
- Why is SMART LCC DEVICE and LCC DEVICE DATA WEBSITE?
- Tools and Technology
- Device and Website System Architecture
- Features
- Project Snaps
- Advantages
- Limitations

What is SMART LCC DEVICE?

‘SMART LCC DEVICE’ is an audio-visual IoT device to measure required urea for specific lands of Aman & Boro Paddy, Wheat & Maize and to send The device data in the online server.

It is built based upon the concept of Leaf Color Chart developed by IRRI.

What is LCC DEVICE DATE WEBSITE?

‘LCC DEVICE DATA WEBSITE’ is built to store and analysis The Device sent Data.

Why is SMART LCC DEVICE?

‘SMART LCC DEVICE’ is built to help Bengali Farmers so that they can provide the required amount of urea fertilizer for their harvesting crops.

It is built to contribute to the development of Bangladesh Agriculture sector by maximizing the yield of Crops(Paddy, Wheat, and Maize).

Why is LCC DEVICE DATA WEBSITE?

‘LCC DEVICE DATA WEBSITE’ is built to help Bangladesh Agriculture Ministry to ensure optimized use of urea fertilizer and to develop a Nitrogen Management Environment in the whole country with the help of analysis part of Device sent data by this website.

Used Hardware Tools for the Device

- Arduino Uno
- ATmega328P microcontroller
- 16 × 2 LCD Display
- Micro SD Card Adapter
- SIM900 GSM GPRS Shield
- Speaker
- 25 Push-Buttons
- 10k Ohm Resistors (Total 20)
- 10k Ohm Potentiometer (2)
- Lithium Ion Battery
- 12V, 1A Power Adapter
- Voltage Regulator
- Buck Converter
- Wires

Used Software Tools for the Device

- Arduino IDE
- Liquid Crystal Library
- Tmrpcm Library
- Software Serial Library

Used Software Tools for the Website

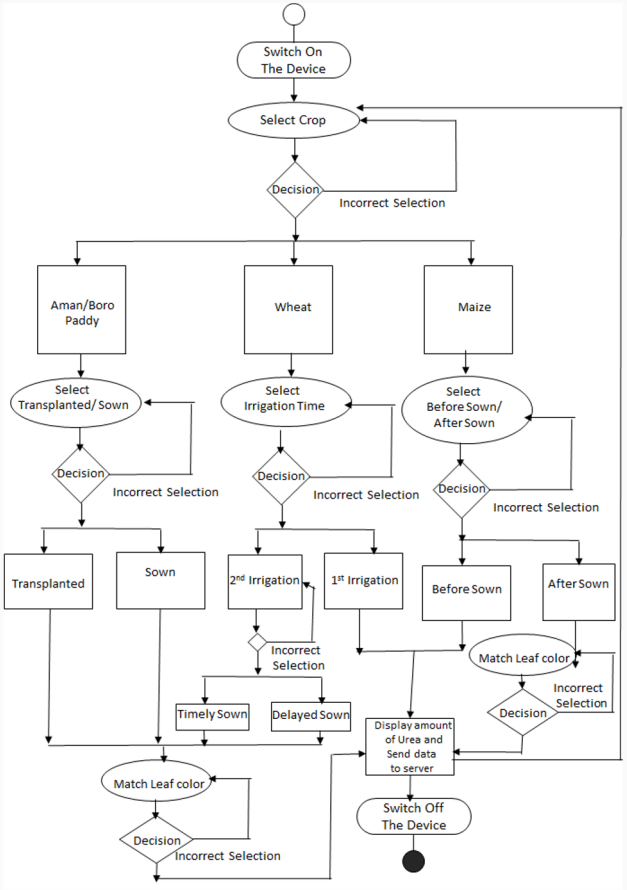
Front-End

- HTML
- CSS
- Javascript
- Jquery
- Flexbox Grid
- Bootstrap Material Design

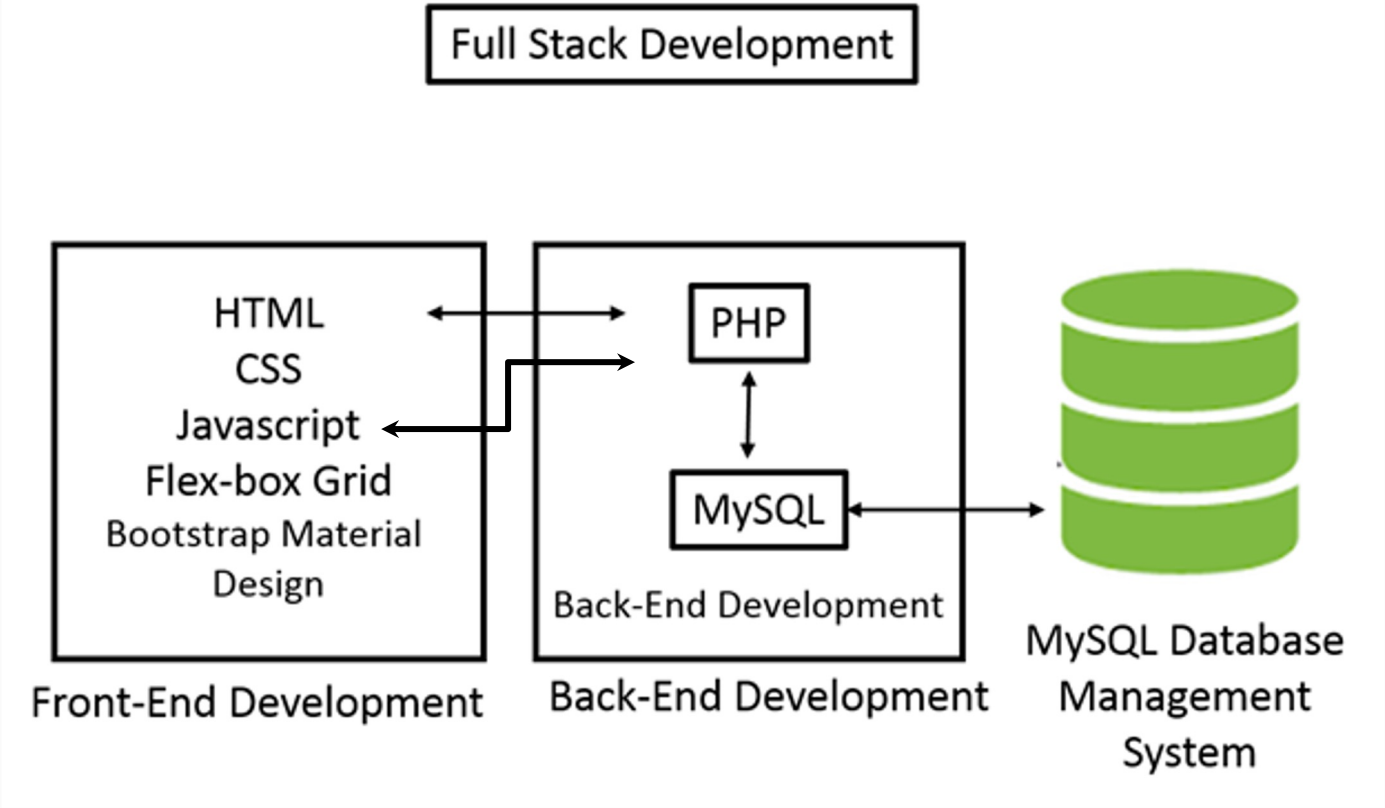
Back-End

- PHP
- MySQL

Activity Flow Chart of The Device



Deployment Diagram of the Website



Key Features of the Device

- IoT Device
- Audio-Visual Device
- Vocal Instructions on how to use The Device
- Undo and Redo facility in any Step
- Embedded Leaf Color Chart
- Measure Urea.

Key Features of the Website

- Display Device Data in Table
- Any Data Searching option
- Individual Column Data Searching option
- Heat Map
- Greenness Comparison Chart of All areas for all crops separately and aggregately
- Urea requirement Comparison Chart for all crops separately and aggregately

Advantages of The Device

- Maximize yields of Crops
- Avoid diseases and better Crops
- Fertilizer at the right quantity at the right time when Crops needs
- save money for farmers
- Huge subsidy savings on N fertilizer for Govt
- Reduce Greenhouse Gas Emission

Advantages of The Website

- Give countrywide urea provision statistics using chart diagram
- Give a viewpoint about which area is facing N deficiency in The Soil
- The Website will be proof of the Device effectiveness

Limitations of the Device

- Can measure urea (not other fertilizer)
- Measure urea for 4 crops (as leaf color value of other crops are under research and not yet made
- LCD display does not support bangla font
- Require sim connection to send data to the online server

Limitations of the Website

- Email Verification
- Admin Panel

Why Color Sensor is not used?

- Cheap Color Sensor can detect different colors but cannot differentiate the same color intensity - For Example: dark and light green
- Same color variation detector color sensor is very expensive

SNAPSHOTS

Smart LCC Device

Home Page


LCC Device Data
HOME
ABOUT
DEVICE DATA
CONTACT
ADMIN LOGIN/SIGN UP
Welcome to LCC Device Data
A website built to store & analysis Data of Smart LCC Device
Paddy
Wheat
Maize
Core Features of The Device
What's Included
IoT(Internet of Things)
The Device can store the Data in this website
Audio-Visual Facility
Displays every step on LCD Screen & tells through Speaker
Vocal Instructions
Guides users how & when to use the Device
Undo & Redo Facility
Users can undo any step using back button and redo from any previous step
Embedded Leaf Color Chart
Leaf Color Chart is embedded with the device, so that farmers no need to buy a seperate Chart
Portable & Rechargeable
The Device is portable and it can also be used through battery and the battery is rechargeable
Smart LCC Device
Core Features
IoT(Internet of Things)
Audio-Visual Facility
Vocal Instructions
Undo & Redo Facility
Embedded Leaf Color Chart
Portable & Rechargeable
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About Page


LCC Device Data
HOME
ABOUT
DEVICE DATA
CONTACT
ADMIN LOGIN/SIGN UP
About Device & Website
What is LCC Device
The Leaf Color Chart (LCC) is usually a plastic, ruler-shaped strip containing four or more panels that range in color from yellowish green to dark green that is cost-effective, visual and subjective indicator of plant nitrogen deficiency and is a simple alternative to expensive chlorophyll meter/SPAD meter (Soil Plant Analysis Development) and it is also suitable for Maize and Wheat providing Farmers with a good diagnostic tool for detecting N deficiency. Using LCC will better Crops, avoid diseases of the Crops, ensure fertilizer consumption at right time and at right quantity, save money for Farmers, increase profits for Farmers, huge subsidy savings on Urea fertilizer for Government, reduce Greenhouse Gas emission. According to Statistics and Research, if 100% Farmers use LCC in Bangladesh, India, Indonesia, Philippines, Thailand and Vietnam then there will be saving in Urea 3,48,800 ton, 1,66,88,000 ton, 6,32,000 ton, 22,48,000 ton, 1,96,000 ton, 3,98,000 ton and 3,99,88,000 ton per year in these countries respectively. But there are rules and regulations that have to be followed to use LCC for detecting nitrogen deficiency and to measure required amount of Urea for Paddy, Wheat, and Maize and there is calculation process also which seems difficult for Farmers to memorize all the rules and regulations and calculation processes. To help the Farmers to get rid of this problem, a Device is built based on LCC for measuring Urea consumption in Rice, Maize, and Wheat.
The Device is built for the Bengali Farmers to help them to ensure either specific amount of lands requires Urea or not and if it requires then measure required amount of Urea for Rice, Maize, and Wheat without memorizing the whole processes and without calculating the amount of Urea. The Device uses an 8-bit AVR microcontroller as the processing unit, an LCD display and a speaker for audiovisual output and user instructions of the Device, a Micro SD Card for data storage, rechargeable battery, and push-buttons for user input. The Device is portable, rechargeable and it has a feature to use an external speaker or headphone and volume control. Also, there is a feature to undo a step using a back button, if a user makes any mistake then he can undo the step and redo the proper step again. The LCC value for Sugarcane, Potato, Cotton, Cassava, Vegetables, Mustard, Oil palm etc. are under Research and Development and the Device can be implemented for these Crops after the Development is done.
What is this website for
The 'LCC Device Data' is a web-based application. The main objective of this website is helping Bangladesh Agriculture Ministry to manage, analysis and research urea consumption by four major harvesting crops of Bangladesh. The website will be also an indicator of the greenness of these four crops in the whole country. It will also prove the effectiveness of the Device throughout the country.
Website functions
✔ Shows Device's Core Features. ✔ Shows the sent data from the Device as a table format. ✔ Users can search for data from the table. ✔ Users can search the individual column also. ✔ Users can copy the data from table. ✔ Users can download all or filtered data as csv or excel or pdf file format. ✔ Users can print all or filtered data. ✔ Shows total land in Bigha and Katha unit, total land in Acre and Decimal unit, total urea provision in Mon, KG and GM unit. ✔ Contact Form
Some Websites About LCC
NITROGENPARAMETERS.COM
KNOWLEDGEBANK.IRRI.ORG
KNOWLEDGEBANK.BRRI.ORG
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Device Data Page

LCC Device Data Table

Show 5 entries Copy CSV Excel PDF Print Search:

ID	Location	Date & Time	Crop	Type	Irrigation	Land Size	Total Leaf	Average Color	Urea
698	Jogini Pasha, Khulna, Bangladesh	Wednesday| 20th March, 2019| 04:00 AM	Aman Paddy	Transplanted	Not Applicable	7 Katha	10	2.6	2 KG 620 GM
697	Baukati, Barisal, Bangladesh	Wednesday| 20th March, 2019| 04:34 AM	Maize	After Sown	Not Applicable	2 Bigha 3 Katha	15	2.87	17 KG 730 GM
696	Jogini Pasha, Khulna, Bangladesh	Wednesday| 20th March, 2019| 04:00 AM	Wheat	Late Sown	Second Irrigation	8 Decimal	10	3	2 KG
695	Dhankhola, Khulna, Bangladesh	Wednesday| 20th March, 2019| 04:55 AM	Boro Paddy	Transplanted	Not Applicable	34 Decimal	10	3.1	9 KG 180 GM
694	Jogini Pasha, Khulna, Bangladesh	Wednesday| 20th March, 2019| 04:00 AM	Aman Paddy	Transplanted	Not Applicable	1 Acre 7 Decimal	10	2.6	24 KG 340 GM
ID	Location	Date & Time	Crop	Type	Irrigation	Land Size	Total Leaf	Average Color	Urea

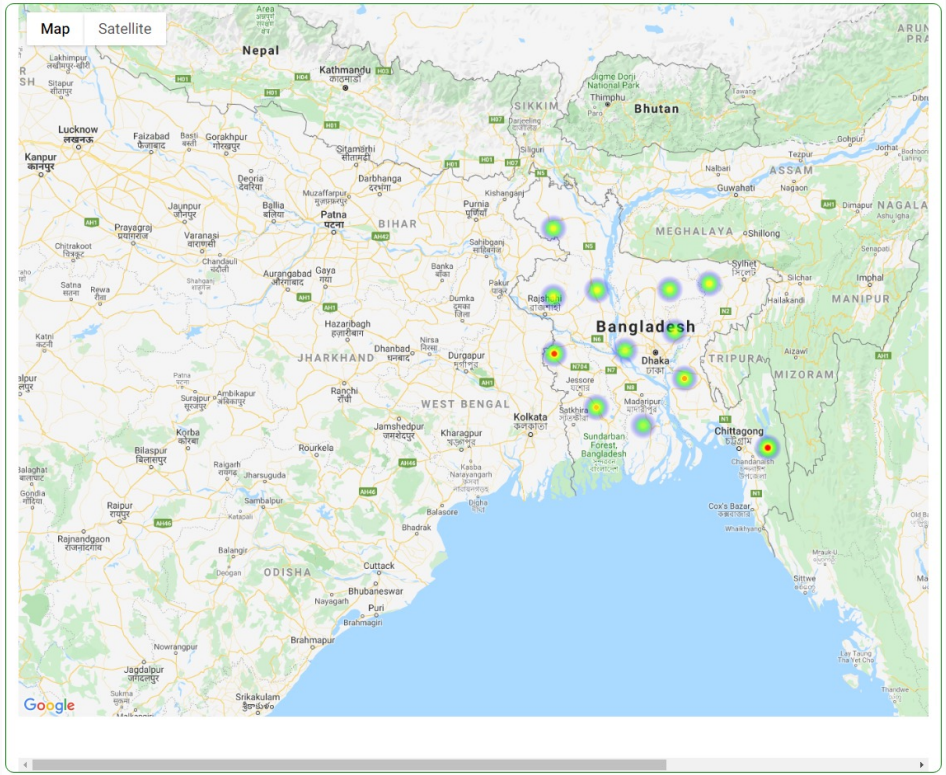
Showing 31 to 35 of 728 entries

Previous 1 ... 6 7 8 ... 146 Next

Heat Map

Select an option below to display Google Heat Map Comparison of All Areas

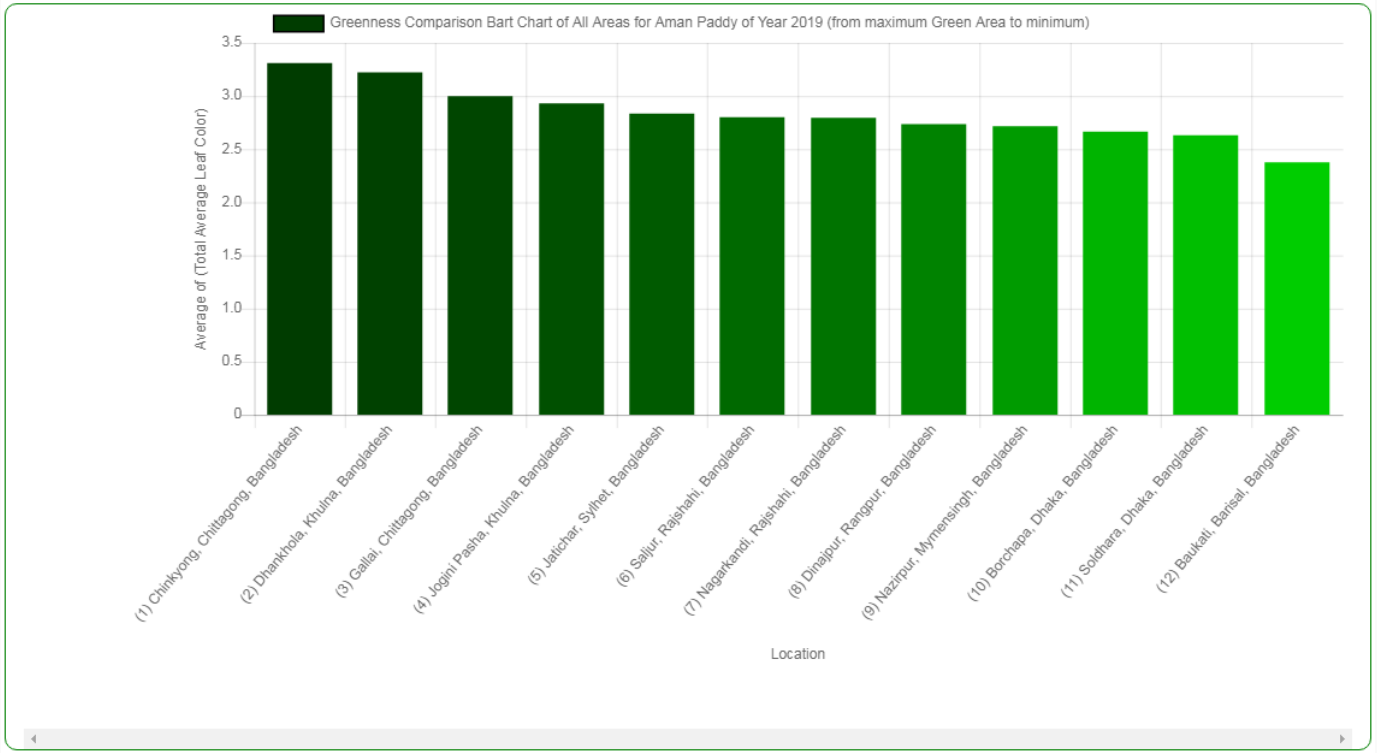
Analysis Selection: Greenness Analysis | Crop Selection: Aman Paddy | Year Selection: 2019



Greenness Comparison Chart

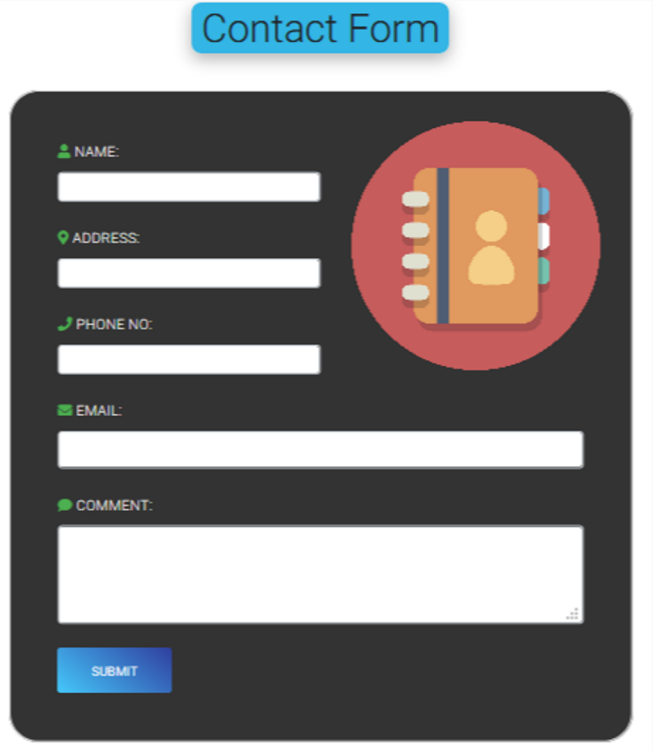
Select an option below to display Comparison Bar Chart of All Areas

Analysis Selection: Greenness Analysis | Crop Selection: Aman Paddy | Year Selection: 2019



Total Urea Requirement Chart

Contact Form for General Users



THANKS