Government of West Bengal
Agriculture Department

Innovations in Agriculture of West Bengal:

Extension Management System – *MATIR KATHA*

Soil Health Card System & STFRS

Date: 28th MARCH 2016
Place: SKIPA, RANCHI, JHARKHAND

By: Jitendra Roy, Jt. Secretary, GoWB  
email: royjitendra92@gmail.com
Tablet PC and Cloud Platform enabled

1. Agri Extension
2. Plant protection
3. Scheme Reporting
4. SHC process automation
5. Dept. communication
6. Calamity reporting
# Vision of Matir Katha

## A  Enabling farmers

<table>
<thead>
<tr>
<th>Produce More</th>
<th>Process More</th>
<th>Market right</th>
</tr>
</thead>
</table>
| • Scientific Crop practice  
• Pest & Disease control  
• Recommended inputs  
• Weather information  
→ Seed, Pesticide, Fertilizer, Farm Loan, Crop Insurance, Farm Machinery, Irrigation, Govt. Schemes | • Post harvest Mechanization  
• Value additions  
• Milling  
• Food processing  
• Packaging & Quality | • AGMARKNET  
• SUFAL Bangla  
• Mandi Price  
• Retail firms procure link  
• APEDA - Export links |

NABARD/ RRB /Govt. schemes  
Model DPR  
Food Processing - Credit links  
Cutting across Middleman

## B  Enabling DOA

<table>
<thead>
<tr>
<th>Remote Governance</th>
</tr>
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</table>
| • 24/7 Scheme MIS  
• Paperless Communication  
• GIS Based report  
• Farm Analytics  
• Farmers Registration  
• Instant Survey  
• HQ-District Video Conf. |

Faster Communication  
Better Coordination

More production < More Processing < Market Right < More Disposable Income < More Domestic Demand
Matir Katha

Matir Katha App

MK Tab Interface for ADA (Block), KPS, BTM, ATM

Matir Katha Portal

www.matirkatha.net

MK Portal Interface for DDA, ADA (PP), ADA (SM) and other officials

Bi-lingual app and portal: Bengali & English
**Modules of Matir Katha App**

- Scientific Farming
- Krishi Katha
- Krishi Pathshala
- Farmers’ Registration
- Departmental Communication
- Agri Calculator
- Agri Credit & Insurance
- IPM
- INM
- Organic Farming
- Weather Info & Agri Advisory
- Agri Marketing

**Modules for Matir Katha Portal**

13. Project Reporting
14. Data Analytics
15. Live Tracking
16. GIS based MIS
17. Virtual Meeting
1 Scientific Farming

1 Government recommended Package of practice (POP) for 83 Crops, grown in different Agro climatic zones of WB is stored in Tablet PC in vernacular language (Text, Image, Video).

1 It can be accessed Off Line also.

2 One touch update from server to all tablets spread across District.

3 Projector can be integrated with Tablet PC for display during Training etc.

4 For Darjeeling District, its English App.
1. Crop problems captured at field with images + local language description and submitted to Dept.

2. Registered members write answers in Portal that reaches Tablet instantly.

3. Questions can be referred to specific experts and Searched through various ways.

4. SMS alert system is integrated for all stakeholders.

March, 2016 New Version: Field issues under following categories to be captured in a structured way.

5. 45,000 Questions already raised.

   - Crop Problem
   - Training & Demonstration
   - Farmers’ Assistance
   - Natural Calamity
   - Agri Farm Activity
   - Research Activity

Pre-stored answers of all Crop problem will reach to ADA Blocks at Portal. Once ADA select suitable answer, it will reach to Farmers Mobile as Incoming Voice Call and SMS.
**Krishi Pathshala**

**Videos/ Presentations on**

1. Farm Mechanisation
2. Cropping Pattern & Rotation
3. Irrigation Practices
4. Problem Soil Management
5. Innovative Practices
6. Success Stories
7. Government Schemes
8. Toxicity & Antidote
9. Agri Entrepreneurship
10. Agri Dictionary
11. District Agri Profile
12. MK Booklet

1. Stored in central server and Tablets spread across state can download immediately.

2. Field staff can upgrade and disseminate knowledge with this module.

3. It enables farm technology to reach grass-root quickly.
3 Krishi Pathshala

Videos/ Presentations on

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6 Agro climatic zone wise suitable cropping pattern, Crop rotation and crop diversity is advised here

Success stories and Innovative practices are collected from each Block and spread to all other Blocks for awareness

Antidote/ Conventional practices against Toxicity of each type of Agro chemical is enlisted here for awareness and emergency use.

Micro DPR on various types of Agribusiness/ Backward/ Forward linkages and associated schemes under NABARD/ Various Dept. is archived here.
1. All 72,00,000 Farm families of WB would be registered with Matir Katha from January 2015.

2. All kinds of Data about the Farmer and his plot will be captured including UID and Bank Account details.

3. Subsidy/ Benefit history will be linked with Farmers database.

4. It will populate Farmers Portal.

5. This database will be crucial for regular Government survey and G2C delivery.

6. Farmers will receive answers to their queries in RMN (Registered mobile number).
1 Communication from Agriculture department HQ to district/ block/ panchayat level are now paperless.

2 Senders need not to remember email ID of everyone to send notification.

3 Recipient can forward it to a group. This is secured through state data centre.

4 Without any time lag, HQ would be able to reach grassroots employees with Paperless communication, 24x7.

5 Entire hierarchy can communicate in-between for various issues/ circulars/ advisories etc.
<table>
<thead>
<tr>
<th>Segment</th>
<th>Brief Description</th>
<th>Apps &amp; Portal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fertilizer</td>
<td>Farmers would be able to calculate the exact amount of fertilizer required for his crop for a given cultivation season.</td>
<td>Once he enters his plot size, cultivation season, crop, variety and present nutrient condition of the soil of his plot, he will get back recommended amount of fertilizer in Kg and total cost of nutrient. This will save him from getting exploited by local dealer.</td>
</tr>
<tr>
<td>Pesticide</td>
<td>Providing KPS a Next Generation Calculator to estimate amount of a given pesticide</td>
<td>KPS will be able to identify and calculate Pesticide required for given crop/land size/season in various compositions and formulations. This will stop most of the misguidance by Chemical dealers</td>
</tr>
</tbody>
</table>
7
Agri Credit & Insurance

<table>
<thead>
<tr>
<th>Agri Credit &amp; Crop Insurance</th>
<th>KCC Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crop Insurance Benefit and Procedure</td>
</tr>
<tr>
<td></td>
<td>Other Farm Loan solutions</td>
</tr>
</tbody>
</table>
IPM Concept

- Acceptable pest levels
- Preventive cultural practices
- Mechanical/Biological/Controlled synthetic
- Crop specific - Reviewed Content
- Pesticide Calculator

Crop specific INM Practices: 75 Crops

- Crop specific Detailed IPM guideline for 75 Crops are pre-Stored
- Crop class & Crop specific search option
- One touch modifications between Server and Tabs spread across Panchayats.
- Image and Text based descriptive details about each practice
9 INM

INM Concept

- Plant Nutrients and Soil Fertility
- Causes of Human-Induced Soil Degradation
- INM Benefits and Practices
- Bio-Fertilizer development and use
- Problem Soil Management

Crop specific INM Practices: 75 Crops

- Crop specific Detailed INM guideline for 75 Crops are pre-Stored
- Crop class & Crop specific search option
- One touch modifications between Server and Tabs spread across Panchayats.
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10 Organic Farming

- Concept
- Soil Structure & Fertility
- Pest, Disease, Weed
- Benefits to Farmer
- Benefits to Environment
- Certification Process
- Crop-wise Practices
Weather Info & Agri Advisory

Weather Info

• Data from around 160 AWS (Automated Weather Station) being sent to Weather server 24/7.

• Weather server to WB State Data centre link will feed Weather data to Tablet PCs across state.

• Predictive analytics if implemented in future will provide Weather prediction as well.

Agri Advisory

• Agriculture related recommendation and advisory will now be immediately sent to farmer’s level, every week

• Post flood or post draught situation can now be easily handled.
Department of Agriculture
Government of West Bengal

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Agri Marketing

1. Department gets mandi price of various crops, from Panchayat level Price grid infographics.

2. This helps Department of Agri marketing to control undesired price fluctuations.
Additional Modules (for Matir Katha Portal)

13. Project Reporting
14. Data Analytics
15. Live Tracking
16. GIS based MIS
17. Virtual Meeting
1 District level officials of the Department report about various running schemes and projects every week/month.

2 Brought swiftness, transparency and decision support to Department headquarter and helps for better planning.
1. All queries are getting Tagged.

2. HQ will be able to generate various Analytical reports from Primary Data, based on Tagging.

3. Employee/ District/ Block Efficiency will be recorded based on their performances.
Live Tracking

1. Movement of Field staff with Tablet is tracked in GPS Map.

2. HQ can check Battery availability, Signal strength and Last active hour of remote Tablets.

3. Authenticity of grassroots activities can be measured.
GIS Map integrated with multiple modules will help HQ to see intelligent, live Maps on various factors. Efficacy of HQ Decision making would multifold. Results are published in GIS Map and Tables.

Sample:

A: How many Disease X of Crop Y is reported from District Z during last 1 Month

B. How many Farmers Training of Subject M has been conducted during last 12 Months and How many Farmers attended.
Virtual Meeting

Video-conferencing solution to take Live Communication to the next level. Live Video communication between HQ to District Office/ District office to Blocks. Voice conference between Blocks to Field Staff.

This will enable distance meetings between department staff. All Tablet holders communication in between is completely Free in same service provider.
Technology Highlights

As per Central Govt. guideline, to avoid dependency on Proprietary Licensed Software for National Interest, entire Matir Katha is built on Open Source Platform.

100% Open Source Technology - Low cost of ownership

Mobile side: Android OS, SMS, IVR, USSD, TTS
Server side: Red Hat Linux (Natural virus protection & superior access control)
Web Platform: Word Press (Enable 3rd Party Plug-ins, Speed up Development)
LAMP stacks: Linux, Apache, MySQL, PHP Architecture
MK Q&A: Districts
Mobile application software, Tablet PC and Cloud server enabled,
Remote process automation for WB Soil Health Card project
ICT enabled process automation - Complete Paperless system from Sample Data to Nutrient Map

Benefits in a Nutshell

1. Source authentication
2. Online/ Offline Data capture
3. SHC to all farmers of WB

- Land< Lab< SHC< Map automation
- Custom made Nutrient Map
- Farmer Friendly SHC
- Data sync with Central portal
- G2F Services
- Project progress monitoring
Soil Sample Collection Spot

15,39,000 Samples to be mapped across 44,000 Mouza

- Paperless Data collection
- Instant Farmer Mapping
- Grid printed Mouza map
- Live MIS from Blocks/ Dist.

Present status:
Collection started at fast pace across all Districts and Blocks

Block ADA Office

Test Labs spread across Districts mapped

- Mouza wise target
- Sample assign to Test Labs
- Target Vs. Achievement MIS
- Outsourced agents device bind
- Dependent Farmer Mapping

Present status:
40,000 plus samples already collected Online

Soil Test Lab

Test Data entry to SHC Advisory to Farmers Mobile

- Test Result entry
- Auto SHC Generation
- Auto Advisory Generation
- Live Test/ SHC MIS
- Nutrient Map generation

Present status:
Test results getting entered
Sample Spot Authenticity
Sample Details with Geo-Tagged Map

RESULT
Processing...

Land information
- Slope of the Plot: Levelled
- Type of Land: Irrigated
- Irrigation type: Wall
- Soil type: Sandy loam

Crops information
- Rabi: Paddy, Potato, Wheat
- Pro-Kharif: Paddy, Jute, Groundnut
- Kharif: Paddy, Jute, Maize

Farmers
- Name: Mahendra barmas
- Address Number: 7017066483

- Latitude: 26.3534
- Longitude: 89.1175
- District: Kothiabazar
- Block: MATHIRAMANDA - I
- Mouza: Kurikura
- JL Number: 981
## District & Block-wise Target MIS

<table>
<thead>
<tr>
<th>Block</th>
<th>Sample Count</th>
<th>Block</th>
<th>Sample Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jalpaiguri</td>
<td></td>
<td>Dakshin Dinajpur</td>
<td></td>
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<tr>
<td>DHUPGURI</td>
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<td>Balurghat</td>
<td>528</td>
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<tr>
<td>JALPAIGURI SADAR</td>
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<td>Banshihari</td>
<td>535</td>
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<tr>
<td>MALBAZAR</td>
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<td>Gangarampur</td>
<td>1544</td>
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<tr>
<td>MAYNAGURI</td>
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<td>Harirampur</td>
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<td>Kumarganj</td>
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<tr>
<td></td>
<td></td>
<td>Kushmandi</td>
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</tr>
</tbody>
</table>
Nutrient Advisory Variables

1. Agro Climatic dependencies
2. Slope of the Plot
3. Type of Land: (Irrigated/ Unirrigated)
4. Soil type: (Sandy/ Sandy loam/ Loam/ Clay loam/ Clay)
5. Crops details
6. Crop Season (Pre kharif/ Kharif/ Rabi)
7. Test Result Data (For Existing Fertility Level)
8. Preferred/ Available Fertilizer combinations
Real time submission of Soil Sample Details From Field on TAB PC

Sample, Plot | Farmer, Crop

Test Result Data Entry at STLs (12 Parameters)

pH/EC/OC/N/P/K | S/Zn/B/Fe/Mn/Cu

PRINT Soil Health Card

Fertilizer Combination (at least 2) | Micro Nutrient, Bio Fertilizers, Ameliorants
MK Platform: Soil Sample Collection

<table>
<thead>
<tr>
<th>Location</th>
<th>Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Howrah</td>
<td>155</td>
</tr>
<tr>
<td>Alipurduar</td>
<td>196</td>
</tr>
<tr>
<td>Bankura</td>
<td>302</td>
</tr>
<tr>
<td>Cochbihar</td>
<td>465</td>
</tr>
<tr>
<td>Purulia</td>
<td>471</td>
</tr>
<tr>
<td>S 24 Pgs</td>
<td>489</td>
</tr>
<tr>
<td>U Dinajpur</td>
<td>611</td>
</tr>
<tr>
<td>West Midnapur</td>
<td>643</td>
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<tr>
<td>N 24 Pgs</td>
<td>929</td>
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<tr>
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<td>Jalpaiguri</td>
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</table>
Thank you