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# Climate Change on Agriculture

## Strategy on Agriculture Sustainability- Indonesia Experiences

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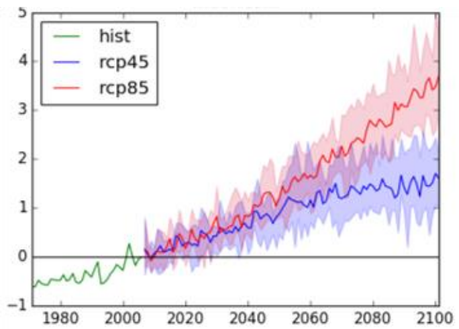
# Climate Change Impacts on Agriculture Sector

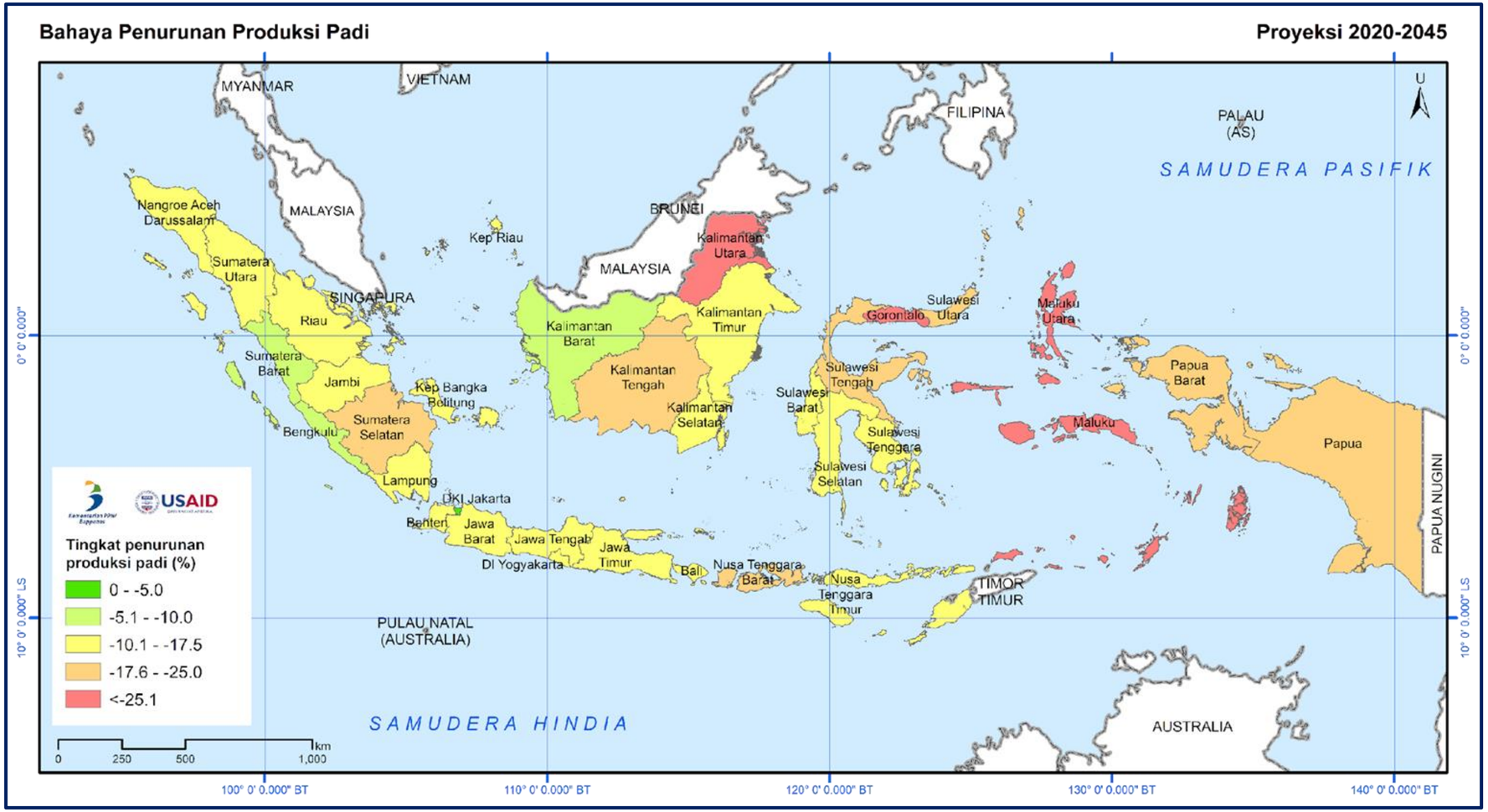
## Climate Change




Indonesia's Climate Projection shows that the temperature increase in 2100 will reach:

- **1.5°C** with RCP4.5 scenario
- **3.5°C** with RCP8.5 scenario

- ➔ Changing on rain pattern
- ➔ High on the extreme variability
- ➔ Extreme dry and wet climate events will be more likely to be above Normal




Increased dry season and physiological changes in rice plants

Increase the potential for decreasing rice production

"Climate change has a significant impact on the agricultural sector."

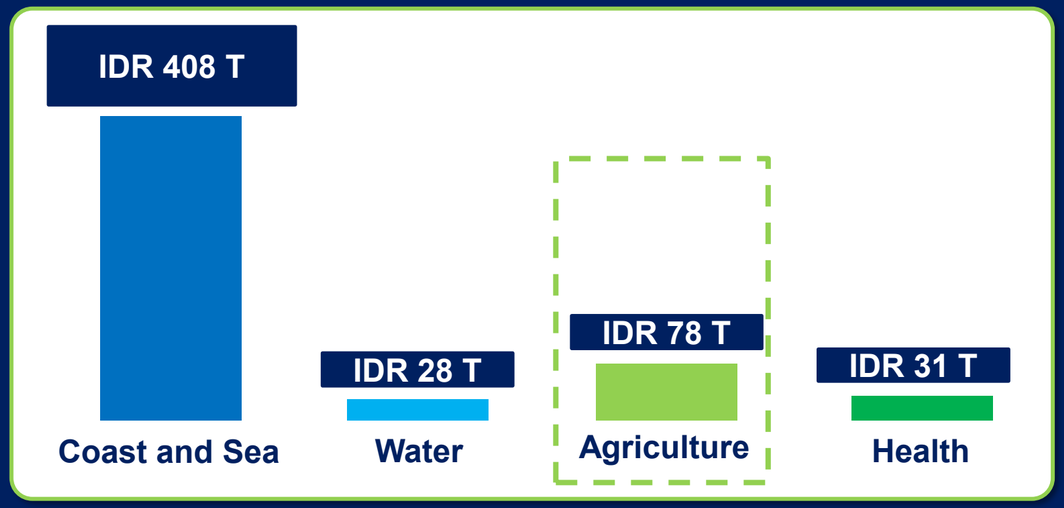
# Economic Losses Due to Climate Change

**Potential economic loss in Indonesia (2020–2024)**

## Rp 544 triliun

the impact of climate change, if there is no policy intervention (*business as usual*)

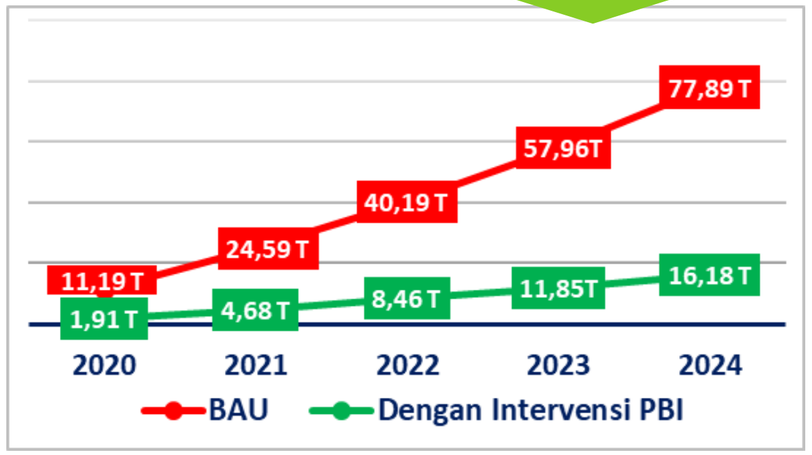
*Source: Kementerian PPN/Bappenas*




**Potential Economic losses:**

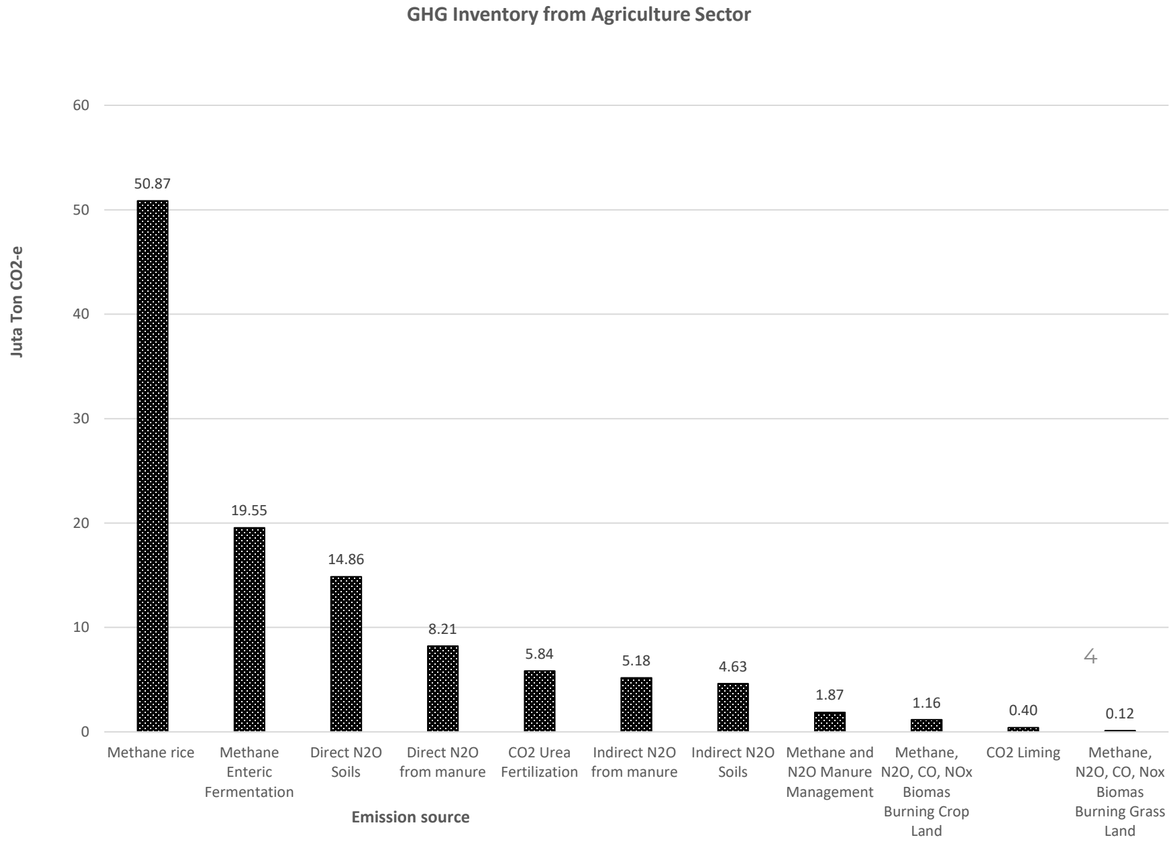
1. Ship Accidents and Beach Inundation,;
2. Decrease in water availability
3. **Decrease in rice productivity, and;**
4. Increasing Dengue Fever

**Potential economic losses in the Agriculture Sector in Indonesia**




**Implementation of Climate Resistant Development has the potential to reduce economic losses due to climate change by Rp 61.71 trillion or 79.2% of the total potential loss in 2024.**

# The status of MITIGATION from Agriculture Sector on 2022 was 15.6-million-ton $CO_2$ equivalent




Agricultural sector emission status 2022, methane from paddy fields contributes the highest to agriculture sector emissions, followed by emissions from enteric fermentation, nitrous oxide (N2O) directly from soil and from livestock manure.

| Action/program | Emission reduction (million ton $CO_2e$) |
|---|---|
| **Biogas** | **0,004** |
| **UPPO dan organic material management** | **0,082** |
| **Organic village** | **0,003** |
| **Low Emissions Rice Varieties** | **5,030** |
| **Enhanced the Feed** | **0,112** |
| **Balanced Fertilizer** | **0,492** |
| **Water Table Management on Peatland** | **7,830** |
| **C Sequestration on the annual fruit trees** | **2,063** |
| **Total** | **15,617** |

The achievement of mitigating greenhouse gas emissions in the agricultural sector in 2022 is 15.6 million tons of CO2 equivalent

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# Technologies and Innovations Application on Adaptation and Mitigation: A Strategy

# Adaptation Action – Priority:

- Providing of water storage (ponds, ditch, supplement irrigation, etc)
- Providing and restoration of irrigation canal
- Application of weather modification technology
- Provision of flood protection buildings, application of soil and water conservation
- Water saving technology (alternate wet and drying system on rice field)
- Application of cropping calendar
- Provision of adaptive farming facilities: tolerant seeds (salinity, drought, submergence, high temperature), pest control, organic fertilizer, soil improver, etc.
- Balance fertilizer
- Improving feed quality
- Preparing non burning land
- Water table management on peatland

# Adaptation & Mitigation Action

## RICE VARIETY FOR PARTICULAR AGRO-ECOSYSTEM

**Rainfed Ecosystem**
- Inpari 39
- Cisaat
- Inpari 46 GSR TDH


**Dry Land**
- Inpago 8
- Inpago 12


**Swamp Land**
- Inpara 2
- Inpara 8
- Inpara 3
- Inpara 10


**Saline Land**
- Inpari 34 Salin Agritan
- Inpari 35 Salin Agritan


**High Land**
- Inpari 28
- Luhur 1

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- Low methane cultivars
- N balanced for plant → N2O reduction

## SOIL AND FERTILIZER TEST KIT


Upland Soil Testkit

Sugarcane Plant Nutrient Test Kit

Organic Fertilizer Test Kit (PUPO)



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## FERTILIZER RECOMMENDATION

Fertilizer recommendation for Rice in Paddy soil

Fertilizer Recommendation for Corn in Paddy soil

Fertilizer Recommendation for Soybean in Paddy soil


Fertilizer recommendation for Plantation crops

Fertilizer recommendation for Fodder plant


Fertilizer recommendation for Horticultural crops

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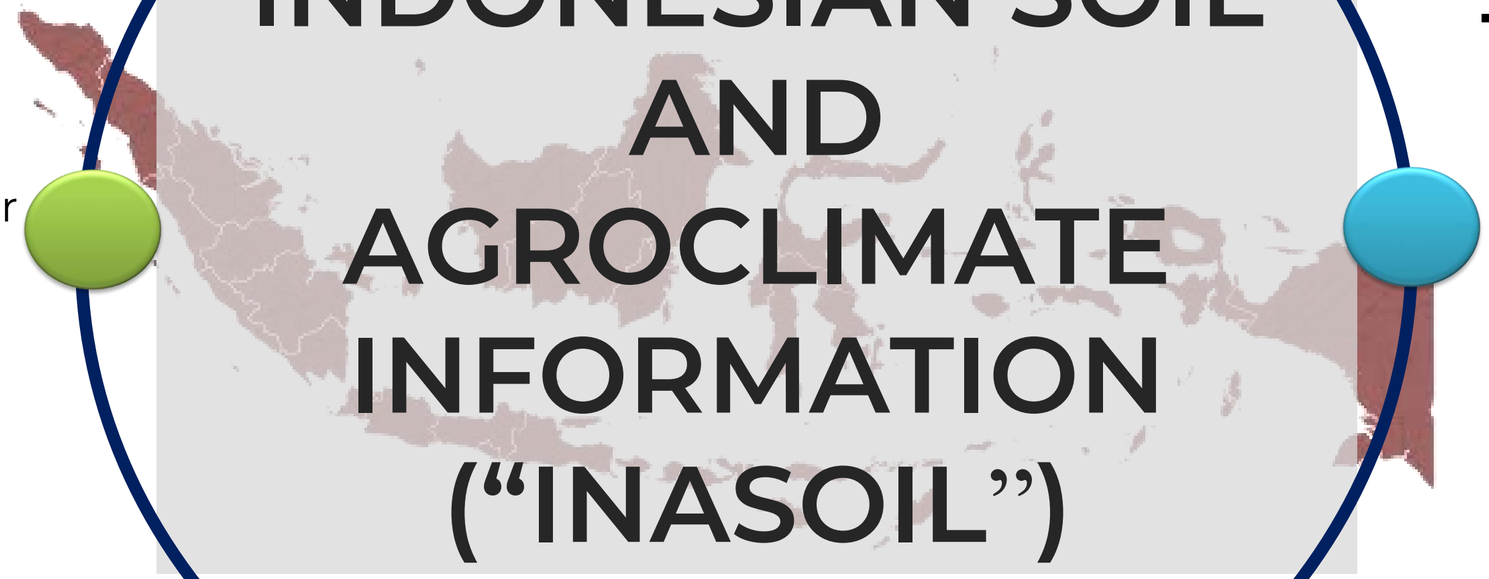
# Information System

## Soil Map

- Observation point
- Soil Map (detail scale,review, exploration)

## Agroclimate Map

- Agroclimate Resource Map
- Agroclimate
- Hidrology Map
- *Real time* climate data



# INDONESIAN SOIL AND AGROCLIMATE INFORMATION (“INASOIL”)

http://awr.bsip.pertanian.go.id/

## Information System

- Cropping Calendar
- SisCrop 2.0
- Agroclimate
- AgriDSS

## Thematic Map

- Rice field map
- P and K map
- Fertilizer recom map
- Dry land map
- Swamp map
- Peat map
- Land slide map
- Comodity area map

## Suitability Land Map

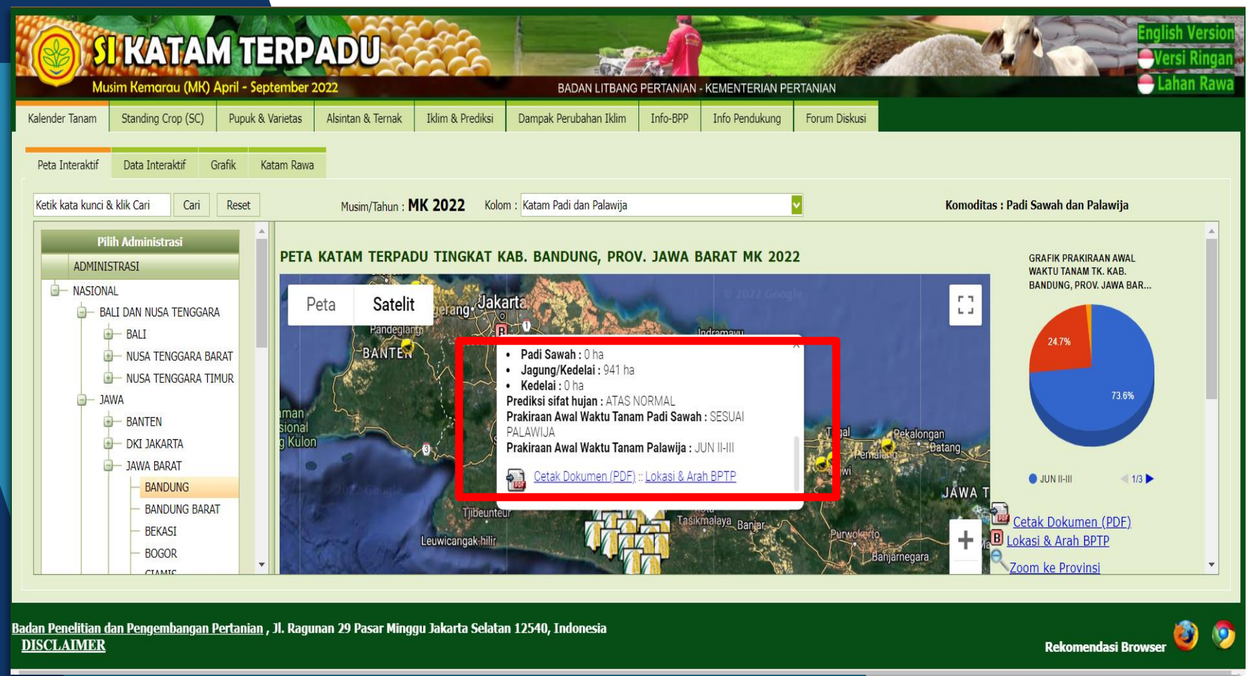
- Crops Food: rice, corn, soybean
- Horti: Shallot and Chili
- Estate Crop: palm and cacao
- Fodder Forage

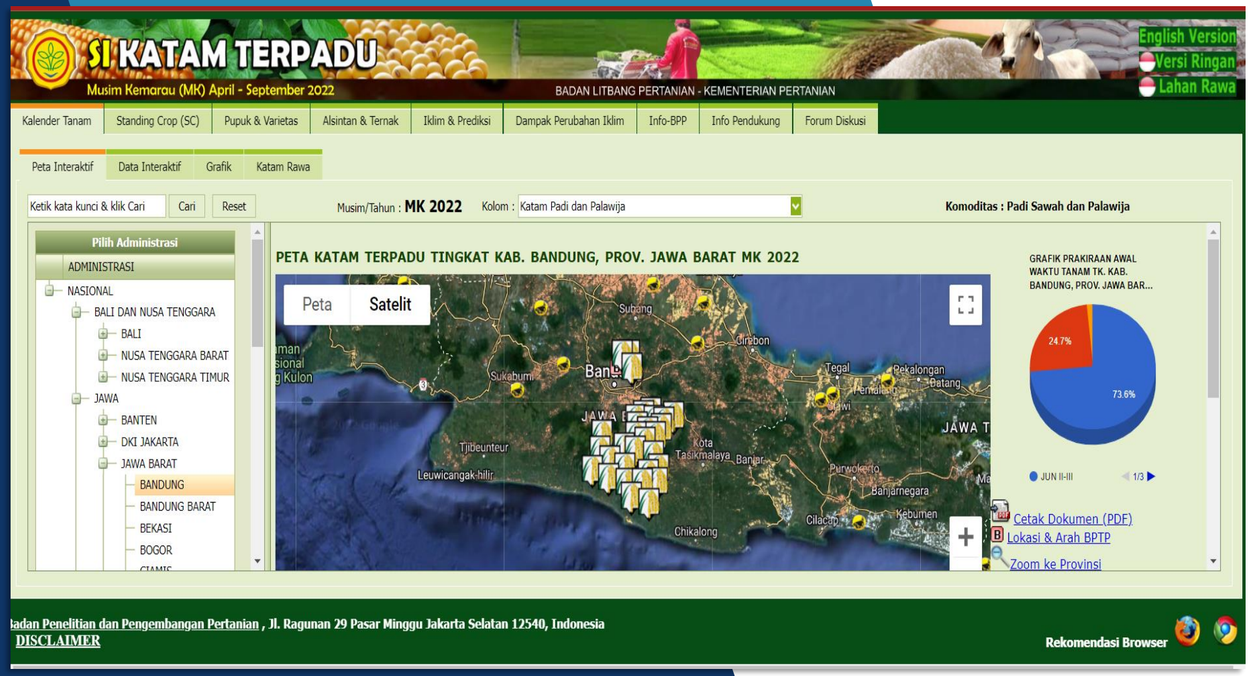
## Residual Map

- Heavy metal residue
- Pesticide residue

# KATAM TERPADU)

## (Integrated Cropping Calendar)





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