



WAKTU TANI

2020

ATMOS FC-19

Bandung, West Java

Indonesia

Summary

WAKTU TANI is a dashboard system via the web that helps governments and farmers in terms of crop distribution and availability. The government can know the distribution of deficits and surplus each region, while farmers can know the crop calendar for their suggested right time to start plants.

What did we do?

The distribution of agricultural products is the background that started this idea. Before the existence of Covid-19, distribution was unequal in several regions resulting in a scarcity of commodities that resulted in price increases on one commodity. With the existence of Covid-19, distribution problems are likely to be increasingly hampered due to some restrictions on access to distribution. Therefore, it is necessary to have data and analysis for decision making so that the problem can be overcome. By knowing the status of commodity needs in each region, policies can be taken as to how distribution should be done between regions. In addition to being seen from a policy perspective, farmers must also be precise in determining when they should plant a commodity to avoid crop failure. For this reason, we made a crop calendar so we could provide farmers with information about the exact time when commodities could be planted using rainfall data.

Who were we helping?

I. Government

The government as a regulator of policy often encounters problems of weaknesses and strengths of a certain commodity. They strive to meet the needs of the public well and maintain price stability on the market. For this reason, WAKTU TANI helps to provide a general description to the government regarding the status of commodities in an area, which is expected to help with problems related to the fulfillment of commodity commodities.

II. Farmer

The amount of harvest, community needs, and distribution must be in accordance with existing conditions. If there is a discrepancy, it can cause losses, especially farmers. This means that farmers must be wise in determining what commodities will be planted, how much, and when to start planting so that harvest failure does not occur. WAKTU TANI helps farmers give an overview of planting time by providing a planting calendar. It is hoped that with the planting calendar, farmers can be wiser to determine their planting activities.

III. Public

The public must get assurance that a commodity in an area can be obtained easily, of good quality, and reasonable price. For that reason, WAKTU TANI has hope that

with the futur on the web we can help the government and farmers to always provide a commodity in accordance with public expectations.

Our Team

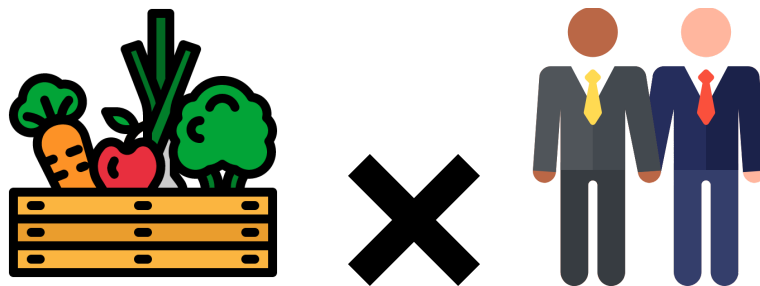
Our team consists of people from meteorological backgrounds, but some of us are also interested in developing science-based technology. With a background that may not be in direct contact with agriculture, we try to see the point of view of the problem from a side that we are quite familiar with. When starting this project, we as a team try to research as much as possible and try to find solutions to the problems that are given. After a goal has been made, we also make a work timeline so that the tracking of each progress is well observed. Every progress is always reported at scheduled meetings according to the work timeline. Joint understanding is important to achieve the same goal, therefore every meeting will always begin with a review and remember what we want to reach.

Where are we now?

WAKTU TANI has 3 main components:

1. Food Consumption

Food consumption data is obtained from the food needs per person each month and the population of a region.



Food consumption = Food Consumption per Person x Total Population

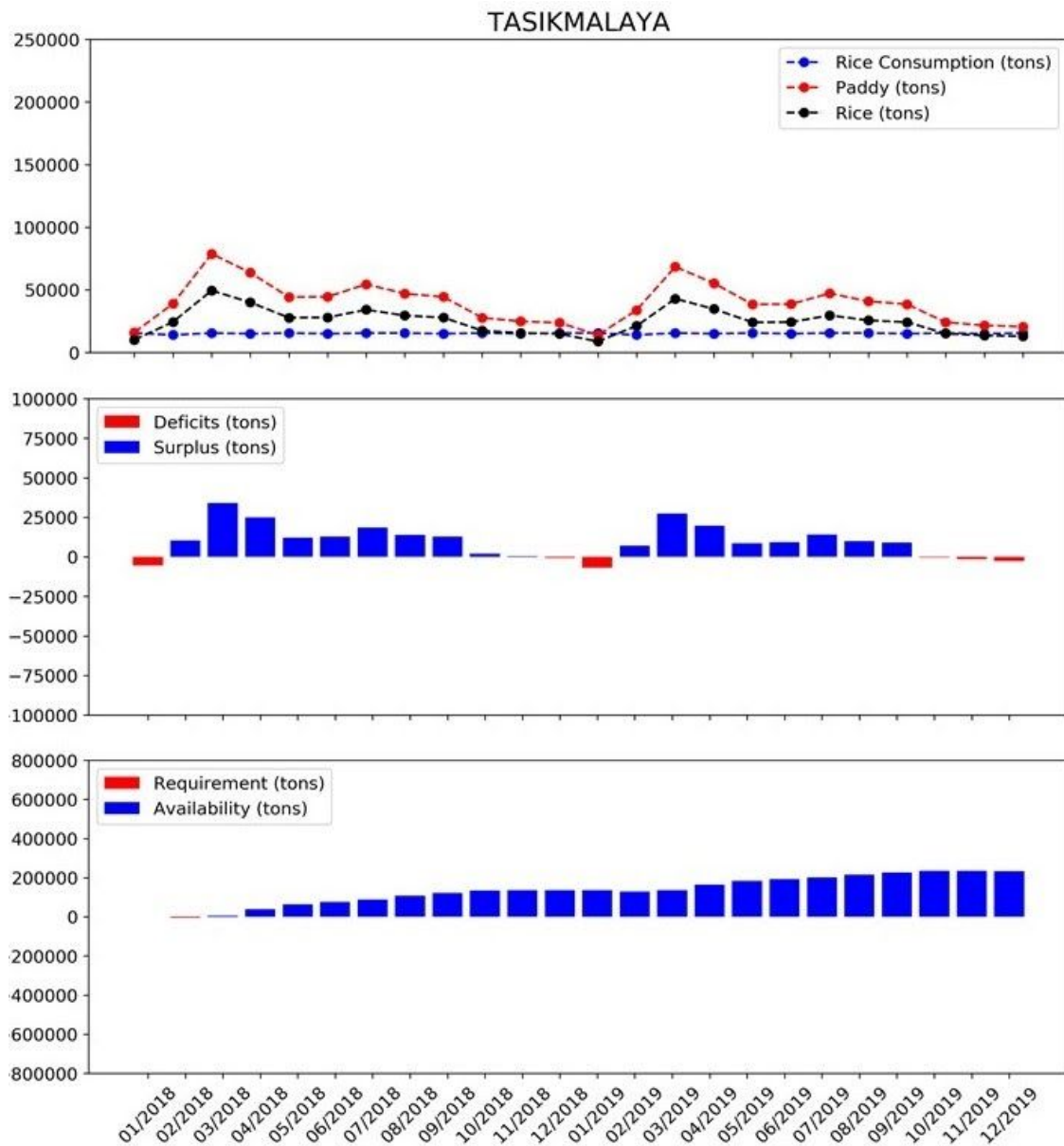
2. Food Production

Food production data is obtained from the land area and crop productivity.



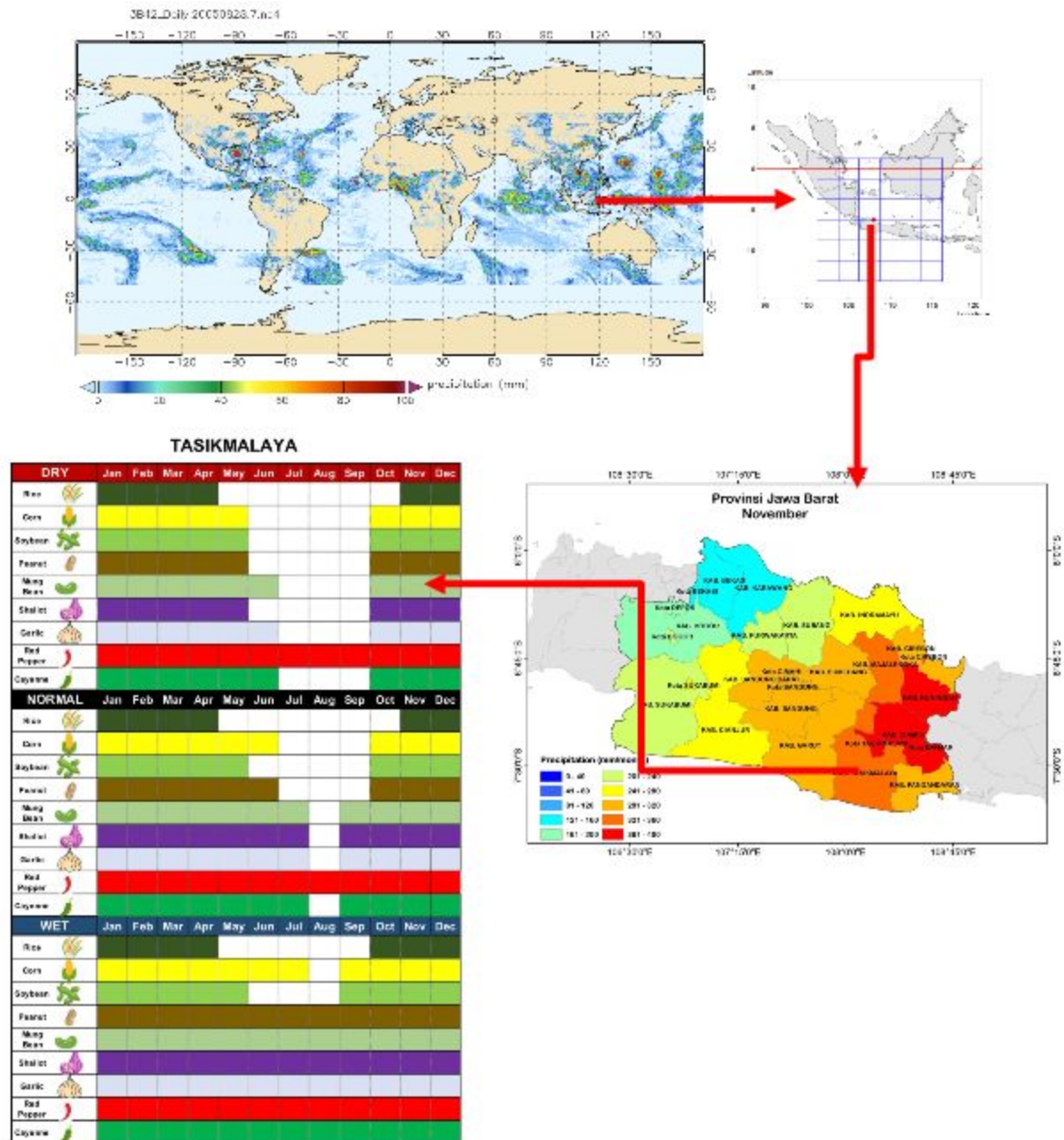
Food production = Land Area x Crop Productivity

The graph below is obtained from data processing by making an assumption where food consumption equal to rice consumption then food production equal to the amount of rice converted to rice. Furthermore, after knowing the amount of production and consumption every month in each region, we can find out the condition of the region's surplus and deficit of a certain commodity, in this case rice. From the picture we have gotten about the surpluses and deficits, we will analyze them in the next few months. If a positive value (surplus) region is found, the region will distribute to a negative value region (deficit). This also applies vice versa, when a region with a negative value (deficit) means that the area requires the distribution of a commodity from another region.




3. Crop Calendar

Crop calendar is made based on the water needs of each plant each month. The water needed usually comes from rainwater. Then the rainfall data is used. Rainfall data from BMKG is uneven so it is difficult to analyze by region. Therefore, satellite data are used which have sufficient detailed spatial resolution.



Rainfall data obtained from satellites cover the whole world. Then cut according to the latitude and longitude of West Java to obtain rainfall data in each district/city in West Java.

Each plant has its own water needs per month. From that, it can be compared with the rainfall in each region that will be produced approximately whether the month can be planted by certain plants with water requirements from rainfall. Therefore, a crop calendar is produced for a year.



However, in meteorology, there are certain phenomena that affect the total precipitation each month, namely ENSO. ENSO can cause dry years (drought/rarely rain), normal years, and wet years (often rainy). Therefore, three crop calendar scenarios are made namely the dry year crop calendar, the normal year crop calendar, and the wet year crop calendar.

What next?

Furthermore, we want this web platform to not only present data obtained from statistical and satellite. However, there is a need for direct data from farmers in each region. Farmers can participate in providing data on how the process of planting seeds to the sale of crops and share problems that they often encounter in the field. We can build a bigger community than we already have and make them grow because it is easier to connect with each other. In addition to being connected with fellow farmers, it is hoped that this platform can become a basis for government policy making on agricultural issues.

The availability of the planting calendar will also be developed further, not only with rainfall data but will be more specific to the parameters according to the commodity. Completely, this dashboard will be able to describe how to make the harvest produced by farmers and its distribution is the optimal way so that in the Covid-19 pandemic there is no concern for food shortages.