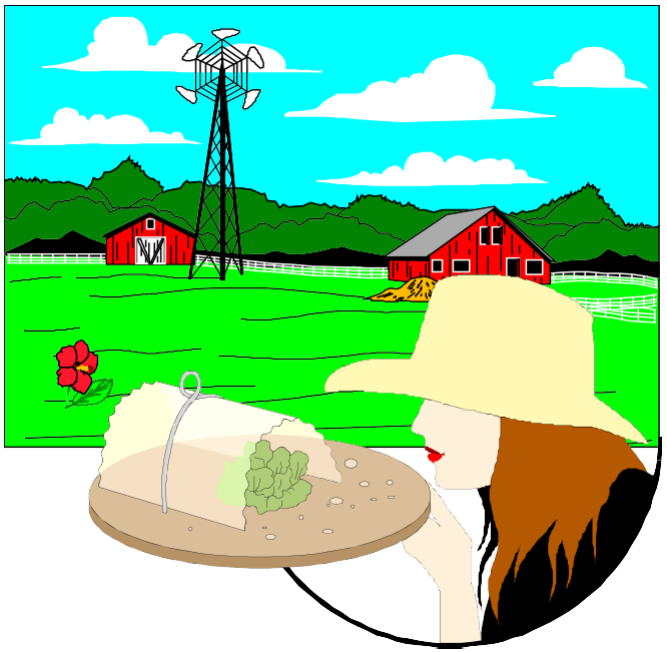
ADMA-AEW

Agricultural Data Collection / Processing Center & Early Warning System



patent no:TR2011/10332

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Subjects

1. *Value Added Results*
2. *Foreknowledge*
3. *Purposes*
4. *Project Details*
    1. *Details of Electonical System*
    2. *Details of mechanical System*
5. *Expectations and Suggestions*

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Value Added Results

- ***Improvement of yield quality***
- ***Due to right orientations of the grower less crop loss and increase of yield***

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Value Added Results

- ***Due to web platform and data collection agricultural planning and value added results***
-
-

After being together of grower and expert regional production planning and before having the yield Planning of Redireciton of experts.

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Value Added Results

- ***Value added results for determining the support of government in agricultural area***

- ***With providing long term agricultural policies it comes out the data to modern and responsive agriculture.***

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Value Added Results

By measuring the nutrient value in the soil and reducing the costs by regional fertilization

- ***The nutrient value in the soil can be measured by %60-%70. and it reduces the cost. It prevents unnecessary fertilization.***

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Value Added Results

- ***A common web portal including yield, expert and buyer-seller.***

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Value Added Results

- ***Database and information system that will define the long-term whole country and value added results***

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Value Added Results

- ***Value added results for domestic yields along with all sensors.***
- ***Value added results for taking precautions to not send the data abroad.***
- ***The system is running for 5 years. Active running scale is -20°C +70°C***
- ***Because of low battery consumption it can run with a battery for 4 years on the average.***

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Foreknowledge

Our project which we have been working on it is defined «Agricultural Data Collection/Process Center&Early Warning» and it is an artificial intelligence sistem predictable.

Started Project from 2004 and GSM-RDAS-03 is the first version which is prepared for the precaution of freezing. It was located in the cherry gardens of company ALARA Fruit and Arboriculture which has 50 million USD Budget per year. The system sends the warning due to parametric values and meteorological parameters of cherry trees. Especially the forst in cherry fruit causes %20 yield loss and this situation indicates the matter of precaution.

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In 2010 the frost in Malatya is caused 1,2 Million loss.

ADMA System contains below main components;

- Grower
- Expert
- Internet based data and information platform
- Cell Phone

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Purposes

Today, thanks to modern medicine the surveillance is done for diseases according to the results of the analysis, the doctor applies the most appropriate treatment to the patients. The production of healthy food is the first source of our health and it needs to be handled with the same seriousness.

Because of the immovable structure of the land, it is very insufficient to examine it by taking samples from the soil.

For this reason, it is aimed to collect the results of the analysis in a centralized laboratory and to determine the disease and risk factors by entering the system. This Internet-based system can track the progress of its region and products by transferring expert comments to cell phones of registered producers on the system.

Our first system with patented system structure (patent no: TR2011 / 10332) will be an indispensable part of precision agriculture.

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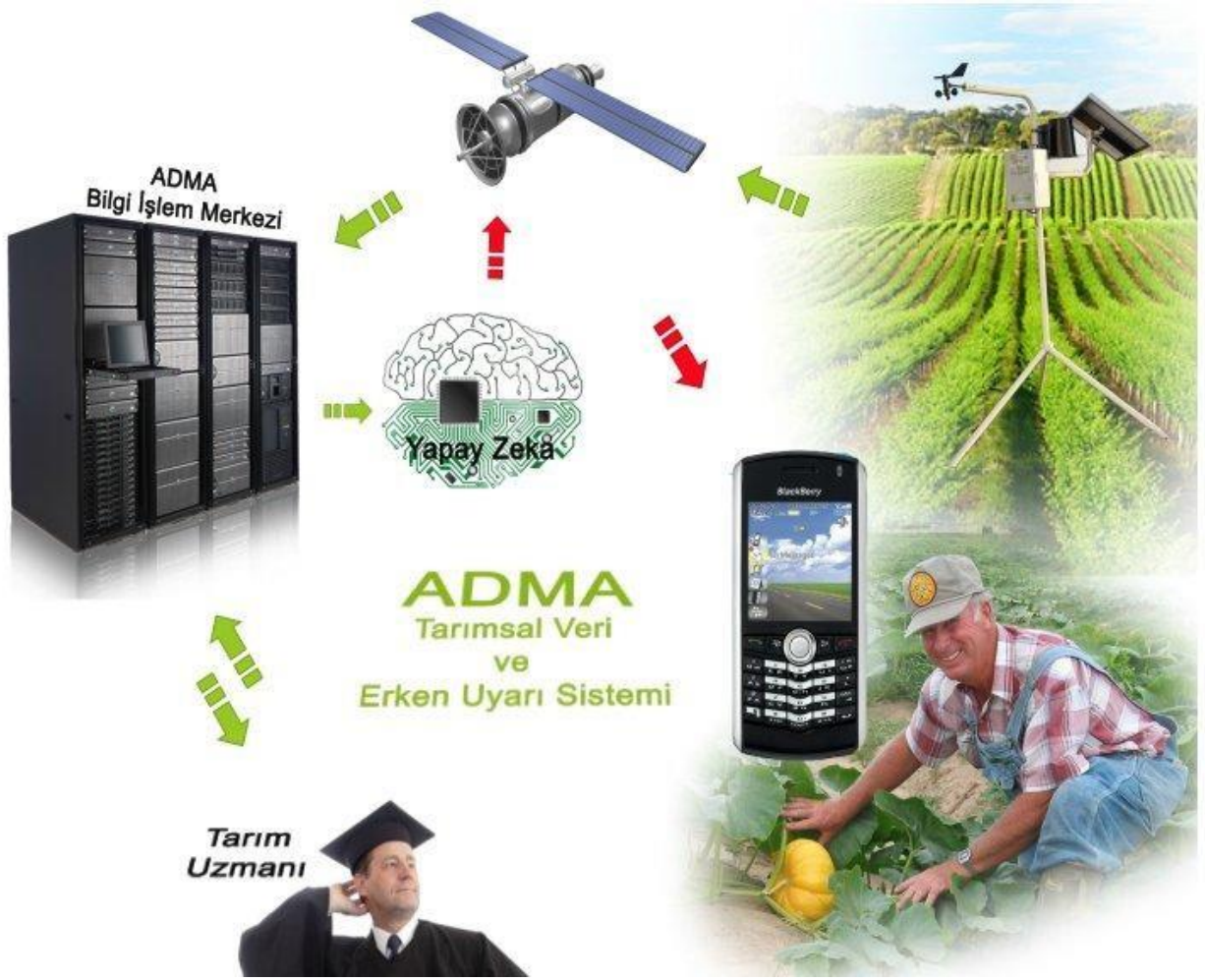

System Components

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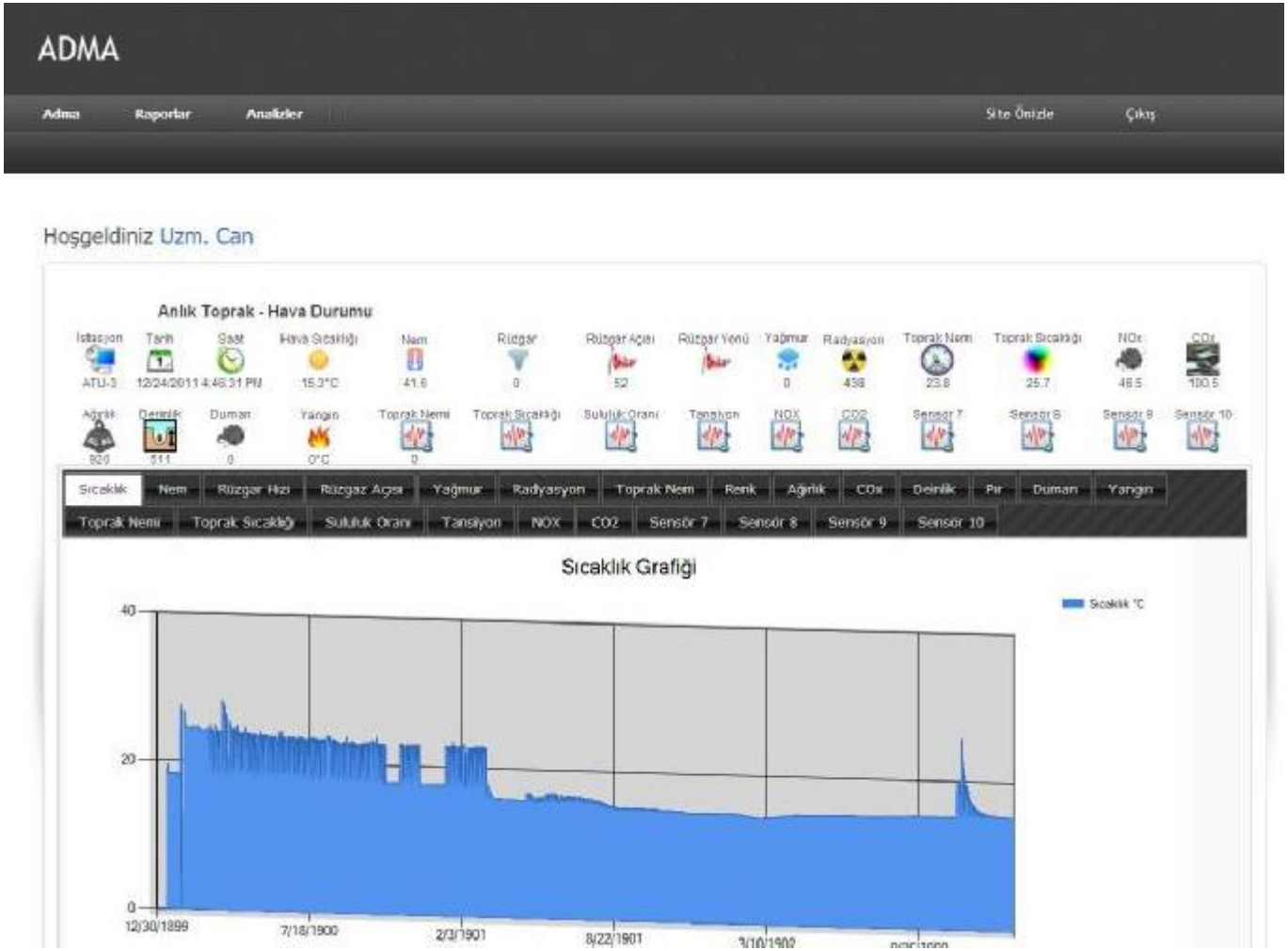
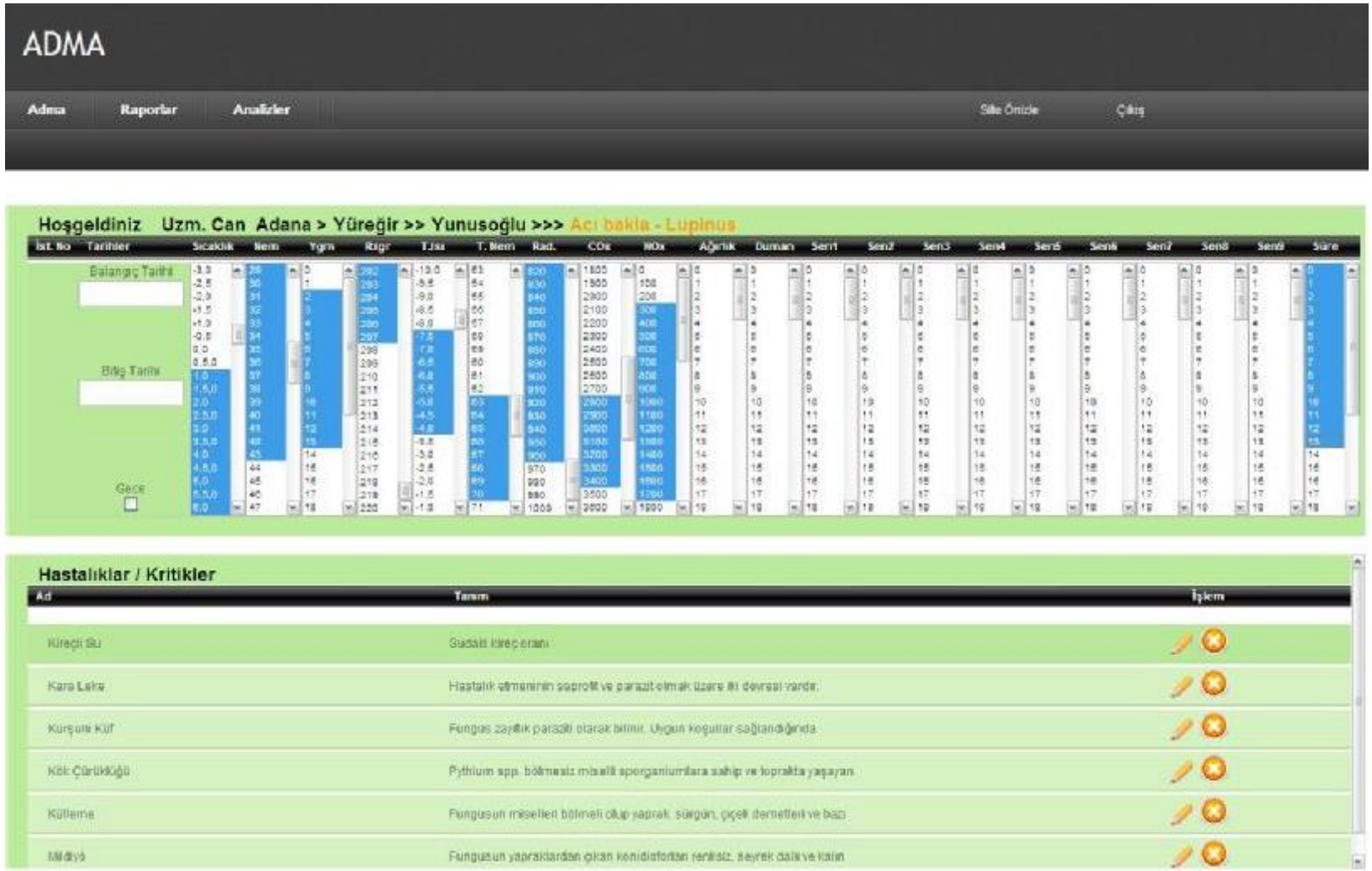


Member Screen



Expert Screen -1

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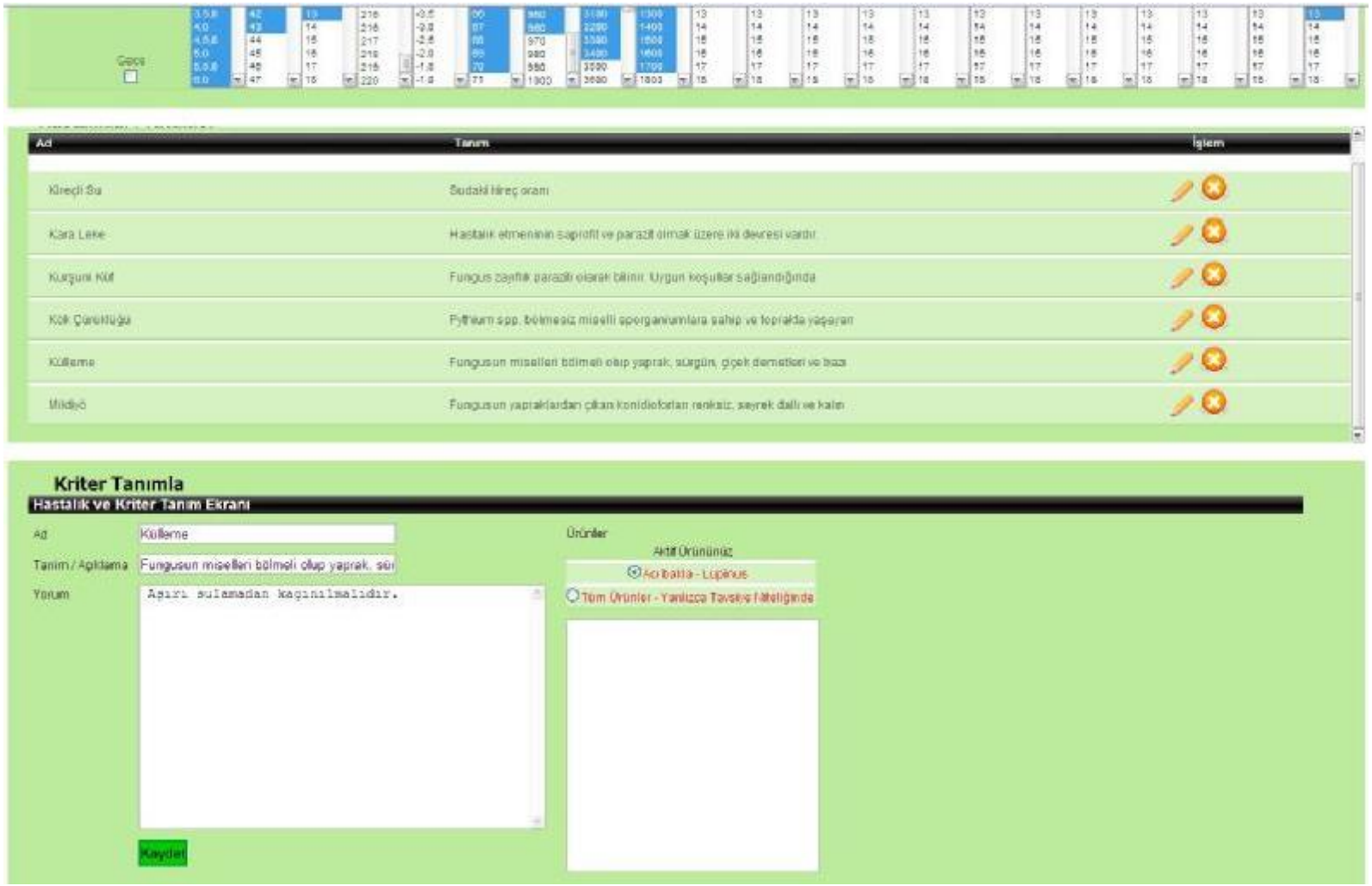

Expert Screen - 2

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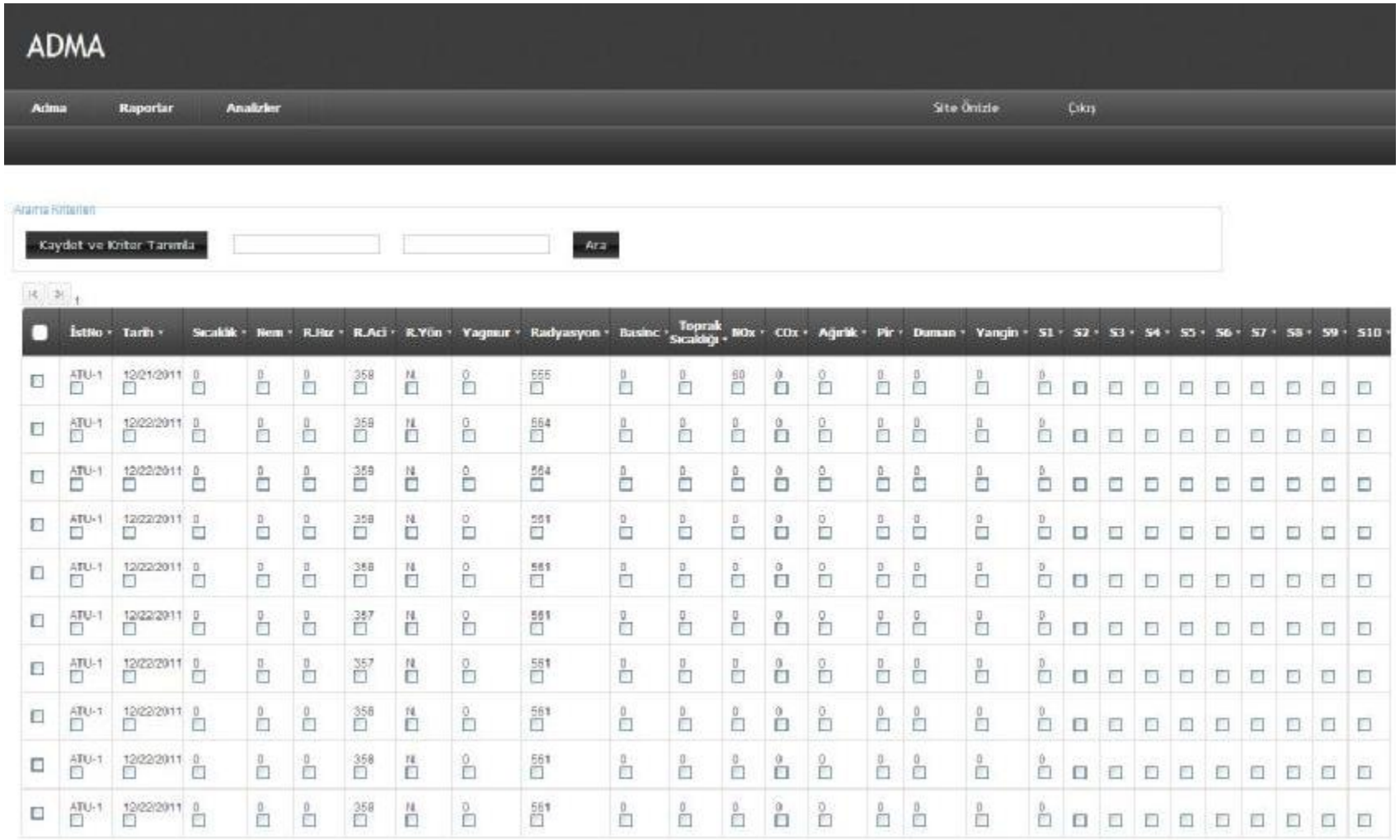

Expert Screen -3

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In terms of our producers;

While the producers register to the system they register the province, district, village, product base and they offer only full-time solution by coming to the mobile phone with expert comments on the risk and disease factors of the products which are registered with. In this respect, it is tried to prevent loss of product.

Due to differences in soil structure, the same product contains different disease and risk factors in different areas.

For example;

The apricot in Malatya and the apricot in Ağrı carry risks in different conditions, periods and values.

For this reason, the producer is informed about the region + selected product and does not receive unnecessary information about the products in different regions.

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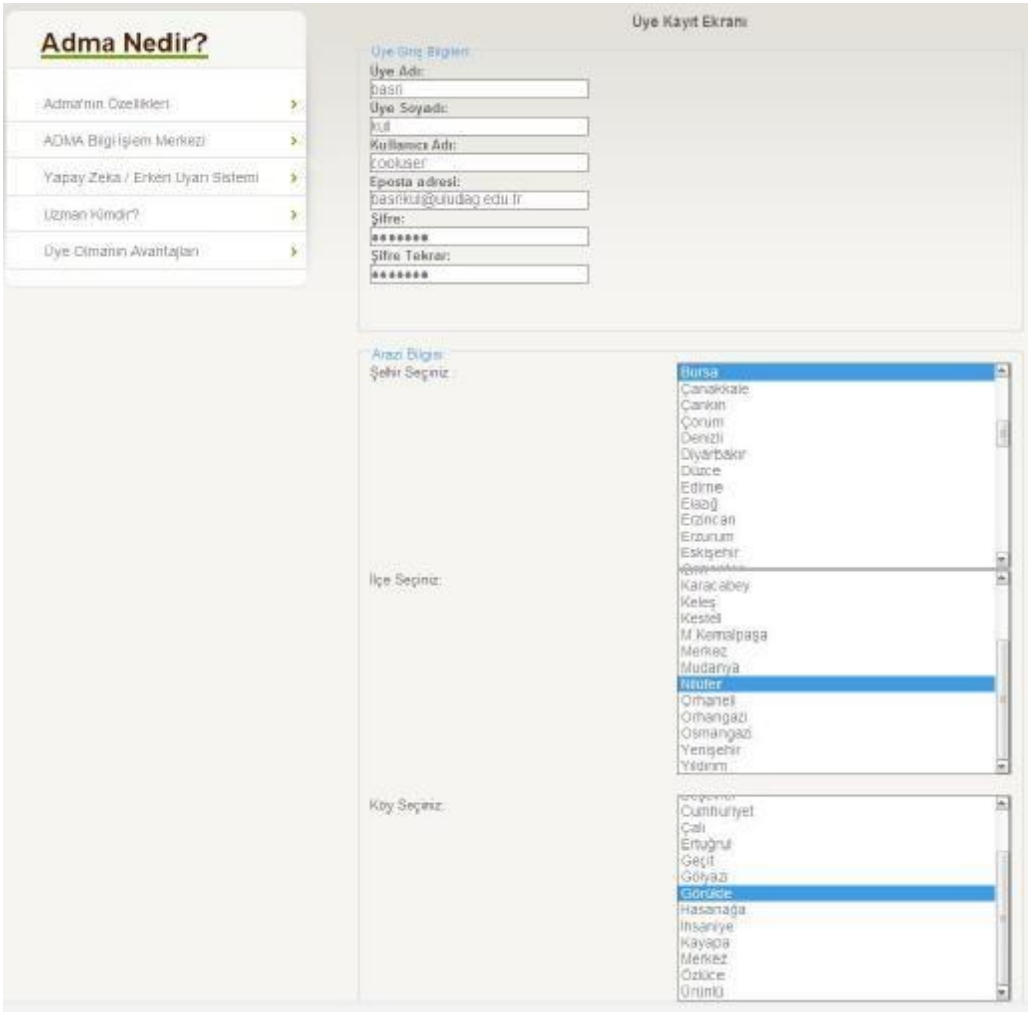

member registration-1

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member registration-2

In terms of our experts;

The experts become members of the system, such as producers, by province, district, village and product based. The experts are whose can identify, comment on and interpret the disease or risk factors for the products they are registered with in the system. Experts are selected from agricultural faculties, persons working in agricultural establishments affiliated to the Ministry of Agriculture or those who have sufficient knowledge and experience about the relevant region and product. After the experts register to the system their expertise is approved or canceled.

The experts add value to the system with their comments and earn revenue from the system. The experts reach the necessary land information without going to the land. A closer platform is established between experts and the manufacturer.

The manufacturer gives an expert comment by SMS. The ADMA system may end expertise or earn more revenue according to experts' scores.

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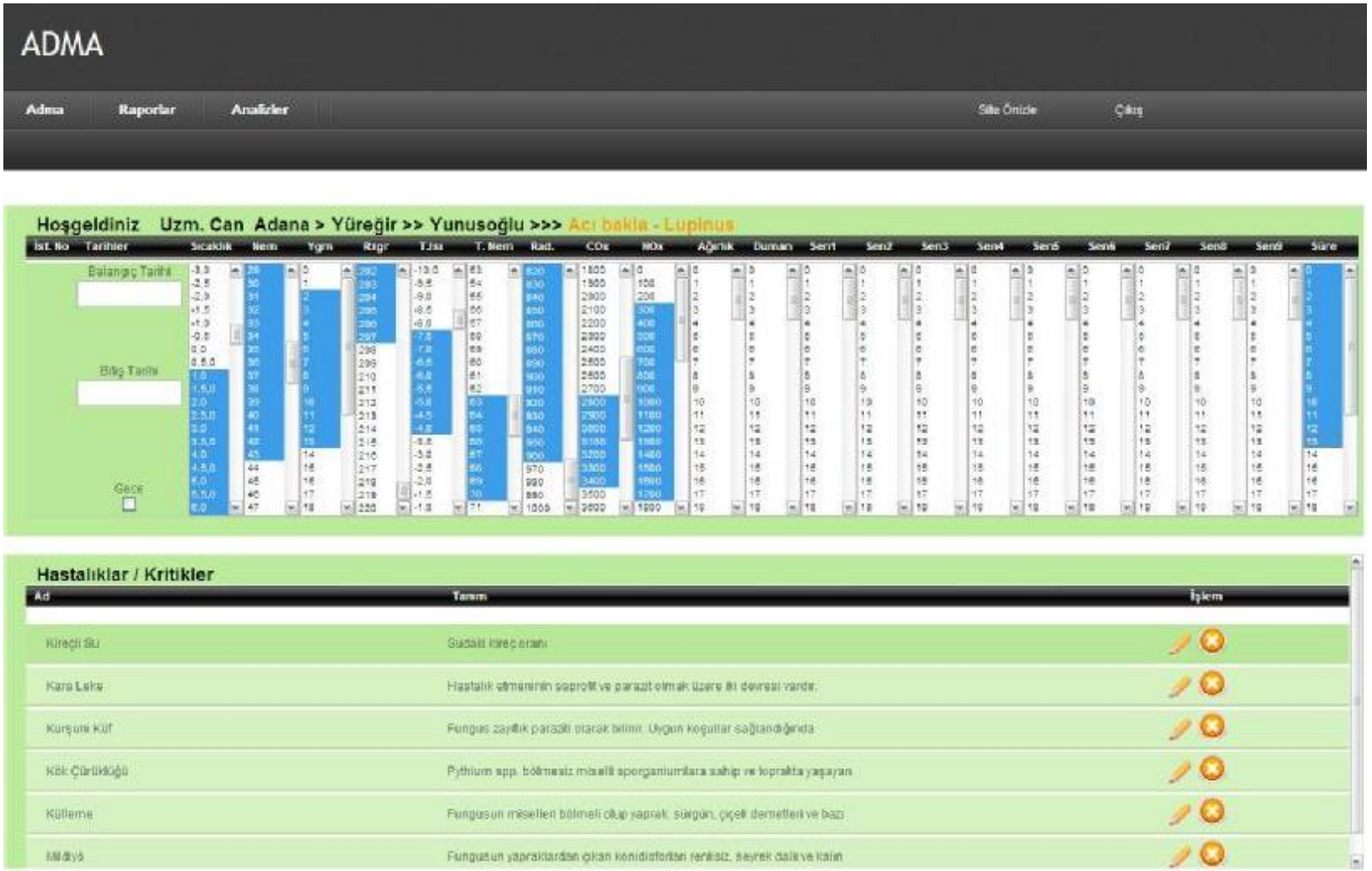

Uzman Ekranı-2

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Other Purposes

It is a support to the development of agriculture data bank of all country by taking agricultural data from the country as a whole and it is shaping an agriculture policy in this issue.

One of the problems that we face in exporting agricultural products to the European Union is to help eliminate the lack of agricultural data.

It is possible to make regional early warning to the producer, the ministry of agriculture and district governorships by evaluating the soil and climatic conditions in the past years with this created data bank.

Besides the producers can track all the internet based data about his village. The member of producers in the system will be informed if any limited measurements occurs by SMS/Call/e-mail. Due to this there will be fortified early warning system. Israel is using a data bank since 1955.

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This database will hold agricultural data (such as soil moisture, leaf color, soil tensions, CO2 emissions from the soil, NOx emissions) and agricultural-purpose meteorological data (such as wind, temperature, humidity ...). According to this information, it will help to determine the causal parameters for the disease formation and it will be beneficial to prevent the loss of crops by informing the manufacturer with early warning system.

The above mentioned agricultural data collection, agricultural meteorological data collection, central data processing and early warning software system will take "Precision agriculture" one step further. In our country, "responsive agriculture" is newly understood and it has taken many years for the drop water metod for acception.

Our country which has fertile lands is experiencing serious losses due to unfortunately lack of information and technology and it is clear that the application of sensitive agriculture policies and technologies is necessary to prevent this.

We have developed the "Agricultural Data Center-Early Warning (ADC-AEW)" system for all these purposes.

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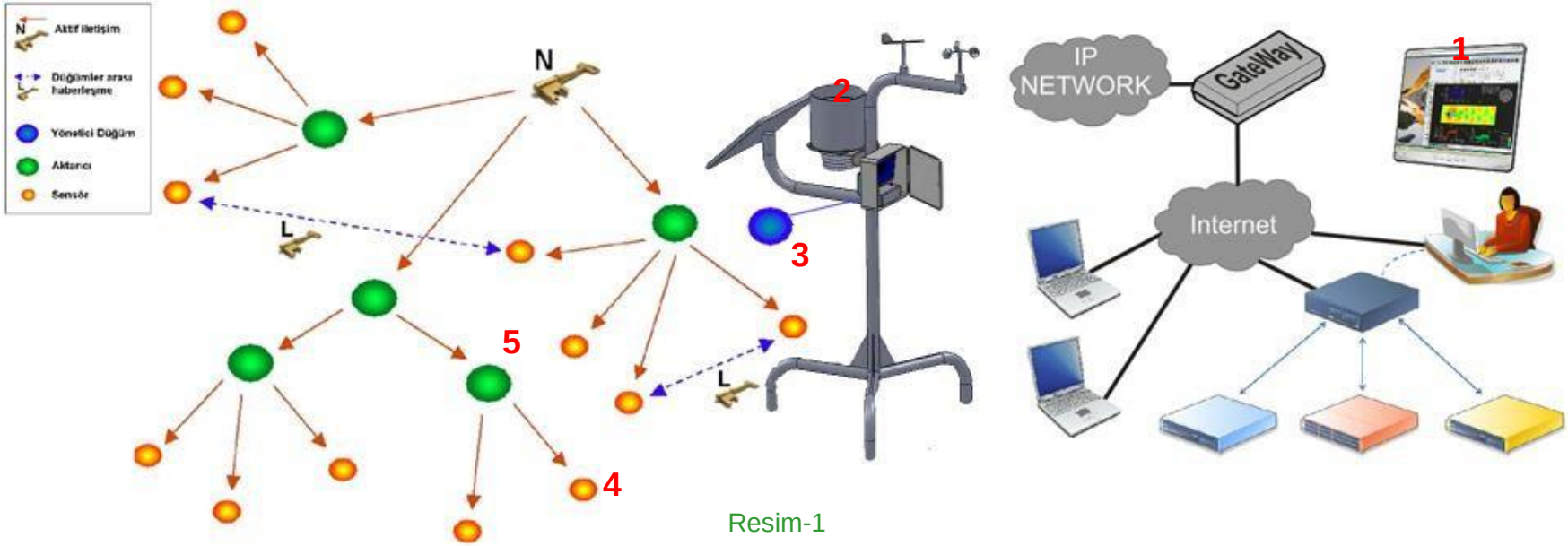
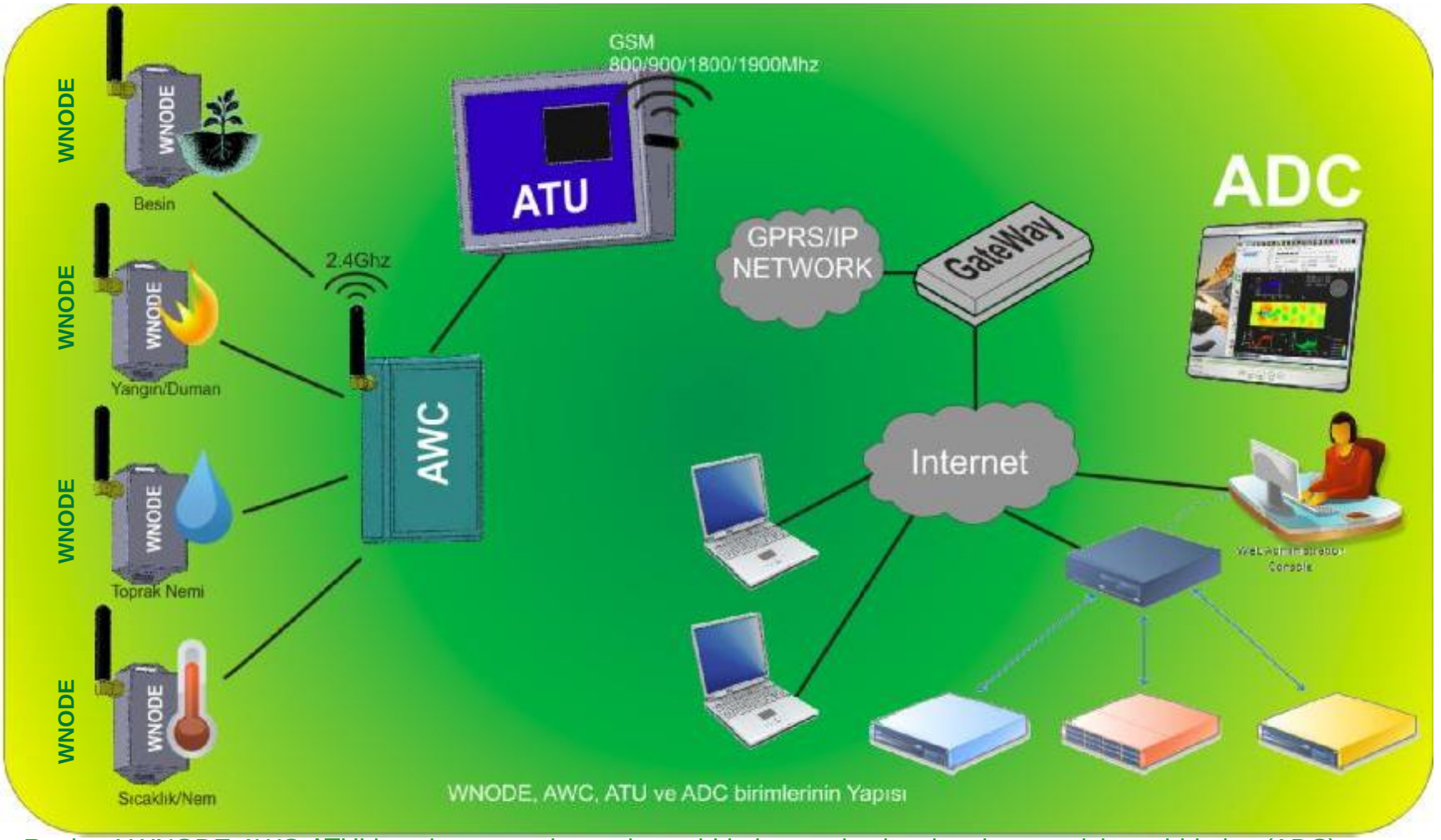
Project Details

“Agricultural Data Collection / Processing Center & Early Warning System"

Multi-node structured, low-cost with wireless sensors and their wide area are based on the fact that the network is integrated with GSM and the data is transmitted to the data analysis center. The central analysis software evaluates the incoming information, the land conditions and the characteristics of the agricultural product. Warns the operator / person by alerting them when the disease or loss of yield is high. (SMS, e-mail, making direct calls)



Resim-1



Resim-4 WNODE-AWC-ATU'dan oluşan araziye yerleşen birimler, merkezi veri toplama ve işleme birimine (ADC) internet protokolü ile bağlanır.

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ATU Birimi-1

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Measurements that ATU unit can manage;

Temperature sensors: 0.5 ° C tolerance from -55 to + 80 ° C. (Agricultural and meteorological)
Humidity / Humidity Sensors: 5% -95% relative humidity and dewpoint (agricultural and meteorological)
Leaf Humidity
Leaf or product color recognizer
Continuous weight measurement in product development and follow-up of the crop according to other parameters
IR based soil nutrient measurement and partial fertilization support
Depth sensor
All meteorological measurements
Irrigation control and flow measurement
Motion detection for security purposes
GAS measurements (CO, CO2, TeO2, CH4, C3H8)
Fire detection
Frame Camera connection
Net radiation measurement
7/24 active with solar battery and built-in battery
Online connection with central data processing via GSM data communication

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Land-1 Sensors are represented in photo.

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Land-2

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Land-3

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ATU Unit Internal Sensor Inputs

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WNODE wireless sensor-1

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AWC – Wireles Sensor Router

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Expectations and Suggestions

Similar work is being done abroad as responsive agriculture. Although some agricultural data collection systems exist in our country, they do not work first in this scale.

To whom support my country in bringing this system,

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