Design of an energy efficient and low cost trap for Olive fly monitoring using a ZigBee based Wireless Sensor Network

Alorda, B.(1), Valdés, F.(1), Mas, B.(1), Leza, M.(2), Almenar, L.(2), Feliu, J.(3), Ruiz, M.(3), Miranda, M.A.(2)
(1) Electronic Systems Group, Dept. of Physics. (2) Laboratory of Zoology, Dept. of Biology. (3) GIS Laboratory.
Balearic Islands University. Contact email: tomeu.alorda@uib.eu

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FruitFly Net

Olive Fly Monitoring

The proposed trap architecture is :

- **Scalable in terms of number of monitoring variables and number of traps,**
- **Open to use third-part ZigBee nodes,**
- **Solar powered fly traps**
- **Easily installed/removed without changes on performance**

The low power consumption resulted and the specific electronic equipment used produce an energy efficient and low cost solution to provide fruit fly precise real time monitoring, improving the integrated control management of this major pest.

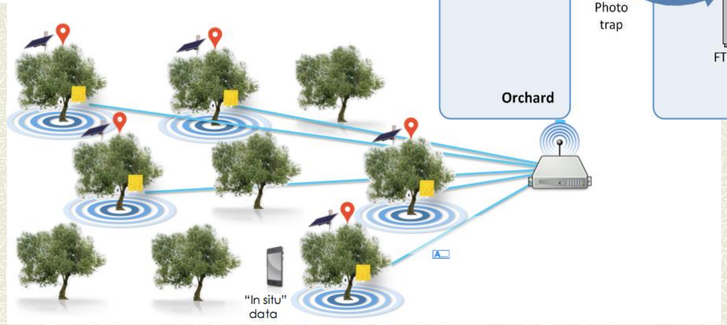
The monitoring activity is **highly time consuming** and due to the **frequency of sampling**, analysis and **data collection**, the time to precisely **detect** an **infestation** and **design a control strategy** is usually **too large**.

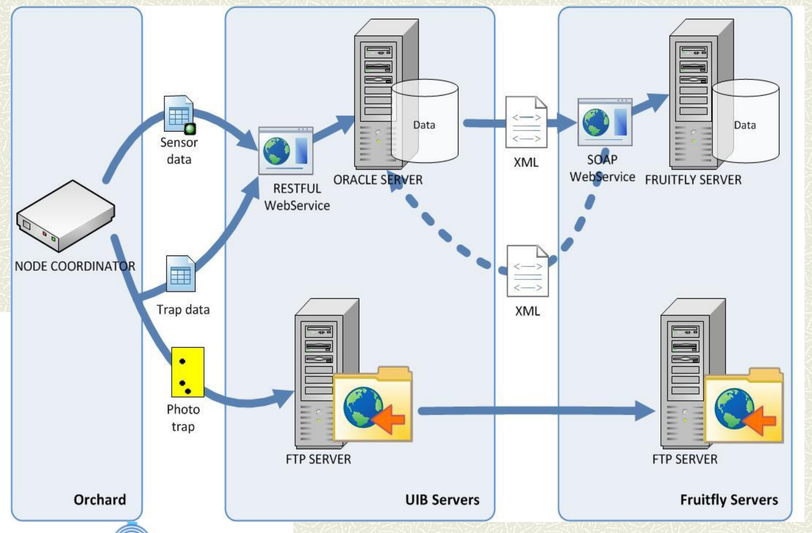
a **WSN** to automate the manual monitoring is expected to **produce many benefits**, such as the reduction of amount and frequency of **insecticide sprays needed** to control this pest.

Architecture using a ZigBee based Wireless Sensor Network

eTrap:
- Ambiental variables
- Sticky photography

- ZigBee based Wireless Communication
- Solar powered etraps
- GPRS for server communications



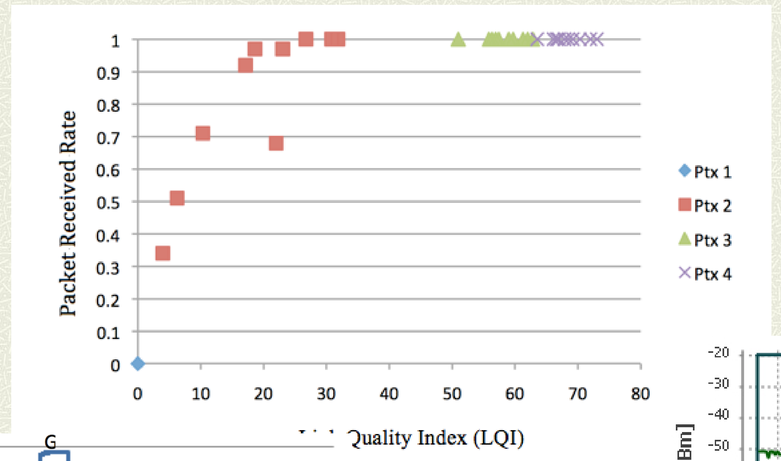


The node coordinator automatically sends the sensor data and metadata of the photograph to the Database server (UIB) (RestFul WebSevice). Then an XML will be send automatically (SOAP WebService Fruitfly) updating the information at the main Database Center of the Fruitflynet project.

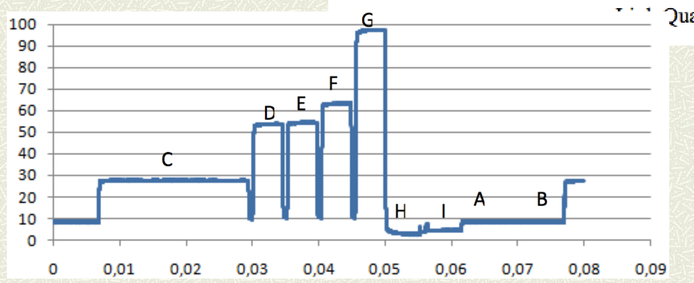
The images are first transmitted through FTP to the UIB repository. Next, the images will be send to the FTP Fruitflynet server.

Wireless Communication Features

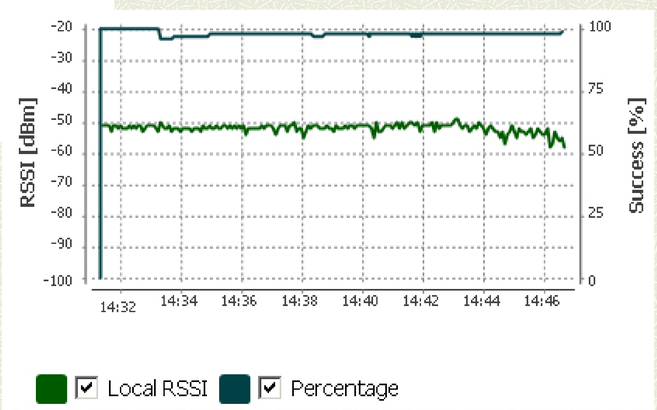
Link quality evaluation



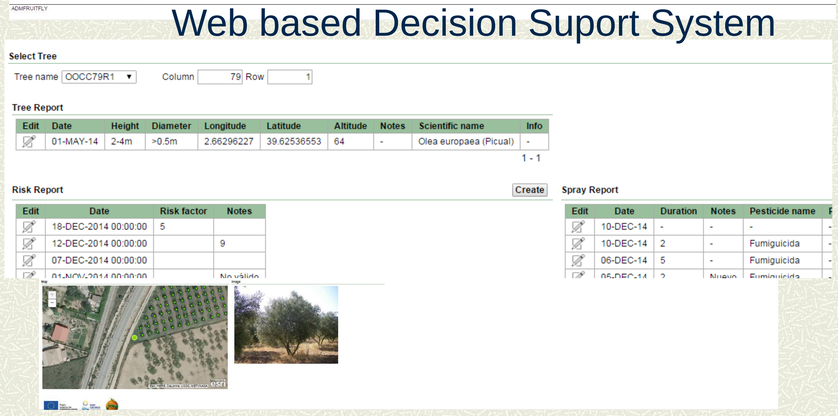
Power analysis



Data Transfer Measurements



Web based Decision Suport System



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