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TEAP
PIRSES-GA-2013-612659

3/8/2015 Fertilization Seminar in Greece with SDAU & NERCITA & TJCC

Welcome by Prof Sigrimis-TEAP and Prof Skarakis, Dean of the School

Coffee break

Coffee break

Workshop ending memorial photo

4-8-2015 Visiting Greenhouse with special Fert-Irrigation system

5-8-2015 Visiting Pear Orchard with Net protection (IPM) and Fert-Irrigation system

Ferti-Irrigation and Hydroponic Progress during TEAP PROGRAM

中国农业大学
CHINA AGRICULTURAL UNIVERSITY

Cooperation to develop Chinese trademark CAUA based on Greek technology

壁挂式**CAUA-6** 型水肥一体化营养液自动调控装备
Wall-mounted integrated water and fertilizer automatic control equipment

立式 **CAUA-12** 型水肥一体化营养液自动调控装备
Vertical equipment

FIG 1

FIG2

IOT-WOT-MOT-CDT

From short horizon to long horizon & web Intelligence

-从短期计划到长远计划以及网络智能的应用

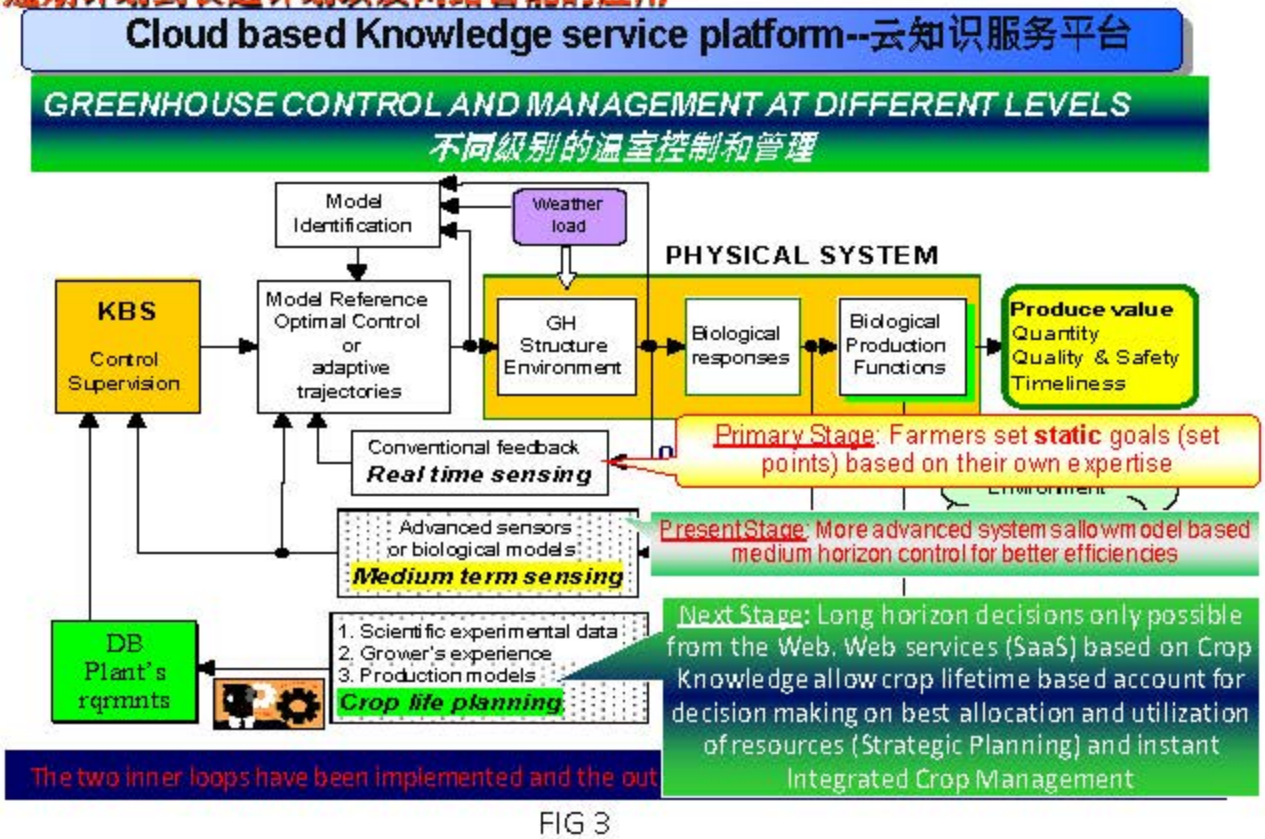


FIG 3


Sino-EU Cooperation
IOT & SmartFarming- Knowledge bridge
& Universities near Production- research in farms Intelligent Machines send BIG DATA and Intelligent Analytics will discover and Innovate in favor of farmer – consumer-Environment
Our Next Project Research in FARM Intelligent machines & Intelligent Data Analytics & Real BIG DATA & many opportunities for Discoveries and Innovation
AUA
CAU
KNOWLEDGE INSERTS ON APPLICATION DOMAIN
CLOUD DATA
BIG DATA
REGISTRY
INTERNET
INTERNET
FEEDING THE WORLD
Economist Conferences
MACQU-H50
CLOSE THE CYCLE
WOT GEOM
KOM-MIR-HOS
IOT SINO
CAUA
ONS
FIELD RESEARCH
TRANSFORM
Water &Fertilizer use efficiency has many opportunities in China

FIG4

FertigationReport_SDAU

In supplying plants' nutritional needs complete methods to service these needs of the plants were/are to estimate:

a) the supply capacity of soil material for several minerals (for which occasionally we need a soil analysis),
b) the water contained minerals (sometimes useful Ca and Mg as well as other trace elements), for which we also an analysis and if seasonal changes we should follow, and
c) the additional amounts of macro and micro elements we need <somehow> to supply

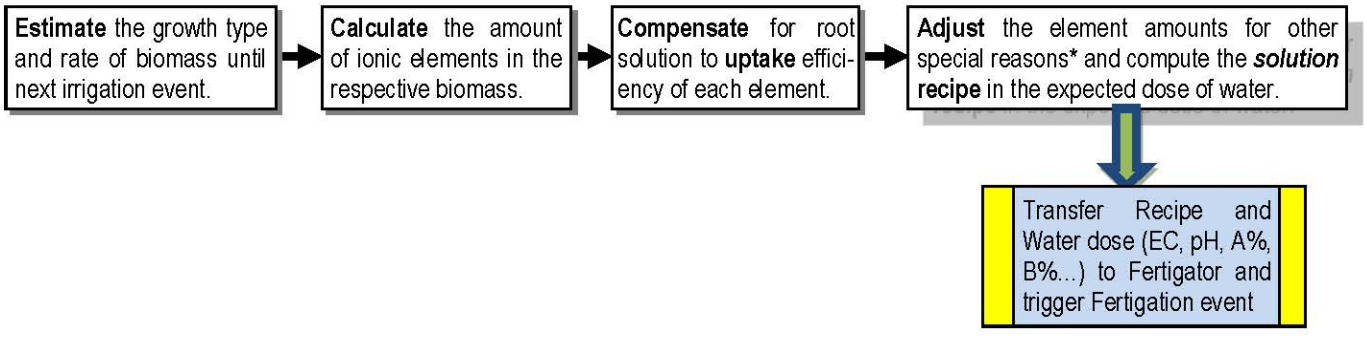
Traditionally, when modern way of supply by water (micro_sprinkler, trickle and dripper irrigation) was not possible, we considered the soil as the storage tank for occasional supply of fertilizer by hand or machine. However this method has had the following drawbacks:

1) The supply did not fit normally the rational needs of plant uptake, as per crop stage different growing organs (spring leaves, blossom flowers, fruits, xylem), despite the fact that different fertilization synthesis was tried at different stages. This is the role of "complex fertilizers" that companies make to fit approximately the needs of different plants at different stages but again occasional supply. Therefore Plants (Trees) do not deliver their maximum utilization of Solar Radiation conversion to quantity and quality, obeying to the law of "minimum element".
2) The occasional storage of a periodic volume of fertilizer is causing big losses due to:
   a. **Conversion**: chemical conversions and adherence to soil compounds as sediment complexes or non-soluble substances (which the roots we expect to have the power to re-dissolve and uptake but this is not for high production plants but rather for stressed-struggling plants or wild plants or weeds). This process, we may assert, is not only ***fertilizer loss*** but also soil alteration to imbalanced nutrition or ***soil degradation***, and
   b. **Depletion**: a heavy rain event usually takes most soluble elements (K, N, some micros) away and it's another ***big loss*** but also ***environmental pollution*** of surface (**eutrofism**) and underground waters. Such loss also occurs because of high irrigation dose that is most often applied by the "non-informed" farmer to "secure his plants", lack of measurements or bad water application method (surface furrowing, border flooding etc).

Usually after fertilization research trials we have come up with certain "needs per stage" which are converted to fertilizer synthesis (recipe) to be supplied with the irrigation water, or, the "expert" has concluded to a specific recipe at each stage of development. Well estimated (model) or measured (sensor, soil or plant) water needs and precisely and purposely calculated nutrient supply can be supported by high tech Fertigators. This cannot be alone buttogether with precision application water system (drippers) to alleviate the above mentioned losses, caused by traditional fertilization techniques. Many researchers are involved today into Precision Fert-Irrigation programs. We develop methods and Web Services to exercise all possible physical measurements and Plant Science knowledge about plant nutritional responses. It is a sustainability effort (ICM) targeting the best product quality and yield, while protecting the environment and the resources.

A **physico-cyber model** to simulate the plant life processes and derive the physical needs of the plant is as the following:

**: based on specific element boosting some product properties for specific effects or pest resistance.*



Recommended Fertilizer routine for SDAU Agricultural Sciences.


2015 03 25


匯賓樓
Guest Room