



World Meteorological Organization
Working together in weather, climate and water



Federica Rossi

Decision Support Systems in agriculture



Need to take decisions and make critical day-to-day and long-term planning on farm management (strategic and tactical).

Support have to be relevant, timely, user-friendly to assist and manage crop cultivation. DSS offer scientific-technical tools often developed by multidisciplinary teams to combine to skills and experience.

The top 100 questions of importance to the future of global agriculture

J. Pretty et al., INTERNATIONAL JOURNAL OF AGRICULTURAL SUSTAINABILITY 8(4), 2010, 219–236



A challenge is how to feed an incoming population of 9 B. To meet the demand without significant increases in prices, the need is to produce 70–100% more food, in the light of growing impacts of cc, concerns over energy security, and the Millennium Development target of halving world poverty-hunger by 2015.

The goal is no longer simply to maximize productivity, but to optimize across a far more complex landscape of production, rural development, environmental, social justice and food consumption outcomes.

The top 100 questions of importance to the future of global agriculture

1: **Natural resource inputs:** Climate, water, soil nutrition, erosion, biodiversity, ecosystem services and conservation, energy, climate change and resilience

What are the predicted impacts of cc on yield, cropping practices, crop diseases, irrigation...?

What approaches can be developed to increase water use efficiency in agriculture and what is the cost-effectiveness of this approaches?

2: **Agronomic practice:** production systems and technologies, genetic improvement, P & D management, livestock

How we can accelerate the rate of technological change to propel sustainable production? Which approaches to P&D are the most economically and socially sustainable?

The top 100 questions of importance to the future of global agriculture

3: **Agricultural development:** networking, solidarity, reciprocity and exchange, farmer participation in technological development.

Farmers involvement enables novel technologies and practices to be learned directly, adopted and adapted. Agricultural and agrometeorological extension services are vital elements to address needs and provide critical services.

4: **Markets and consumption:** food supply chain, food standards, LCA, energy, C footprint, environmental impact.

As energy prices rise, how can agriculture increase its efficiency and use fewer inputs to become economically sustainable and environmentally sensitive, yet still feed a growing population?



Climate resource

Water resource

Genetic resource

Energy resource

Landscape resource

Human resources

Economic resources

New-light
technologies, saver
inovation, DSS

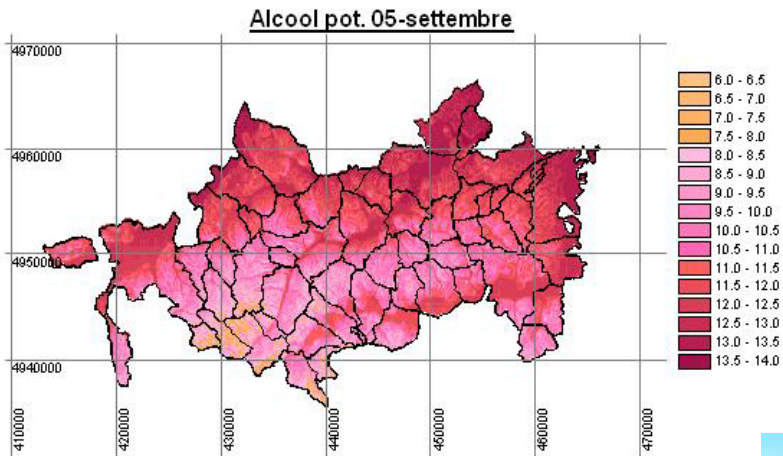
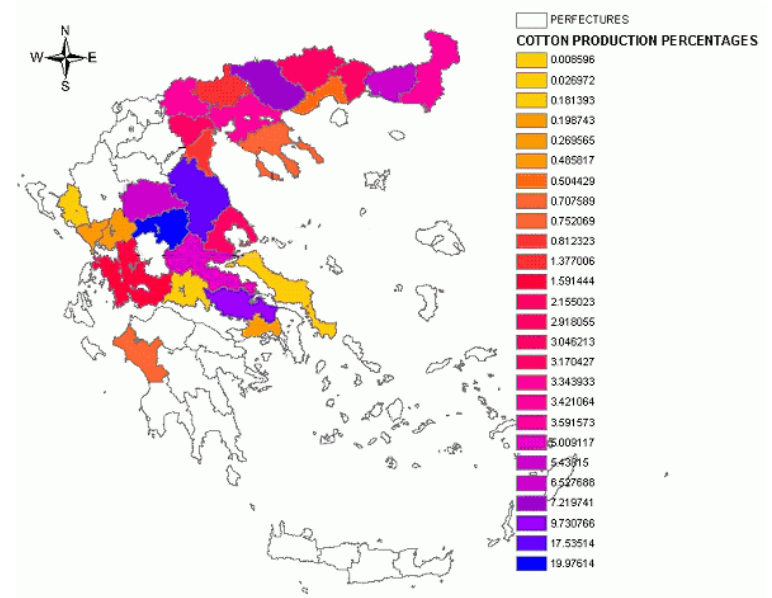


Crop protection

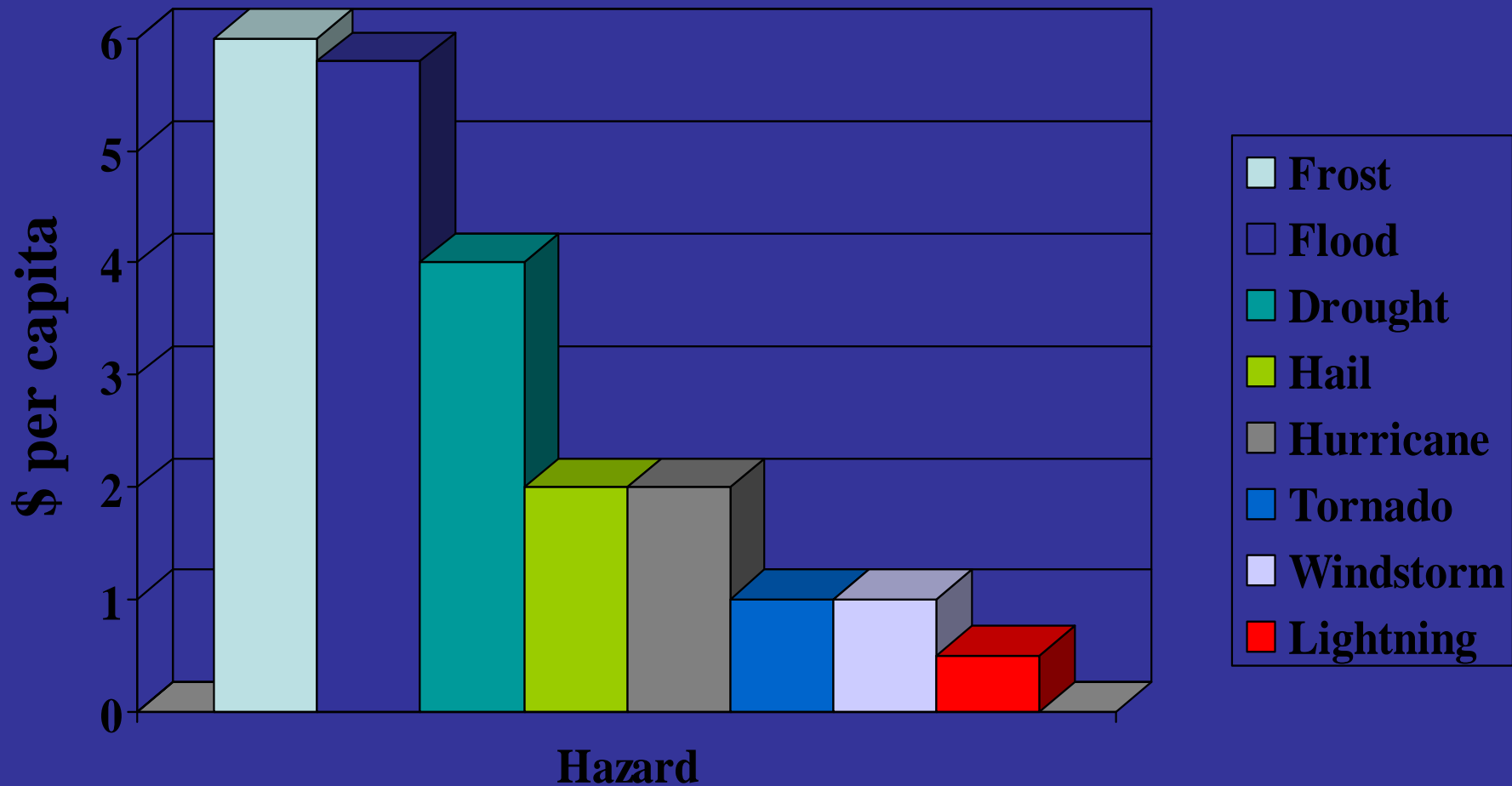
Crop production

Crop quality

Environmental impact



Mean Annual Losses to Weather Hazards in the United States



Spring frosts: when temperature falls below the melting point (0°C) sensitive crops can be injured



Scarring, distortion, russet



Style, ovary, petals necrosis

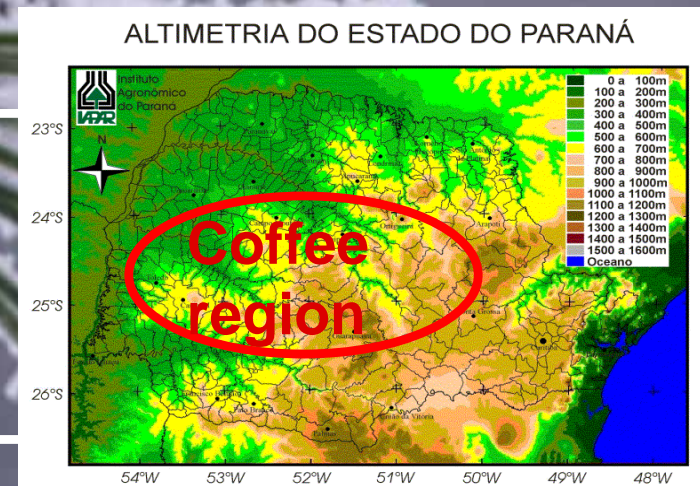


Dehydration, brown tissues

Whether or not there is frost damage at a particular minimum temperature

species, crop variety, hardening, cultural practices (pruning, fertilization, irrigation), INA bacteria, weather conditions.

It occurs in most countries with temperate climates and even in tropical countries at high elevations



Advices for frost protection



Define meteo & micromet conditions during frost events

Define the most appropriate methods for protection in relation to the climatic hazard and sustainable resources management

Develop instruments able to evaluate the risk

Support farmers in avoiding or mitigating the detrimental effects (active-passive protection)

Foreword to Agricultural Meteorology by Sir John Stuart Forbes of Pitsligo

The Transactions of the Highland and Agricultural Society of Scotland July 1853 - March 1855

effects. Thus, shelter is indispensable for tempering our climate; but when too close or continued, especially in low situations, the want of circulation condenses the moisture into hoar-frost, and checks early vegetation. . . . So drainage increases



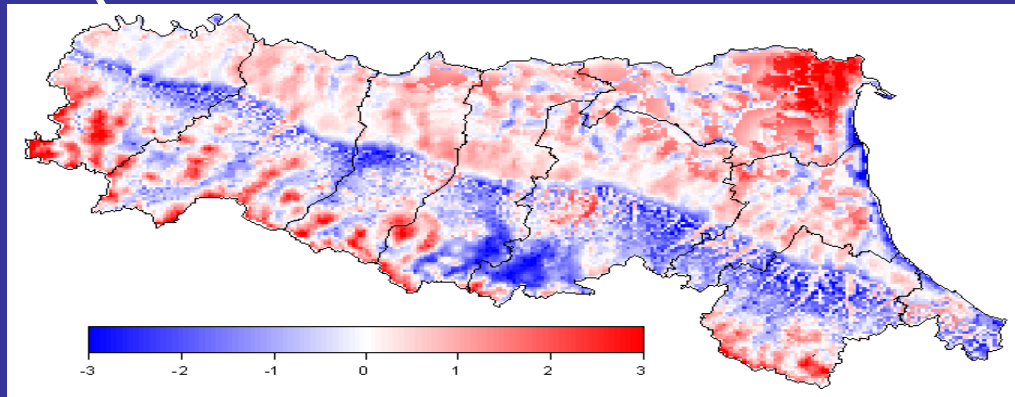
WHY DSS??

Awareness of the risk



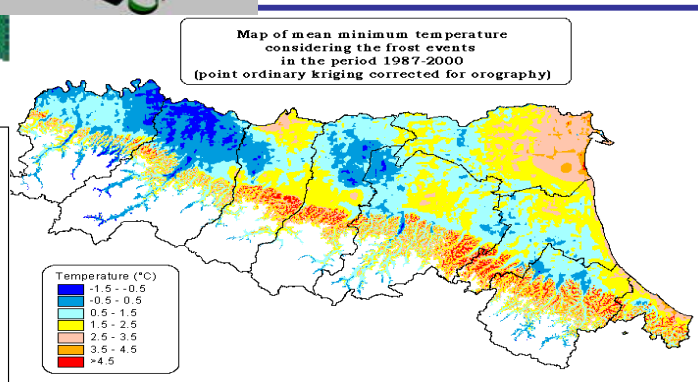
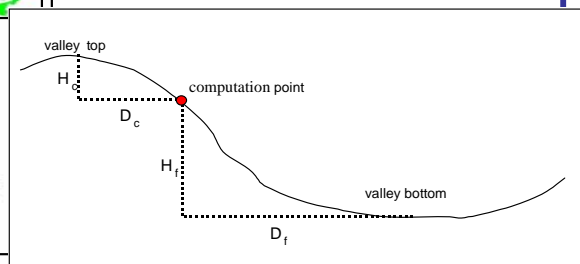
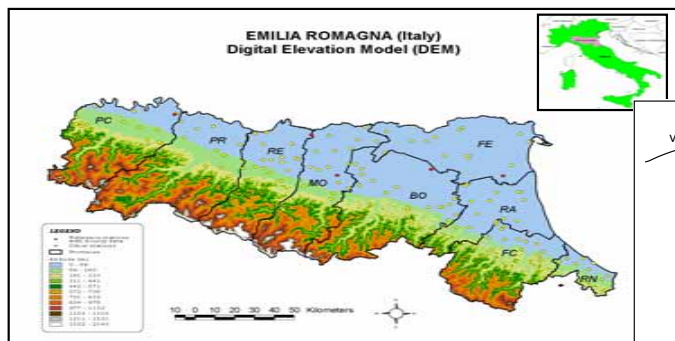
Passive protection

Selection of low-risk sites !!!!



Crop selection

$$T_{\min} = a \cdot H_{\text{rel}} - b \cdot I_n + \Delta_z + \Delta_{\text{sea}}$$



Regional topoclimatic model including phenological and growth models to be used operationally

- Define the risk maps for the various crops
- Weekly agrometeorological bulletins
- Climatic regional data-base for land capability



fenologia

Stato
Premi RUN per simulare

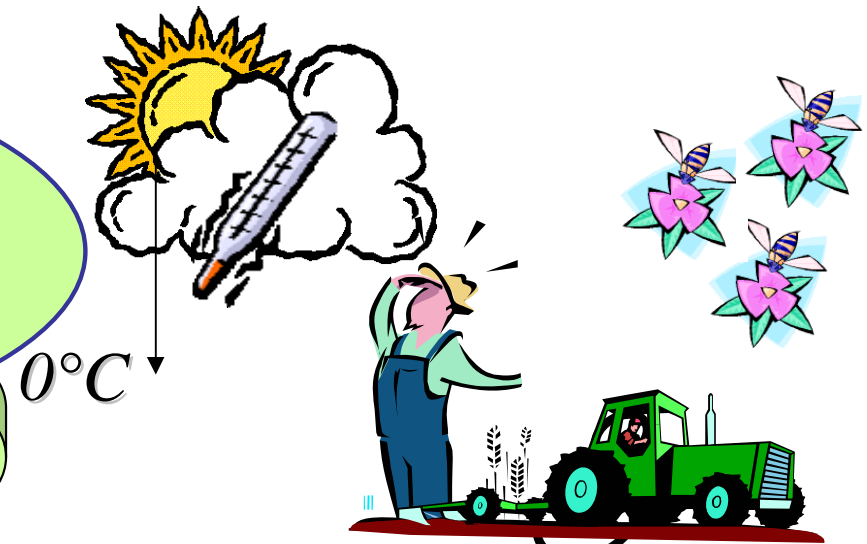
Impostazioni
Colture: corn sunflower
Anni: 1998, 1999, 2000, 2001

Buttons: SETTINGS, RUN, EXIT

Chart 1: Fruit Dry Weight

Year	1998	1999	2000	2001
1998	10000	10000	10000	10000
1999	10000	10000	10000	10000
2000	10000	10000	10000	10000
2001	10000	10000	10000	10000

Reduce or to avoid the impact of these extremes -microclimate management & manipulation



Awareness of the meteorological risk

Active protection ()

Selection of the appropriate method:

- crop
- location
- climate
- costs

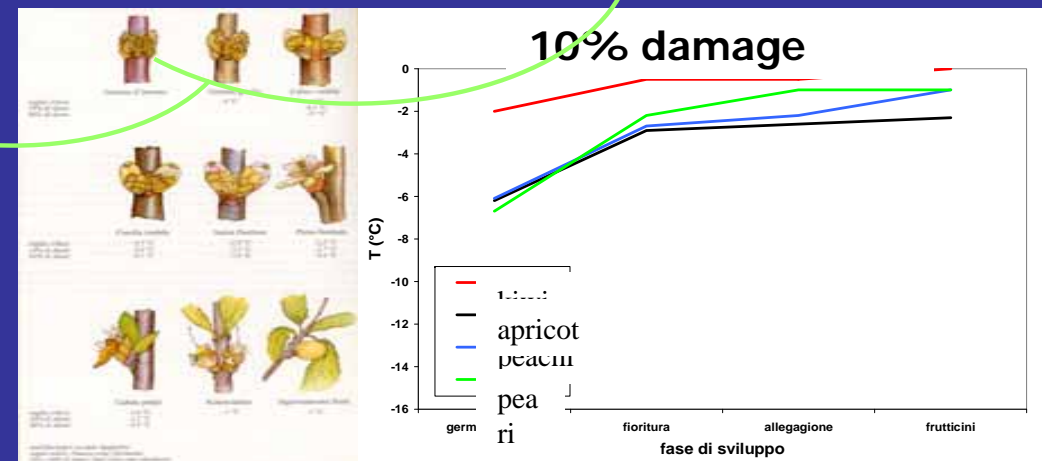


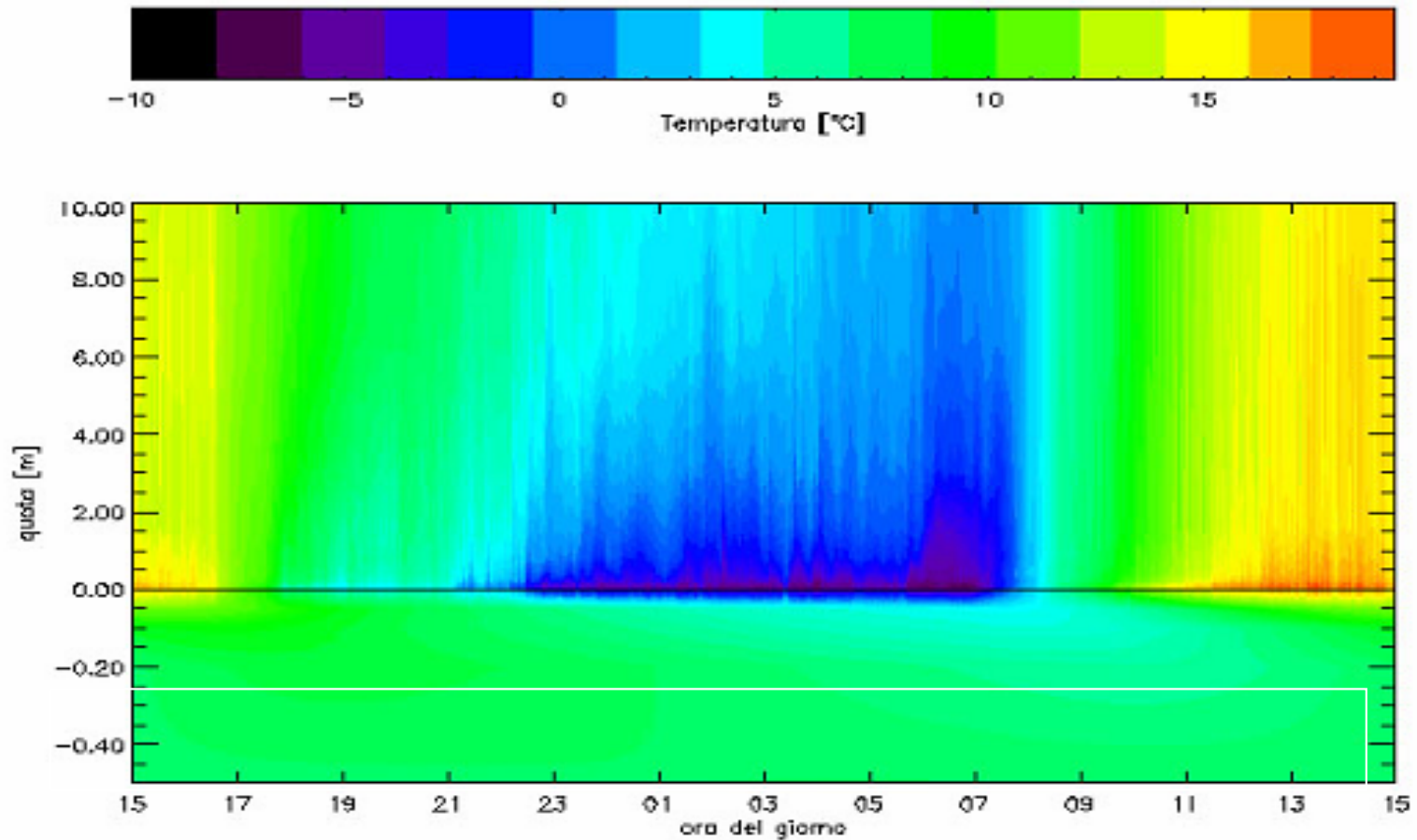
WHY FARMERS NEED PREVISIONS ?

Awareness of the risk

Active protection

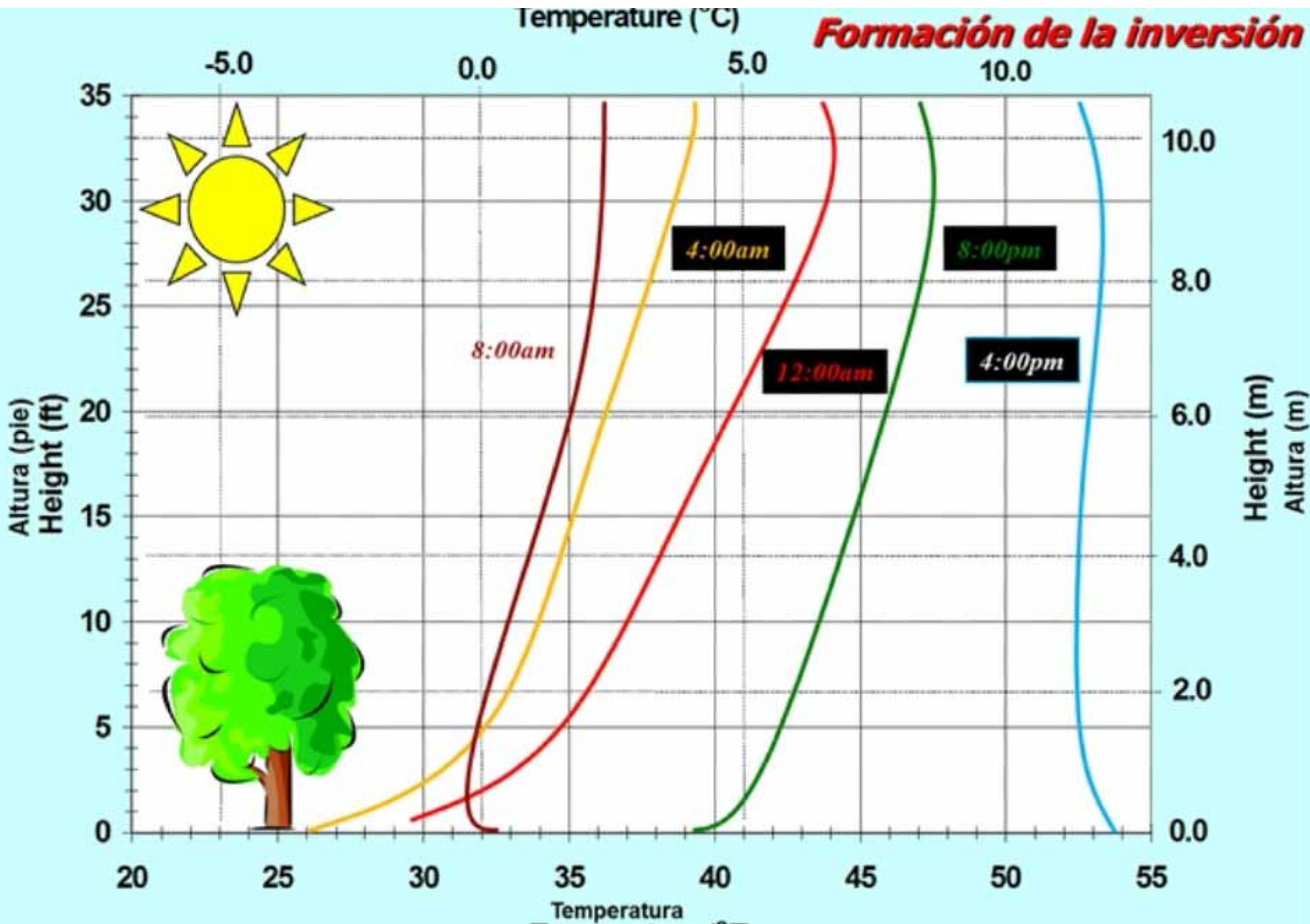
What a probability for a frost tonight? Can the thermal levels predicted compromise my crops at this stage? Shall I activate my protection devices? What the ratio cost sustained/cost of the possible damage?



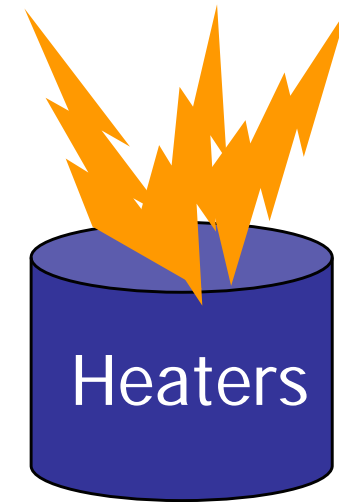


Radiation frosts: calm wind - clear sky: heat is lost in form of radiant energy. Temperature falls faster near the surface causing a temperature inversion

Formación de la inversión



Active protection

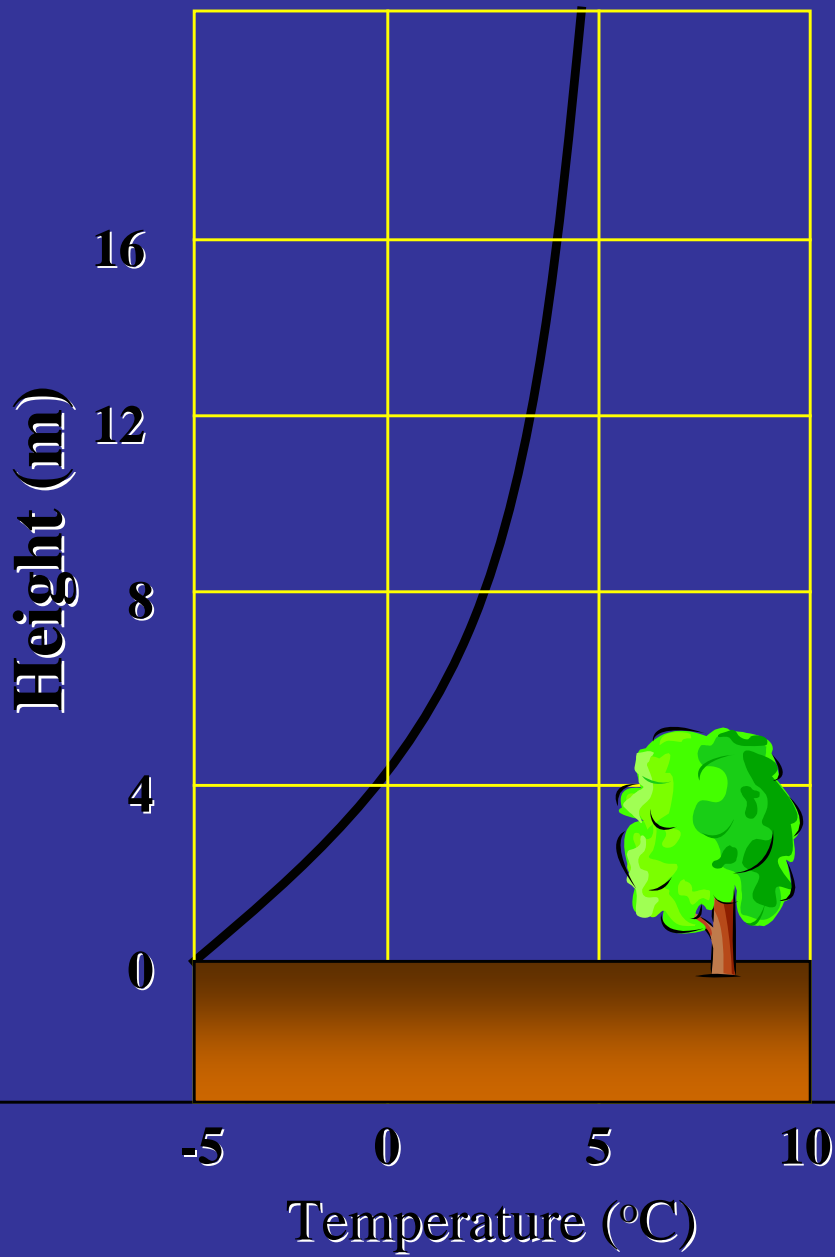


High consumption rates

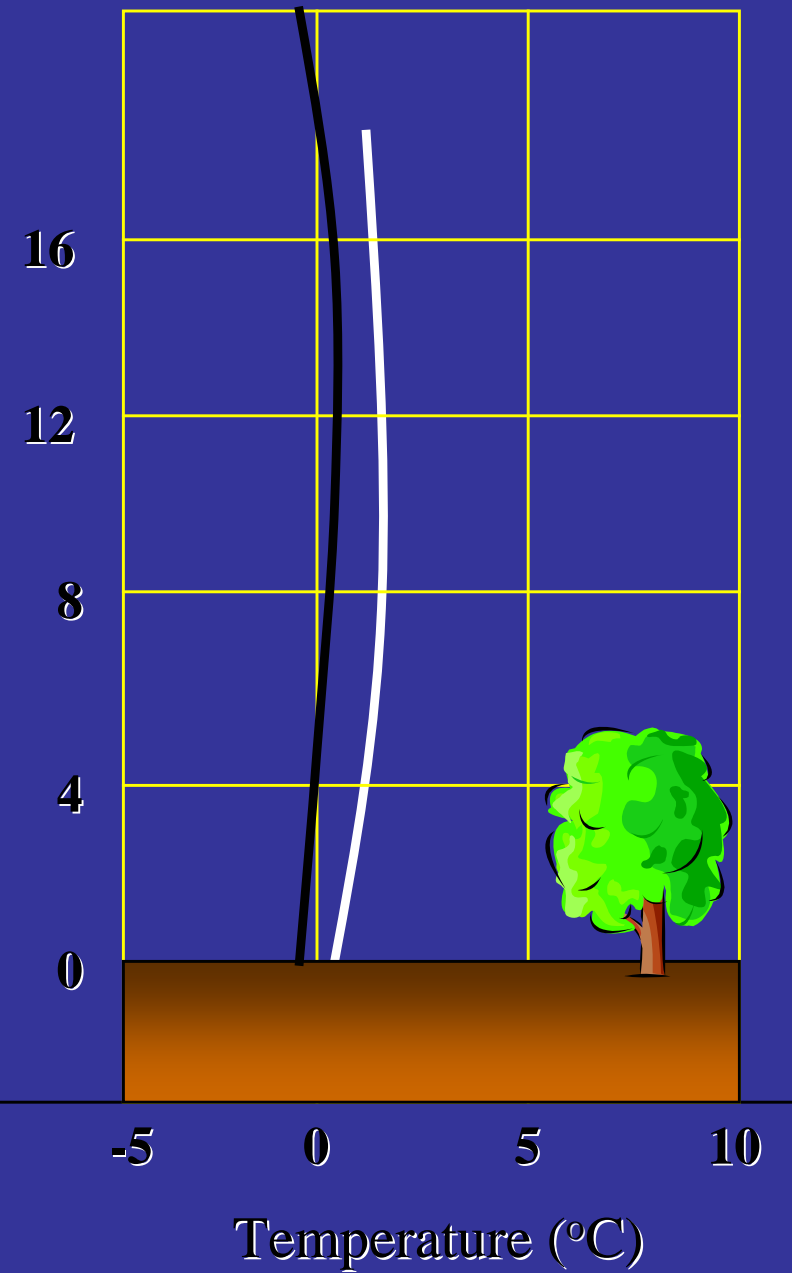
Expensive to operate
(2000 €/ha/night)

Total efficiency
proportional to the
number of heaters
and depending on
the air temperature

No Wind Machine



With Wind Machine



Active protection

Over-plant
sprinklers

Under-plant
sprinklers

Water freezing:
when 1 Kg of water
freezes at 0°C, the phase
change converts 334 kJ
of latent to sensible heat

Low operational costs. High
installation costs but sprinklers
can be used for irrigation,
fertilizer applications,
evaporative
cooling... **Disadvantages:**
large amounts of water



Over-plant sprinklers

Uniform application, continuous and adequate water amounts. Problems under windy conditions. Errors in operating (late starting, early stopping, accidental interruptions) can induce major damages

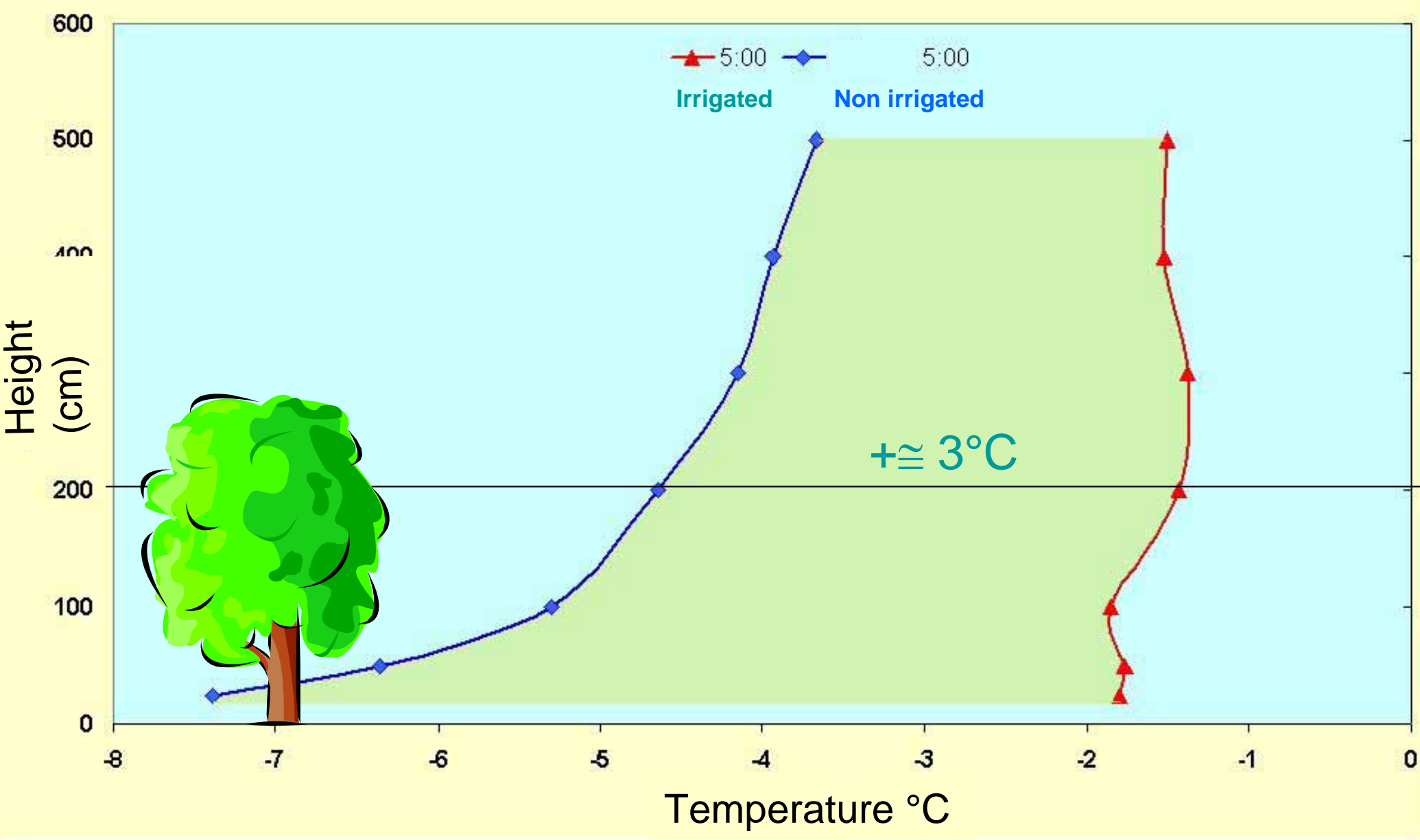


Under-plant sprinklers

The goal is to maintain the wetted cover crop temperature near 0°C



Intermittency, lower amounts of water (higher sustainability, lower costs).
Same sprinklers are used for irrigation.
Protects large surfaces



Frost Protection

English Frost Protection Training Units (videos)

Spanish Frost Protection Training Units (videos)

When to Turn Sprinklers On and Off for Frost Protection

FP001 Quick Answer—This quick answer provides information on using a psychrometer or temperature and dew point data to determine when to start and stop sprinklers for frost protection.

Predicting Temperature Trends during Freeze Nights

FP002 Quick Answer—This quick answer gives a method for predicting the change in temperature during a calm, radiation freeze night.

A Simple Method to Measure the Dew Point Temperature

FP003 Quick Answer—This quick answer provides information on how to measure the dew point for use in estimating minimum temperature and for starting and stopping sprinklers for frost protection.

Sprinkler Application Rates for Freeze Protection

MEASURING THE DEW-POINT TEMPERATURE

Materials:

- Metal can
- Thermometer
- Water
- Ice
- Salt, if very cold

▪ When the temperature of the ice-water mixture reaches the dew point, dew or ice forms on the can

When surface temperature reaches the dew point, condensation forms releasing sensible heat to retard temperature drop.




Table 3. Minimum turn-on and turn-off air temperatures (°C) for sprinkler frost protection for a range of wet-bulb and dew-point temperatures (°C)*

Dew-point Temperature	Wet-bulb Temperature (°C)						
	°C	-5.0	-4.0	-3.0	-2.0	-1.0	0.0
0.0							0.0
-1.0						-1.0	0.7
-2.0				-2.0	-0.4		1.3
-3.0			-3.0	-1.4	0.2		1.9
-4.0		-4.0	-2.5	-0.9	0.8		2.4
-5.0	-5.0	-3.5	-1.9	-0.4	1.3		2.9
-6.0	-4.5	-3.0	-1.5	0.1	1.8		3.4
-7.0	-4.1	-2.6	-1.0	0.6	2.2		3.9
-8.0	-3.6	-2.1	-0.6	1.0	2.6		4.3
-9.0	-3.3	-1.7	-0.2	1.4	3.0		4.7

*Select a wet-bulb temperature that is above the critical damage temperature for your crop and locate the appropriate column. Then choose the row with the correct dew-point temperature and read the corresponding air temperature from the table to turn your sprinklers on or off. This table assumes a barometric pressure of 1013 millibars (101.3 kPa).



National Weather Service

Watches, Warnings & Advisories

Local weather forecast by "City, St" or zip code

Frost Advisory



SMS
Servizio Alert
Previsione delle gelate ANGELA

NEW

Iscriviti al servizio 



- Forecast of night temperatures depending on foreseen weather conditions and on temperature at sunset. At 10.00 and 01.00 forecasted temperatures and measured temperatures are checked.
- In case of temperatures below 0 °C, a SMS is sent to all registered users





Appropriate pest management using meteorology and microclimatology can reduce losses: the tactical use of weather information in the prediction of p&d development may allow for near-optimum use and timing of pesticides and/or release of predators.

WARNING



PESTICIDE USE

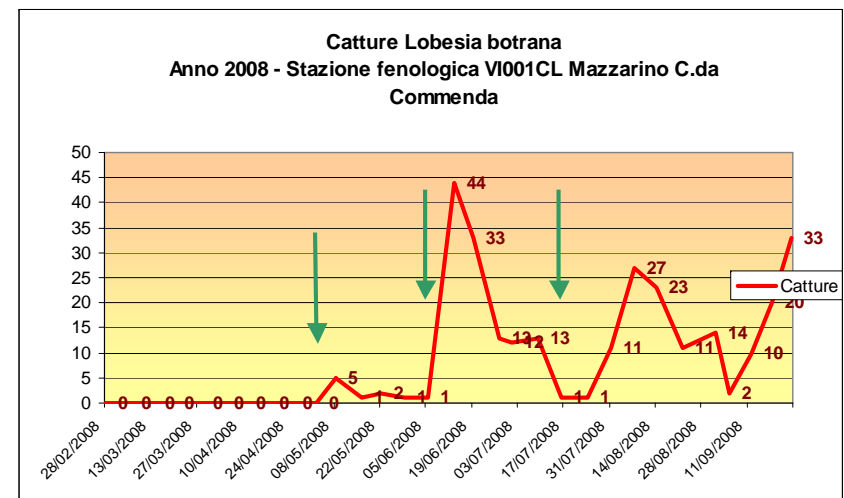
FOR INFORMATION
CONTACT 1-234-567-8901
DATE SPRAYED _____

COMPANY NAME



SAFE

- To guide farmers in the integrated pest management, improve effectiveness of treatments, reduce or avoid pesticides impact and improve quality
- A network of monitoring sites, using pheromone traps or test plots, gives the basic informations to run simulation models
- The system uses weather forecasts and climatology to estimate periods of next insect generations, guiding farmers to choose the best moment for the treatment
- When a threshold is approaching, a SMS alerts the farmer, so that he can plan a treatment if necessary



Velkommen til PlanteInfo

Vandregnskab

PlanteInfo-redaktionen 10/05/2004

Vandregnskab er et særdeles nyttigt program til styringen af vandning. Nye brugere kan læse mere ved at følge linket foruden. Til gamle brugere er her lidt information om Vandregnskab i 2004.

Beregnelsen af potentiel fordampning er i 2004 ændret til den såkaldte Makkink-formel, som anbefales af DJF og DMI. Den daglige potentielle fordampning bliver herved i gennemsnit 0,3 mm højere.

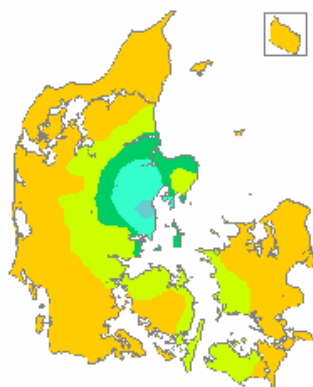
Der er tilføjet en yderligere forklarende figur (klik på Detaljer i Vandbehov). Denne figur viser den aktuelle fordampning fra jordoverfladen og ved afgrødens forbrug af vand rodzonen. Der er en ganske betydelig fordampning fra jordoverfladen efter nedbør.

Der er rettet en fejl i beregningen af vandbehov for kløvergræs.

[Læs mere...](#)

Nedbør

10/05 kl. 08 - 11/05 kl. 08



Nedbør i egen hjemmeside

Redigér kommentar

Vejledning

Se hvordan du bedst bruger PlanteInfo.

[Læs mere...](#)

Her bor jeg ...

Den røde prik på kortet viser hvorfra du får lokale vejrdata i prognoser, eVarsling m.m.



Grid 0949 [NY](#)

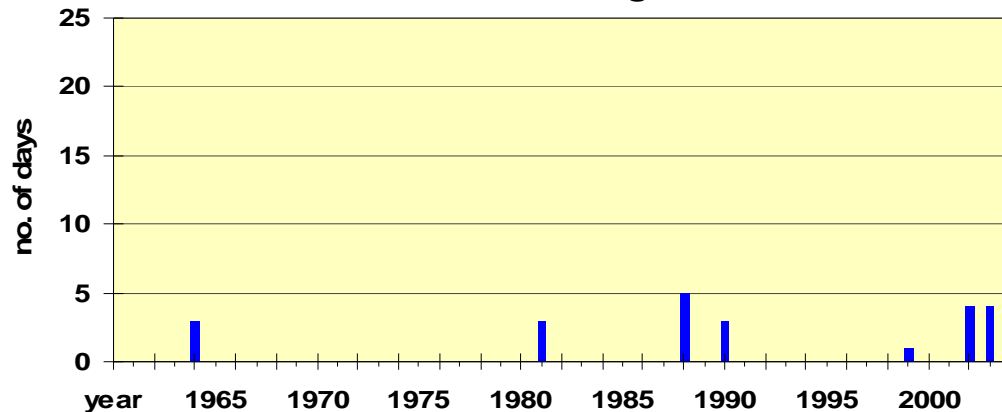
[Afmeld SMS og Email uden at logge ind](#)



The activities of the German Weather Service in the field of agroclimatology

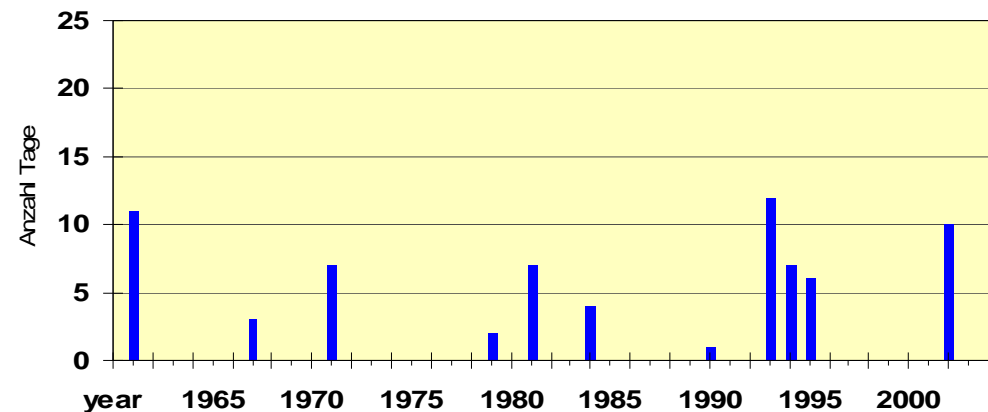
risk from cereal aphids no. of days
with >4 aphids /ear+flag leaf, May-Jun 1961-2004

Schleswig



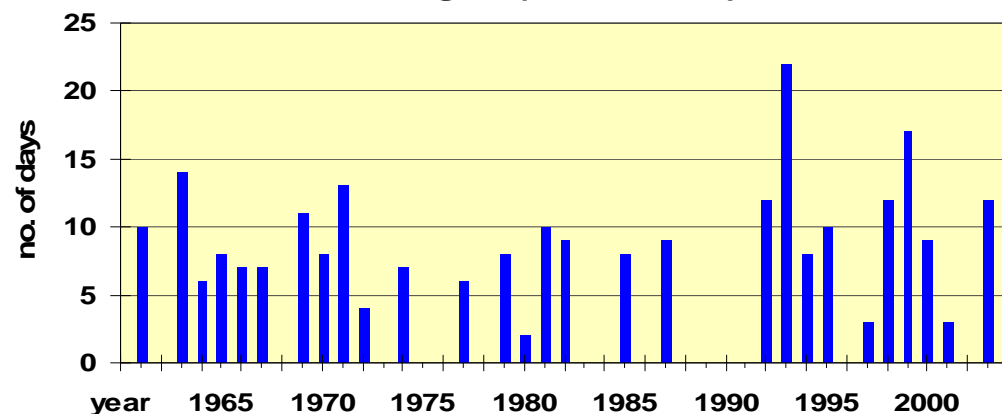
risk from cereal aphids

Potsdam



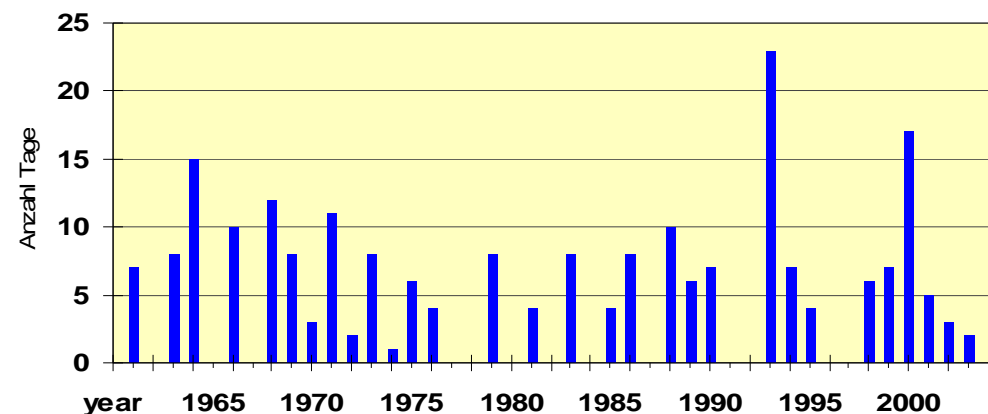
risk from cereal aphids

Cologne (Köln/Bonn)



risk from cereal aphids

Augsburg



Plasmo Project - PLASMO on-line



PLASMO Project - Netscape 6

File Edit View Search Go Bookmarks Tasks Help

http://agromet-cost.bo.ibimet.cnr.it/plasmo/ Search

Home My Netscape Search Shop Bookmarks Net2Phone



Plasmo Project



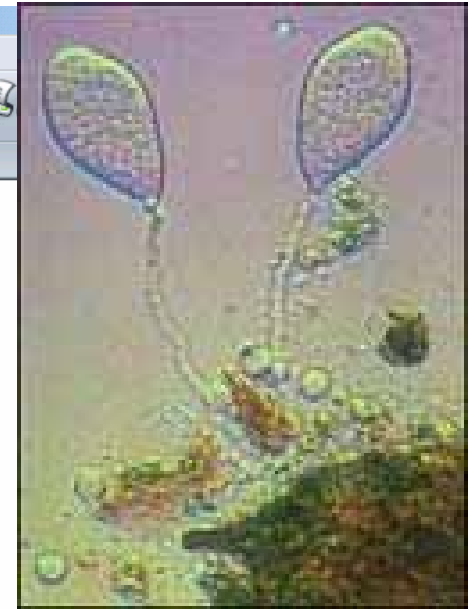
The model, called Plasmo (Plasmopora Simulation Model), simulates grapevine downy mildew biological cycle on the basis of agrometeorological parameter, allowing the best timing for fungicide treatments. The model reliability was evaluated during several years of research, comparing the results obtained by applying traditional methods of crop management with those planned according to model simulation.

Plasmo was implemented by collaboration among several institute: [Institute of Biometeorology \(IBIMET - Firenze\)](#) – National Research Council (CNR); [Department of Agronomy and Land Management \(DISAT\)](#) – University of Florence; Centre for the Application of Computer Science in Agriculture (Ce.SIA) – Accademia dei Georgofili. The online version has been developed and is provided by [Institute of Biometeorology \(IBIMET - Bologna\)](#).

PLASMO Project
COST 718
By
Simone Orlandini, Federica Rossi, Massimiliano Magli

Document: Done (0.24 secs)

Start | PLASMO ONLINE - Micros... | PLASMO Project - Net... | Microsoft PowerPoint - [... | Immagine - Paint | IT | 5 | << 10.13



<http://agromet-cost.bo.ibimet.cnr.it/plasmo/>

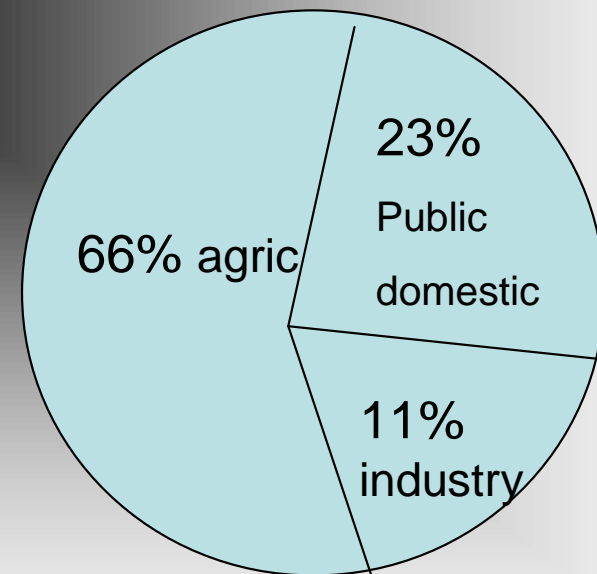


Irrinet Emilia Romagna – Online DSS on Irrigation:



2020 MILLIONS
m³ water are withdrawn

Withdrawal is 130 Mm³ higher
than recharge, thus inducing a
progressive subsidence



What is a "best management practice for water?"

A practical, affordable approach to conserving water without sacrificing productivity, maximizing its use efficiency.

Good practices for water management

Water saving



- Dry farming
- Crop selection and management
- Improvement of efficiency of irrigation equipments, reduction of losses

- 
- Water balance calculation, agrometeorological support
 - Decision Support Systems and Advisories

Re-utilization



- Depuration/ phytodepuration
- Irrigation using waste water

To save water, there is not a unique solution, but several strategies can be used together. The saving may reach 20-25 %.

IRRIGATION METHODS

The selected irrigation technique has a great importance in limiting water use, and also on leaching of nutrient in soil.

- **Flooding**
- **Furrow**
- **Subirrigation**
- **Sprinkling**
- **Microirrigation (drip, microjects)**

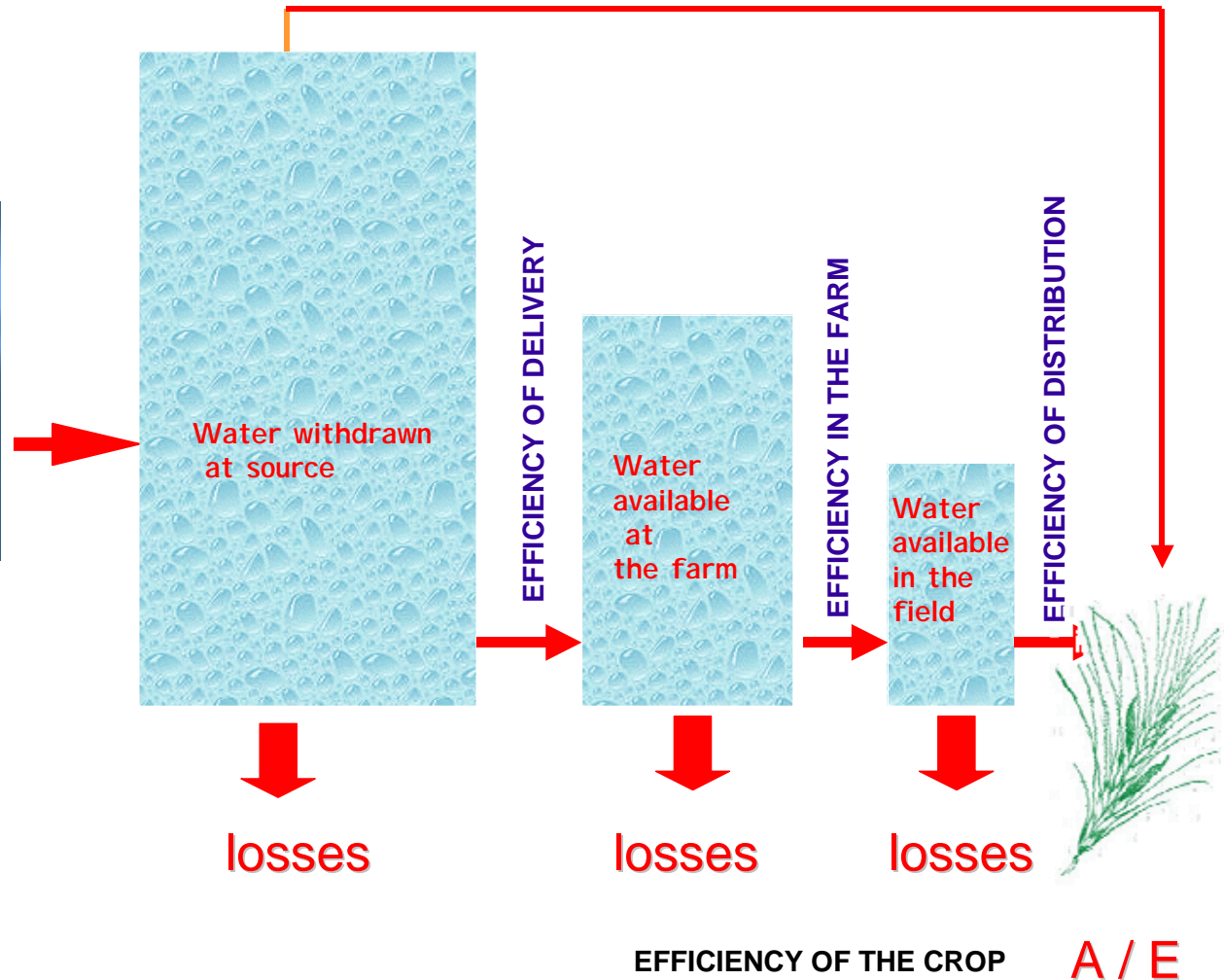




At basin level

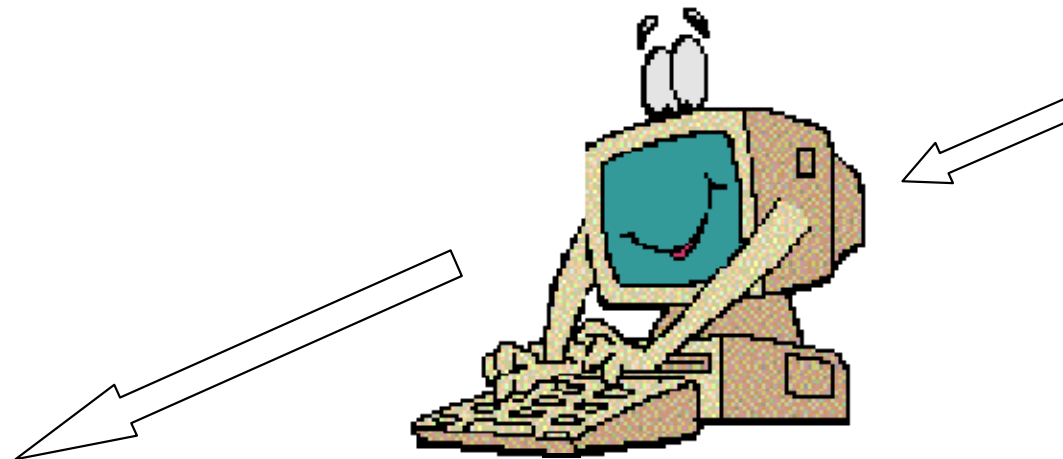
Global efficiency

Transport between the source and the farm



Information to the farmers:

Decision support systems for irrigation



Improvement in efficiency of irrigation is possible by modulating timing and quantity of water as a function of meteorological variables, evapotranspiration assessment, and using informing tools for dissemination

When and how much to irrigate?

What is the proper irrigation system?

CER is a consortium distributing water and the most important hydraulic infrastructure



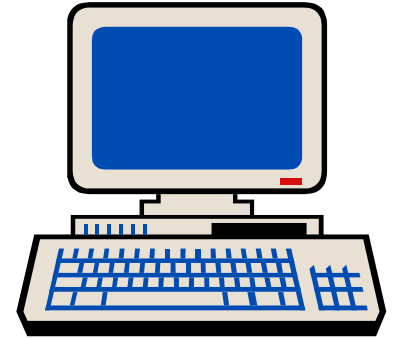
Founded by local Authorities and from regional reclamation consortiums

- Through a channel from Po river water is made available over a 3000 Km² area and the water resources (68m³/s) allow to satisfy the irrigation needs.

- Water is furnished together with the information for its rational and sustainable utilization (IRRINET).

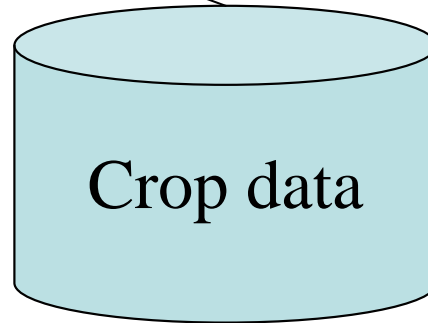
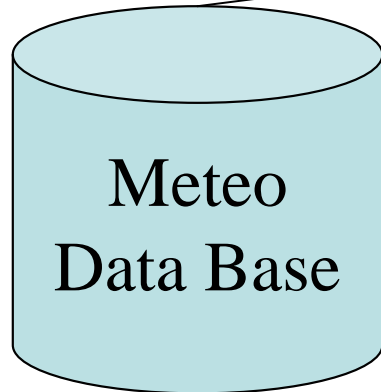
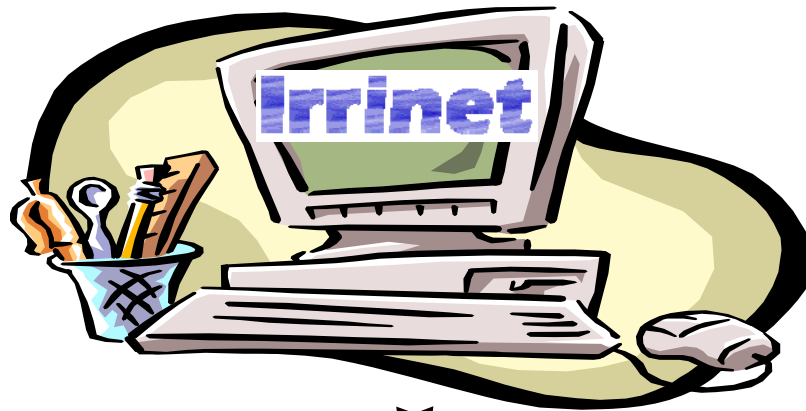


Irrinet in pills

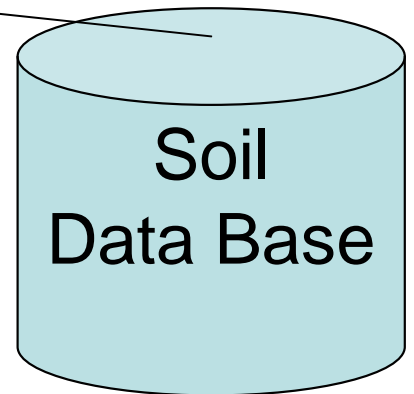


- Started in 1984 with public founding to test telematics in agriculture (Videotex)
- In the WEB in 1999
- GIS extensions & advanced WEB interfaces in 2002
- From 2003: WEB + SMS (IrriSMS)
- Involves more than 11000 farms, covering almost 22% of the irrigated area in the region
- Its application in the 2010 allows a water saving for more than 50 millions m³

Irrinet irrigation model



CER



Irrinet



CONSORZIO DI BONIFICA
DI SECONDO GRADO
PER IL CANALE
EMILIANO ROMAGNOLO

venerdì 28 novembre 2003

Servizio interattivo di supporto all'irrigazione

Servizio per utenti registrati

Il servizio permette all'utente di salvare i propri profili colturali e di utilizzare diversi tipi di dati aziendali permettendo una personalizzazione dell'informazione irrigua

Codice azienda:

Password:

[Entra](#)

Per registrare un'azienda al servizio vai a [registrazione on-line](#)
Oppure compila il [modulo di adesione](#)

Servizio per utenti non registrati

Il servizio fornisce informazioni irrigue basate su dati di area senza utilizzare dati aziendali forniti dall'utente

[Entra](#)

Registered users: farm, soil, crop data are kept in memory and used from the program.

Unregistered users: users can interrogate by selecting crop and finding the farm location

Subscription Form



CONSORZIO DI BONIFICA
DI SECONDO GRADO
PER IL CANALE
EMILIANO ROMAGNOLO

Irrinet

[Home](#)

[Richiedi assistenza](#)

Registrazione nel servizio di una nuova azienda

Inserire i dati necessari alla registrazione. I campi contrassegnati con (*) sono obbligatori.

Il codice azienda viene fornito in automatico dal sistema al termine della registrazione. I dati inseriti possono essere modificati in qualsiasi momento dal menù principale del servizio.

Ricordarsi che la password scelta sarà sensibile al maiuscolo/minuscolo che va rispettato in fase di accesso.

Se viene inserito un indirizzo di email valido si riceverà una email di conferma con i dati di registrazione.

Codice azienda

Password (*)

Fare attenzione al maiuscolo/minuscolo delle lettere

Descrizione

Indirizzo

Località

Provincia

Scegliere una provincia ▼

Comune

Scegliere un comune ▼

Email

Cellulare

Necessario per attivare il servizio IrrisMS

[Registra la nuova azienda](#)

Irrinet GIS approach

Click on the map to find user farm and download the following data:

- METEO DB: Meteorological data: daily ET, temperature; hourly rainfalls
- PEDO DB: Soil texture
- WATER DB: average water table depth

Irrinet CONSORZIO DI BONIFICA DI SECONDO GRADO PER IL CANALE EMILIANO ROMAGNOLO

Irrinet | Home Servizio Anonimo Servizio interattivo di supporto all'irrigazione

Avvia calcolo consiglio

Quadrante selezionato 1580(VEDRANA)
Batteria falda: 1980

Canali
Ferrovie
Fiumi
Centri Urbani
Urbano
Altre strade
Strade provinciali
Strade Statali
Autostrade
Limiti Comunali
Limiti provinciali

Start Irrinet Emilia Romagn... Microsoft PowerPoint - [P...]

15.59

Input Data Form: focus on soil data

Registrazione nuova coltura

Tipologia culturale

COLTURA:

DESCRIZIONE:

Il menù a tendina contiene la lista delle tipologie di coltura irrigua gestite dal sistema

Campo facoltativo: serve per differenziare appezzamenti diversi della stessa coltura

Dettaglio colture arboree

SESTO DI IMPIANTO: Distanza sulla fila m: Distanza tra le file m:

CONDUZIONE INTERFILARE:

DATA DI RACCOLTA:

VIGORE PORTINNESTO:

ANNO DI IMPIANTO:

FORMA DI ALLEVAMENTO:

Le informazioni sul sesto di impianto sono obbligatorie per la colture di tipo arboreo

Dati terreno

PENDENZA:

ORIZZONTI e GRANULOMETRIA

Ordine	Spessore metri	Sabbia %	Argilla %	Scheletro %	
1	1,4	15	32	0	Modifica

Possono essere inseriti uno (obbligatorio) o più orizzonti di suolo ciascuno con la propria granulometria. Inserire i valori di sabbia e argilla (opzione "da granulometria") oppure scegliere una classe tassaturale standard nel caso di unico orizzonte usare lo spessore standard di 1,4 metri

DA GRANULOMETRIA: Scheletro:

Impianto irriguo

TIPO IMPIANTO IRRIGAZIONE:

CARATTERISTICHE IMPIANTO MICROIRRIGUO: Distanza erogatori sulla fila m: Distanza erogatori tra le file m: Portata singolo gocciolatore l/h:

Questi valori sono obbligatori nel caso di microirrigazione

Dati climatici

STAZIONE METEOROLOGICA:

BATTERIA FALDA:

Data rilevazione	Profondità cm
17/04/2008	288

PLUVIOMETRO AZIENDALE:

La stazione meteo viene assegnata in base alla localizzazione sulla mappa operata nella pagina precedente, può essere modificata manualmente scegliendo dal menù a tendina

La batteria di falda viene assegnata in base alla localizzazione sulla mappa operata nella pagina precedente, può essere modificata manualmente scegliendo dal menù a tendina. Se compare "Batteria di falda aziendale" significa che non ci sono batterie di falda presenti nell'area; in questo caso gli eventuali dati di profondità falda possono essere registrati dall'utente andando in menù principale > Falda.

Per definire un nuovo pluviometro aziendale ritornare al menù principale. Per ogni pluviometro possono essere registrati durante la stagione dati di pioggia in alternativa a quelli forniti dalla stazione meteo

The system provides soil data, automatically downloaded from Regional Soil Information System; if the data are not similar to those of the farm, the user can input their own data from field analysis.

Irrinet Output page

19 MELONE sabbioso

Stazione meteo: CAMPAGNOLO EMILIA - Batteria di falda: 05RE
I dati della stazione meteo sono aggiornati a **lunedì 21 aprile 2008** (ultimo dato pervenuto)
Suolo: Spessore 1,4 mt Sabbia 85% Argilla 4% Scheletro 0%
Impianto irriguo: Impianto a pioggia fisso

Consumo giornaliero effettivo della coltura in mm (ETE)	2,4
Data prevista per l'irrigazione	24/04/2008

[Visualizza Grafico >](#)

20 MELONE argilloso

Stazione meteo: CAMPAGNOLO EMILIA - Batteria di falda: 05RE
I dati della stazione meteo sono aggiornati a **lunedì 21 aprile 2008** (ultimo dato pervenuto)
Suolo: Spessore 1,4 mt Sabbia 4% Argilla 60% Scheletro 0%
Impianto irriguo: Ala gocciolante
Sesto erogatori: 0,3mt x 2mt - Portata erogatore: 2,0lt/h - Portata impianto: 3,333mm/h

Consumo giornaliero effettivo della coltura in mm (ETE)	2,4
Data prevista per l'irrigazione	Oggi
Volume irriguo da fornire alla coltura in mm	4,3
Tempo di funzionamento dell'impianto irriguo in ore e minuti	1:17
Numero di giorni previsti per l'irrigazione successiva	2

[Visualizza Grafico >](#)

[Inserisci irrigazione >](#)

predicted
evapotranspiration

Next day to
irrigate

Water irrigation
amount (mm when
sprinkler irrigation
or h /min when
microirrigation
applied)

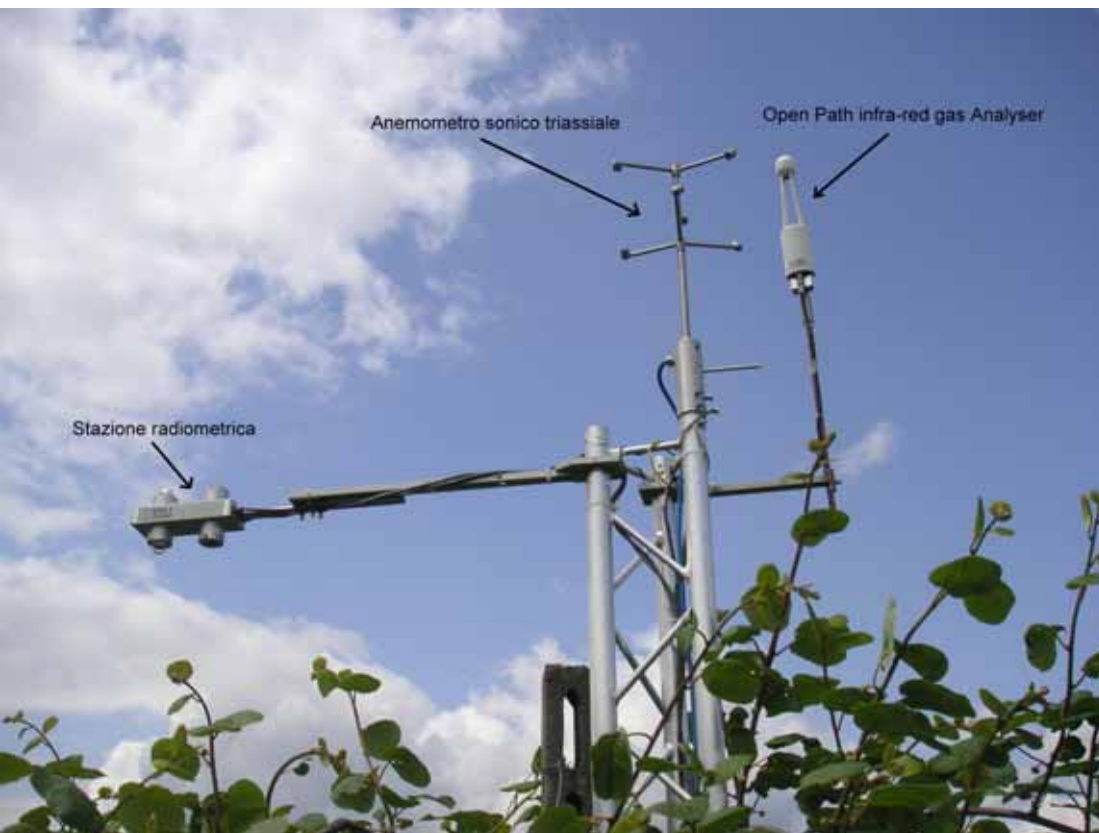
IrriSMS structure



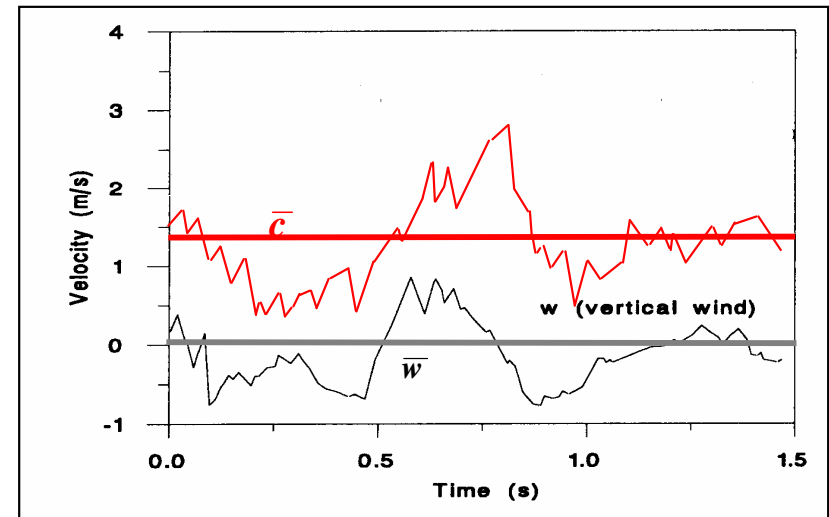
Message sender: who is providing this service: an irrigation company, a public body etc..

Farm crop: peach, corn, sugar beet

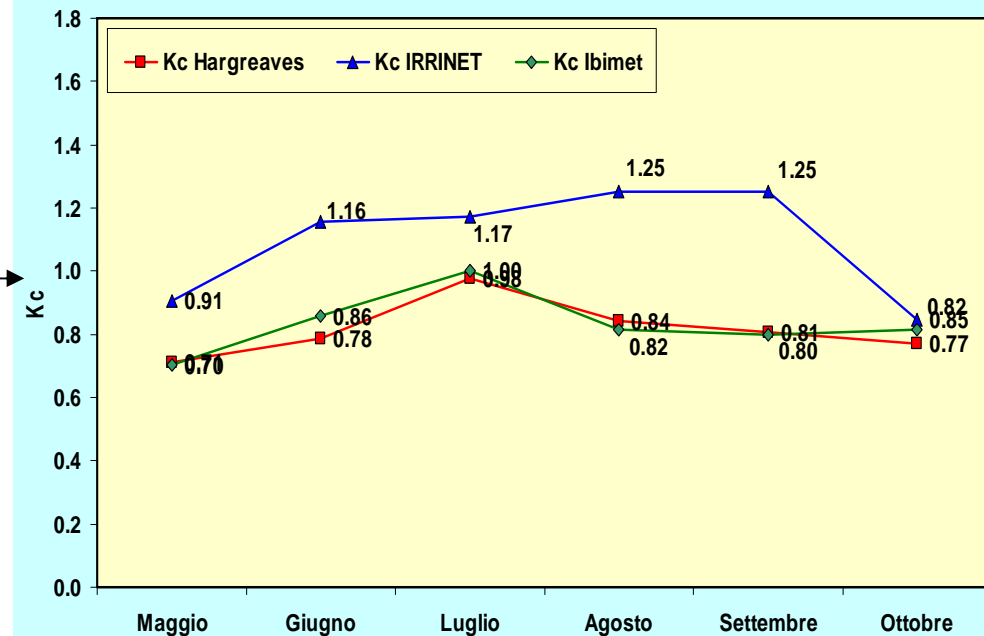
Irrigation scheduling: yesterday crop evapotranspiration; when you have to irrigate; (forecasted data); water applying to that date



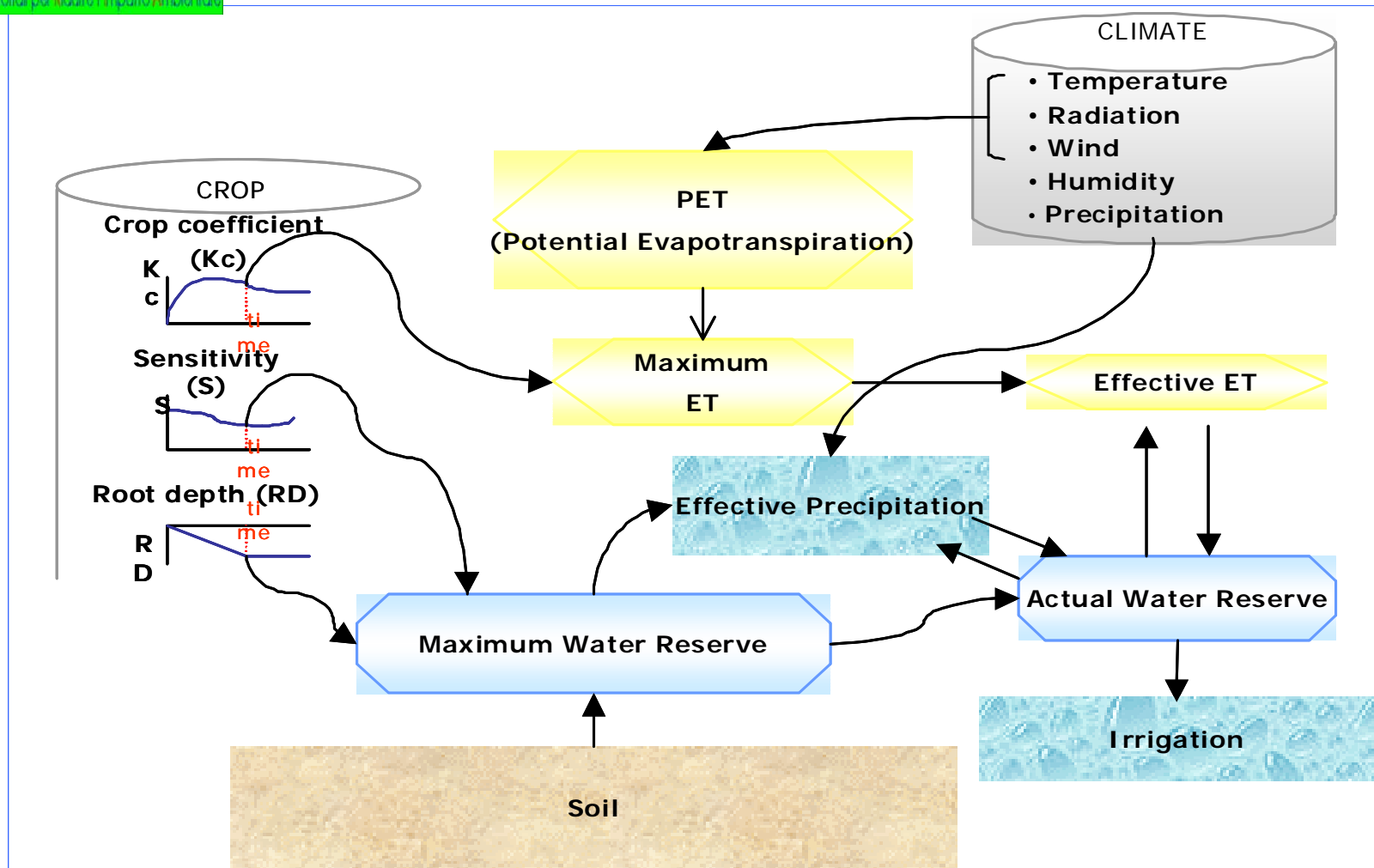
Micrometeorological approach to assess water requirements of crops:



Ex: for kiwifruit, measured crop evapotranspiration allowed to give new indication to irrigation schedule programs, able to save 15-20% water



Criteria





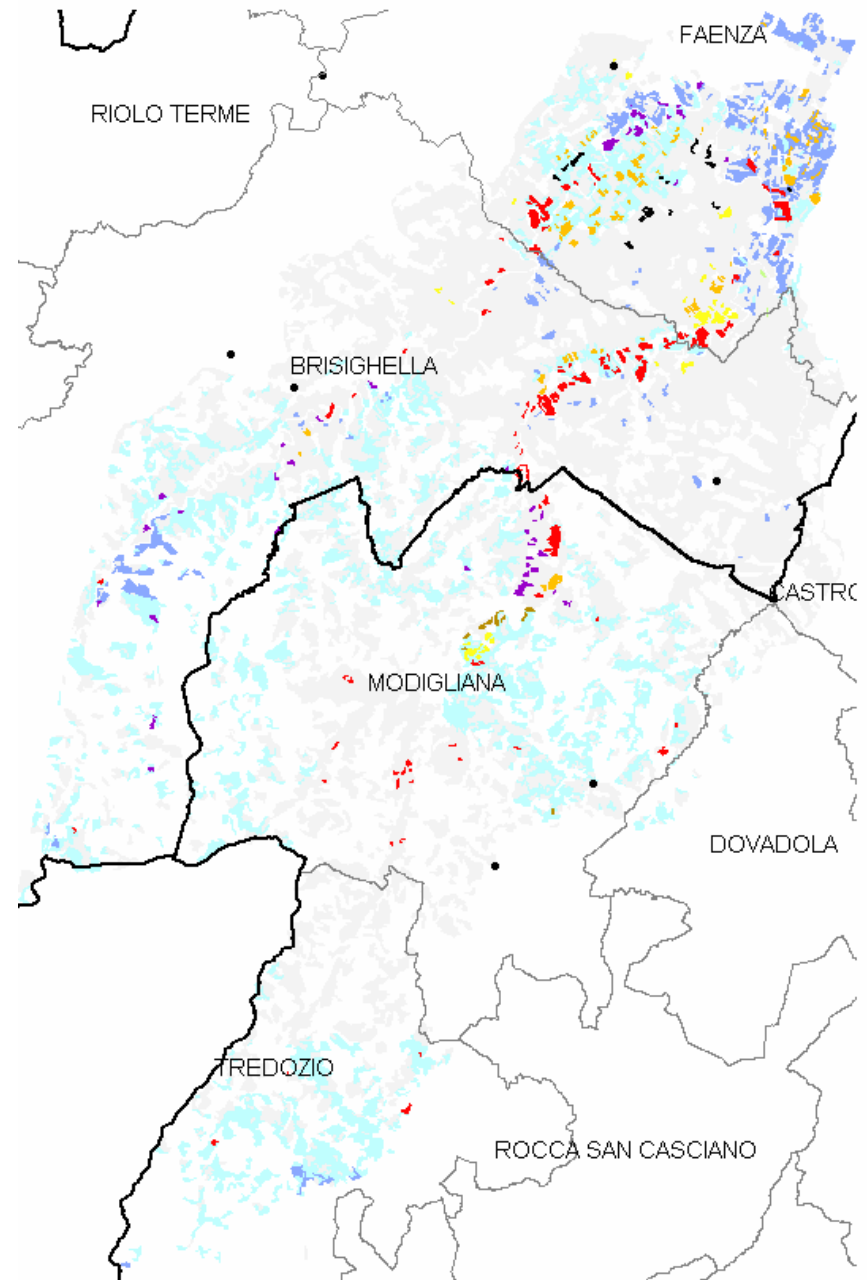
Stima delle esigenze irrigue

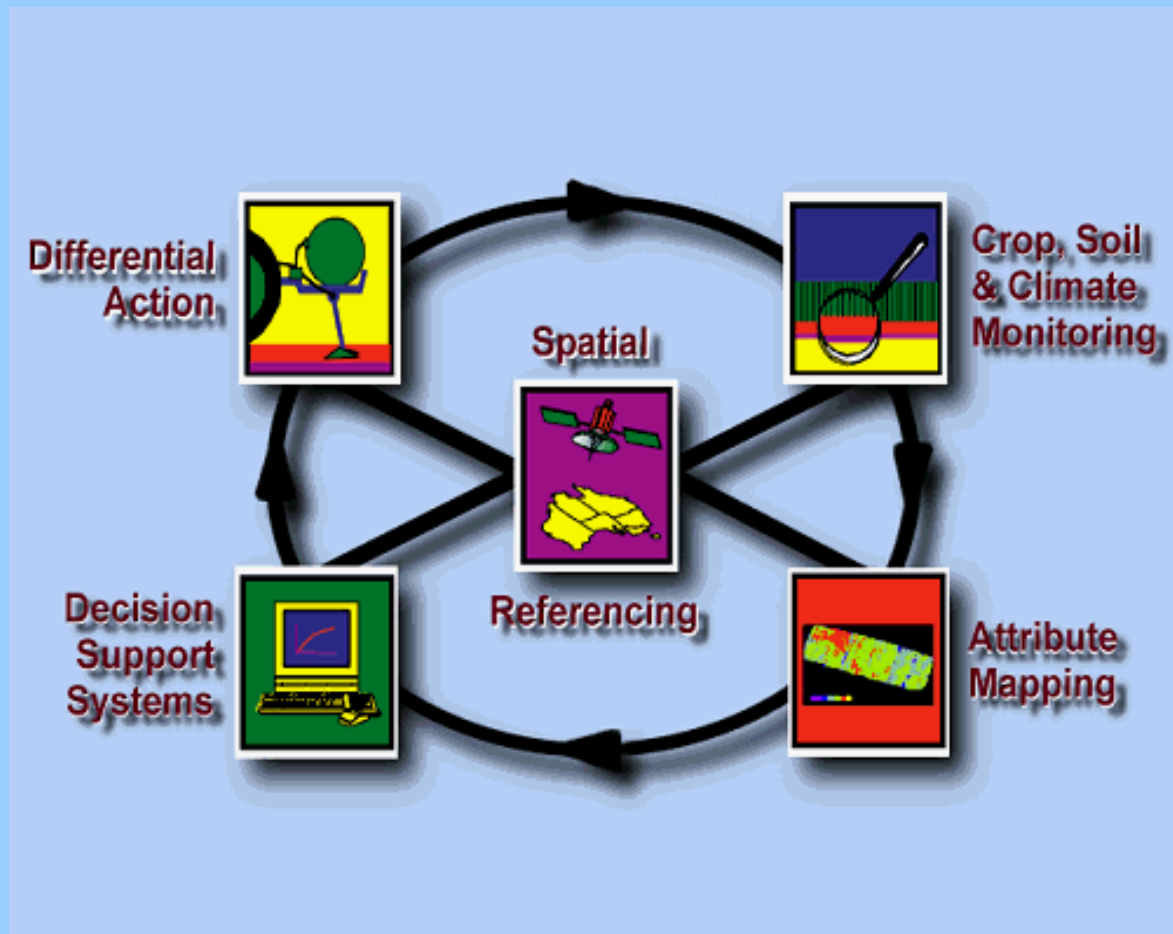
H2O - Irrigazione (mm)

Condizione Colturale:

Storia della particella

01/01/2008 - 20/09/2008

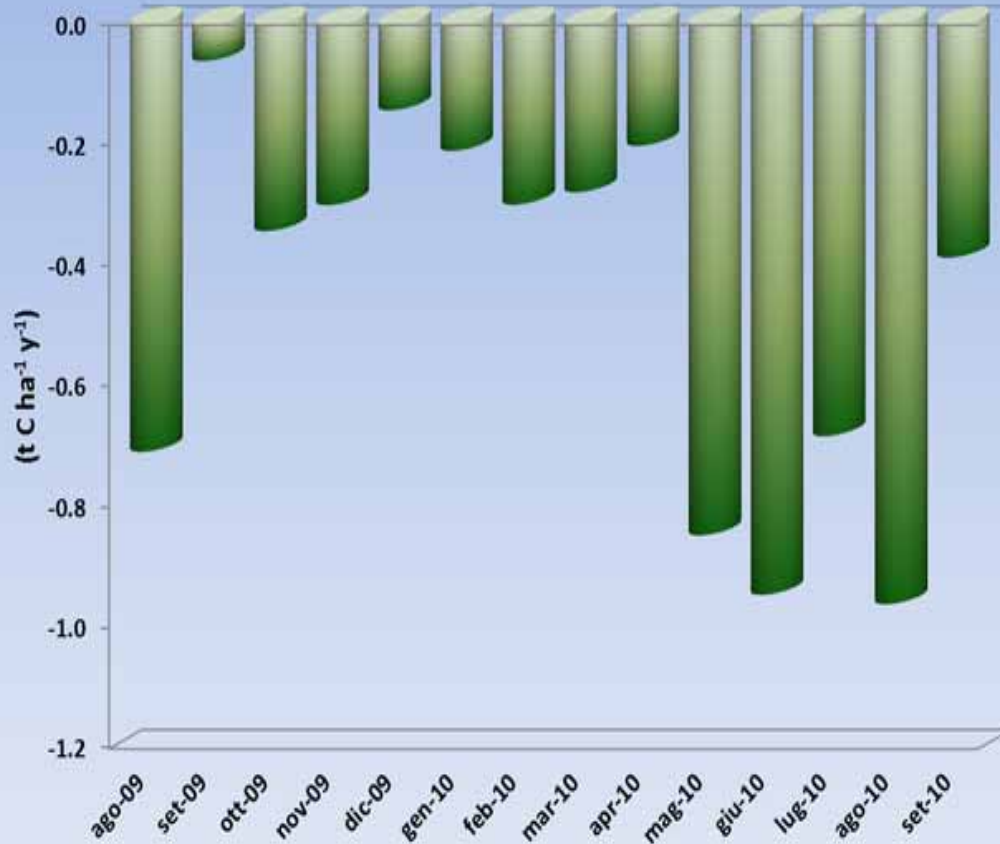




DSS on Digital Agriculture: farm-level mapping, comprehensive data base creation on resources generated through space- based inputs and field observations to make a detailed plan of work for maximizing yield and reducing inputs and their costs.

5 R rule: “applying the Right input in the Right amount at the Right time in the Right place and in the Right manner”.

Fissazione del carbonio



NEE

(t C ha⁻¹ y⁻¹)

-5.6



DOCUMENTO TECNICO

Valutazione dei gas serra emessi e dell'energia rinnovabile utilizzata nel ciclo di vita dei prodotti agroalimentari

Green Thinking



Sink - source

$$5.6 - 1.35 = 4.25 \text{ tC/ha/yr}$$

$$5.6 - 3.1 = 2.5 \text{ tC/ha/yr}$$

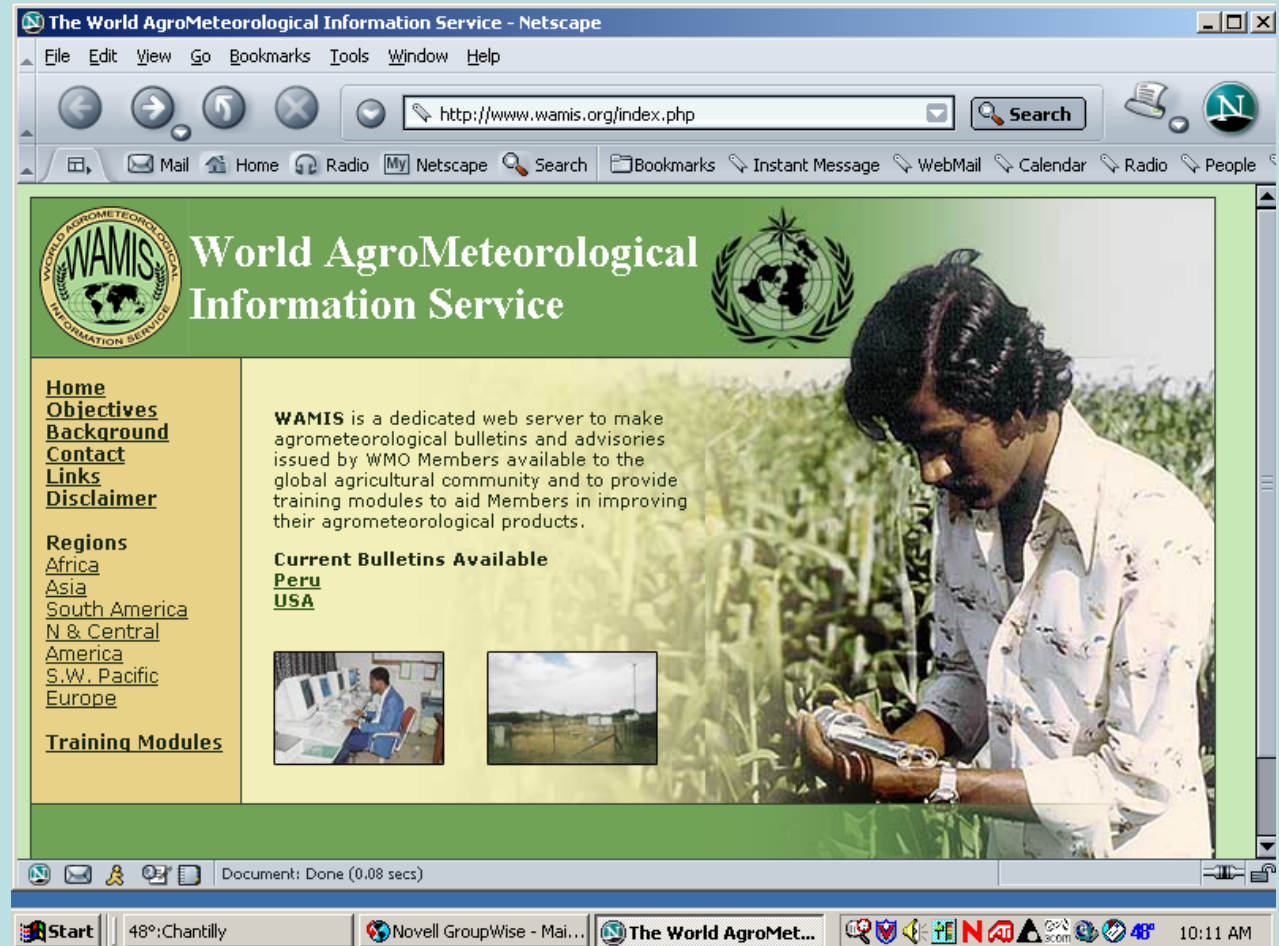
COLTURA	EMISS CO2 (tC/yr/ha)	+ transport to Germany (tC/yr/ha)
albicocco	4.91	6.64
susino	8.46	11.92
pesco	11.08	14.33
arancio	4.96	11.40

World Meteorological Organization



Information for farmers-
government/agro-
business

DSS on agricultural
management
strategies, land use
planning, water
resource management,
depletion/erosion of soil
resources, economic
evaluation of impacts
on yield



The screenshot shows a Netscape browser window displaying the website for the World AgroMeteorological Information Service (WAMIS). The browser's address bar shows the URL <http://www.wamis.org/index.php>. The website header features the WAMIS logo on the left and the United Nations logo on the right, with the text "World AgroMeteorological Information Service" in the center. Below the header, there is a navigation menu with links for [Home](#), [Objectives](#), [Background](#), [Contact](#), [Links](#), and [Disclaimer](#). A "Regions" section lists [Africa](#), [Asia](#), [South America](#), [N & Central America](#), [S.W. Pacific](#), and [Europe](#). A "Training Modules" section is also present. The main content area includes a paragraph describing WAMIS as a dedicated web server for agrometeorological bulletins and advisories, and a section for "Current Bulletins Available" with links for [Peru](#) and [USA](#). There are two small images: one showing a person at a computer workstation and another showing a landscape with a windmill. The browser's status bar at the bottom indicates "Document: Done (0.08 secs)" and the system tray shows the time as 10:11 AM.

