«The sciences do not try to explain, they hardly even try to interpret, they mainly make models»

John von Neumann

Experiments to analyse biophysical systems

Measurements on rice plants grown in controlled environment
Analysis in lab

Modelling

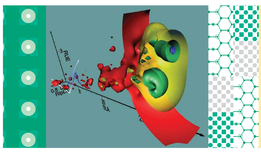
From systems "in vivo"
To systems "in silico"

$$\frac{dV}{dtV} = \frac{\Phi \cdot L}{\Phi + L} \cdot (\Delta\Psi + P - Y)$$

$$bellF_i \quad \frac{\delta}{\gamma\sqrt{2\pi}} \cdot exp\text{-}\frac{(DVS_i - 1.8)^2}{2\gamma^2}$$

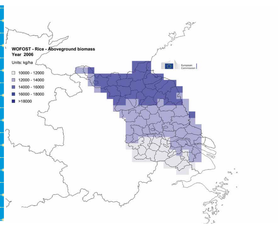
$$TF_A = \frac{f_{A1} + \Sigma\,(f_{AK} \cdot \sqrt{f_{AK-1}})}{f_{A1} + f_{B1} + \Sigma[(f_{AK} \cdot \sqrt{f_{AK-1}}) + (f_{BK} \cdot \sqrt{f_{BK-1}})]}$$

Reproducing the behaviour of biophysical systems using computers

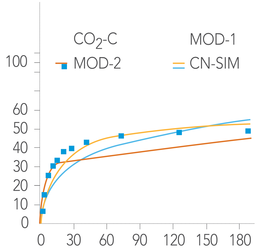


The hyperspace of the parameters of a crop growth model

Monitoring, yield forecast and management support

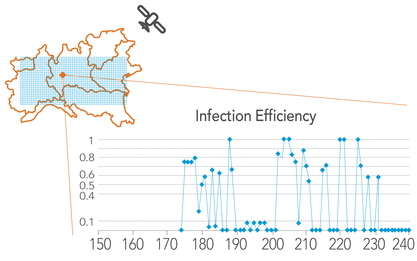


Crop growth simulations at regional scale

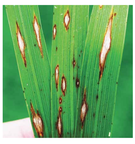


Output simulated by a mathematical model

Early warning systems

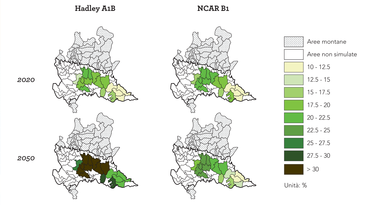


Early warning: infection risk for rice blast



Lesioni fogliari
da brusone su riso

Estimating climate change impact on crop productions



Simulation of climate change impacts on crop productions

Progetto UNI PER EXPO TUTTI

finanziato da mipaaf Ministero delle politiche agricole alimentari e forestali

LE UNIVERSITÀ PER EXPO 2015 COMITATO SCIENTIFICO DEL CONSORZIO MILANO

UNIVERSITÀ DEGLI STUDI DI MILANO

DiSAA DIPARTIMENTO DI SCIENZE AGRARIE E AMBIENTALI