Council for Agricultural Research and Economics

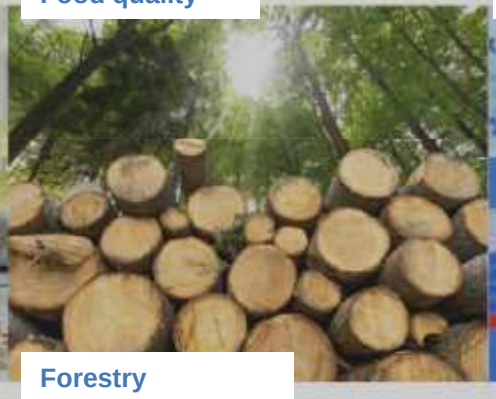

Environment

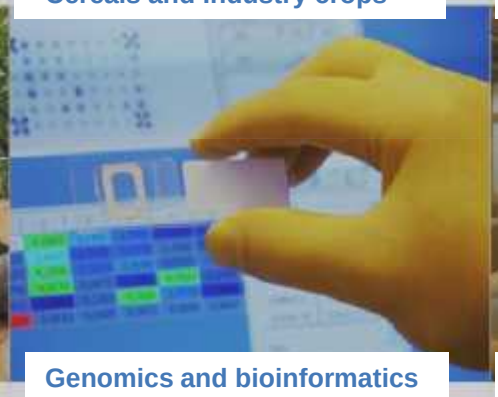

Food quality


Cereals and Industry crops


Fruit trees


Plant pathology


Forestry


Genomics and bioinformatics


Engineering and Food processing


Vegetables and Ornamentals


Politics and Bioeconomics

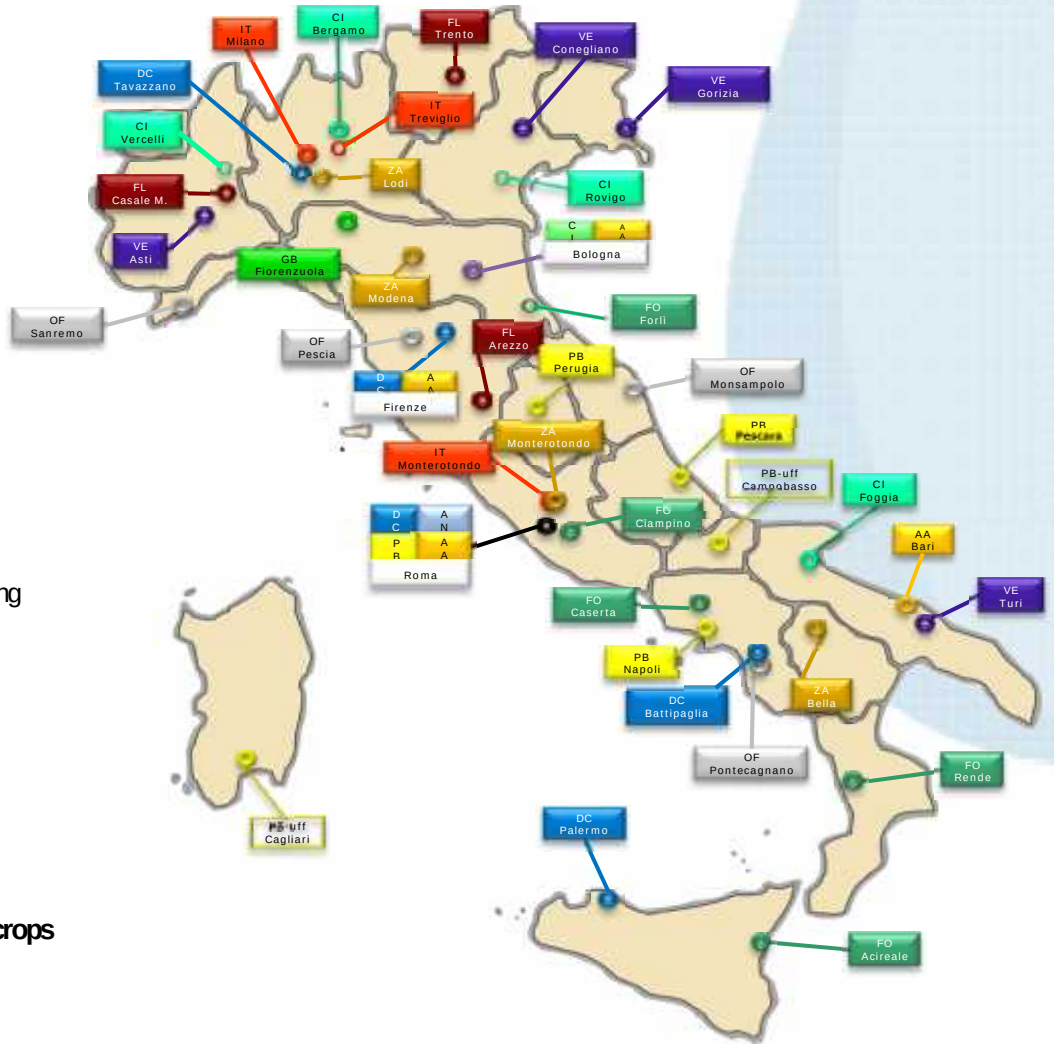

Grapefruit and Enology


Zootechnics and Aquaculture

Joined to support research in agriculture

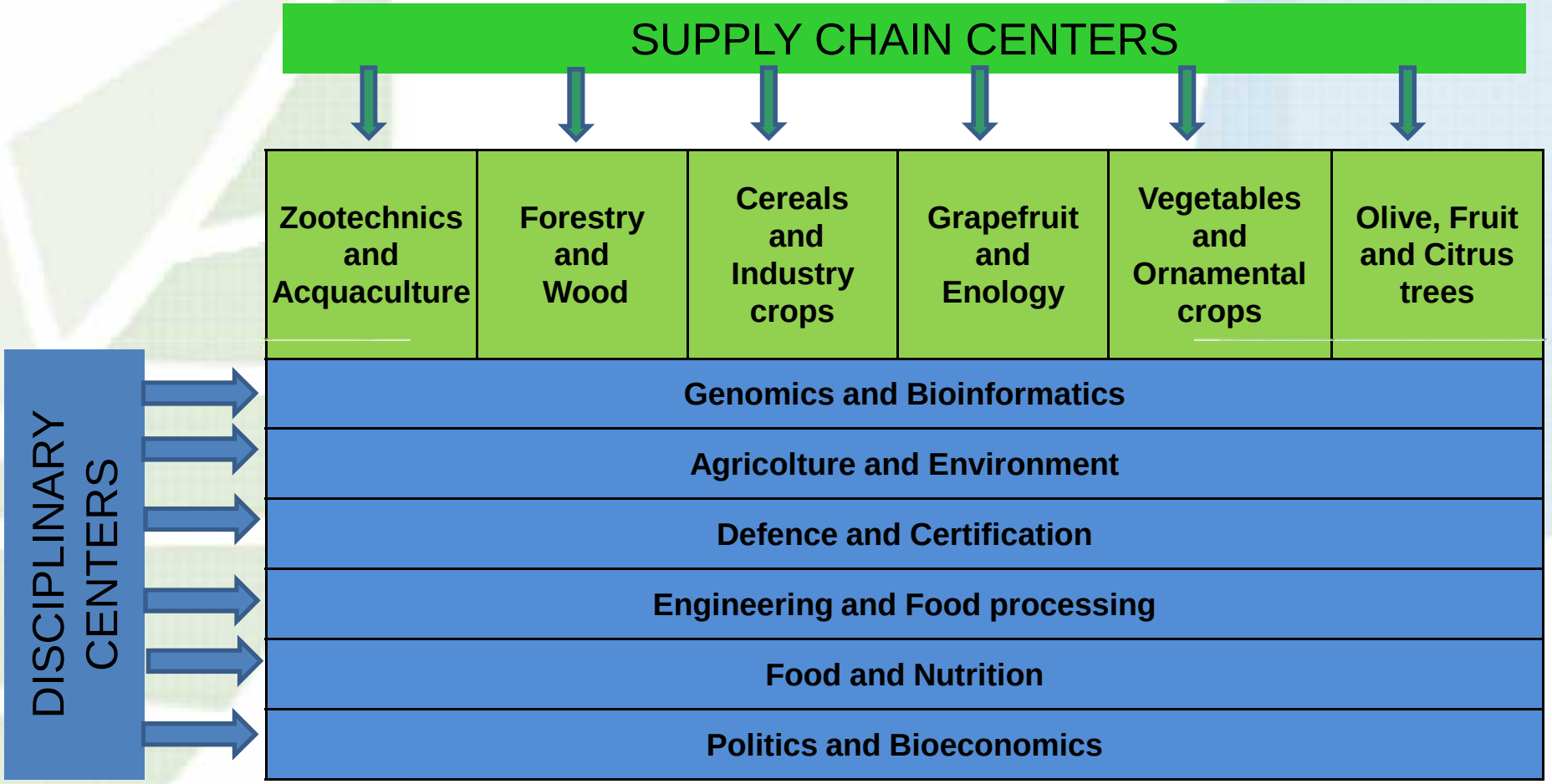
2000 Staff
5300 Hectars of experimental farms

12 Research Centres
40 Units



GB	Genomics and Bioinformatics
AA	Agriculture and Environment
DC	Defence and Certification
IT	Engineering and Food processing
AN	Food and Nutrition
PB	Politics and Bioeconomics
ZA	Zootechnics and Acquaculture
FL	Forestry and Wood
CI	Cereals and Industry crops
VE	Grapefruit and Enology
OF	**Vegetable and Ornamental crops**
OFA	Olive, Fruit and Citrus trees

Organization of CREA



CREA: Research Center for Vegetable and Ornamental Crops Unit of Pescia

1969. Peripherical research unit of the experimental Institute for Floriculture

1988. First seat of the experimental Institute for Floriculture

2018. CREA research Center for Vegetables and Ornamental crops

- Flower and ornamental crops
- Nursery production
- Breeding and selection
- Adaptability evaluation for urban environment
- Energy saving in greenhouse production
- Fertilization and water use efficiency
- Innovative substrates for pot plant production (compost, green waste, zeolites, etc.)
- Alternative products as substitutes to chemistry in agriculture (microorganisms, organic biostimulants, organic mulching, etc.)

- Training and educational activities

Laboratory for physiology




Laboratory for molecular and biochemical analyses

Laboratory for spectrophotometry and gaschromatography analyses

Laboratory for *in vitro* culture and growth chamber

Laboratory for microscopy

Research Center for Vegetable and Ornamental Crops

Congress room

Greenhouse

Water stress trials on Photinia and Viburnum

High-tech greenhouse

BREEDING ACTIVITIES IN *LIMONIUM SINENSE*

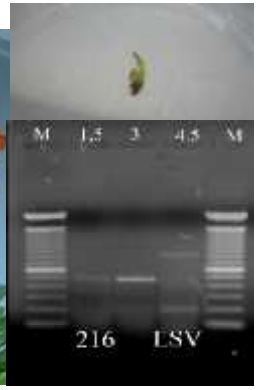
- Selected genotypes collection
- Plan of intra-specific controlled crosses
- Development of specific micro-propagation protocols
- Field trials and evaluation of new varieties

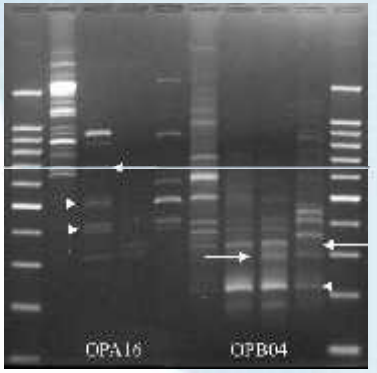
Controlled crosses among selected progenies

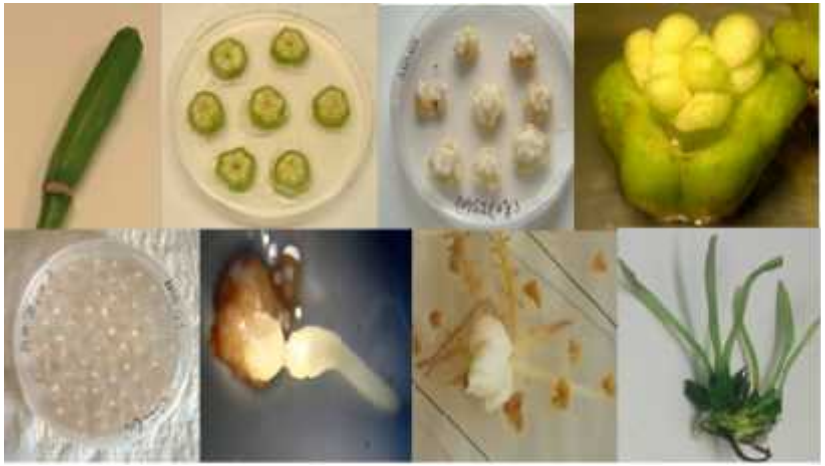
Inflorescence details of new varieties

BREEDING AND VIRUS DETECTION IN LILY

- Hybrids embryo rescue
- Molecular analysis
- *In vitro* and *in vivo* propagation
- Virus detection

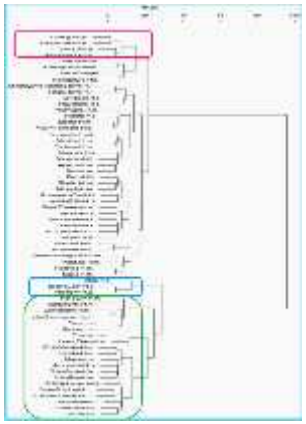


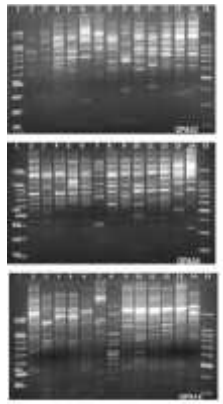




BREEDING OF *HYDRANGEA*

- **Morphological and genetic characterization**
- ***In vitro* and *in vivo* propagation**
- **Effects of colored shading net on the cultivation**
- **Hybridization and selection**





VALORIZATION OF ITALIAN AND EUROPEAN WILD ORCHIDS

- **Development of *in vitro* germination protocols**
- **Asymbiotic and symbiotic micropropagation techniques**
- **Acclimatization and cultivation**
- **Molecular analysis, conservation and breeding**

European orchids of different genera *(Cephalanthera, Serapias, Ophrys, Anacamptis)*

Phases of *in vitro* germination

CHARACTERIZATION OF *ARAUCARIA ARAUCANA* (MONKEY-PUZZLE TREE)

- Valorization of genotypes selected by Pistoia's nurseries
- Molecular analysis
- Morphometrical characterization
- Definition of a descriptors list

***Habitus* variability**

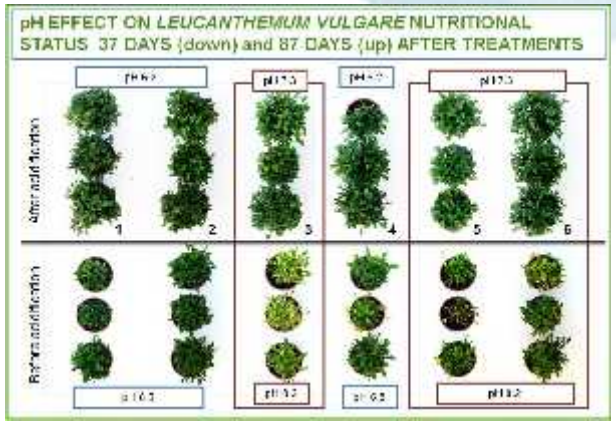
Mature male inflorescens - Immature female pine-cone - Wind pollination - Trunk scales

WEED CONTROL FOR POTTED PLANTS

- Eco-friendly solutions
- Innovative mulching products
- Reduced inputs of chemical products
- New patent for organic mulching (2014): Biopac®

IMPROVING CROP PERFORMANCE IN SUBSTRATE CULTIVATION SYSTEMS

- Innovative peat-free substrates
- Use of amendments, biochar, zeolites, microorganisms and biostimulants
- Soilless cultivation
- Strategies for reducing water and nutrient leaching



CONTROLLED-RELEASE FERTILIZERS TO INCREASE EFFICIENCY OF NUTRIENT USE AND MINIMIZE ENVIRONMENTAL DEGRADATION






AIR POLLUTION MITIGATION

- **Urban air quality**
- **Green barriers**
- **Use of Mediterranean brush species**

Photinia x fraseri

Elaeagnus x ebbingei

Laurus nobilis

Viburnum lucidum

Arbutus unedo

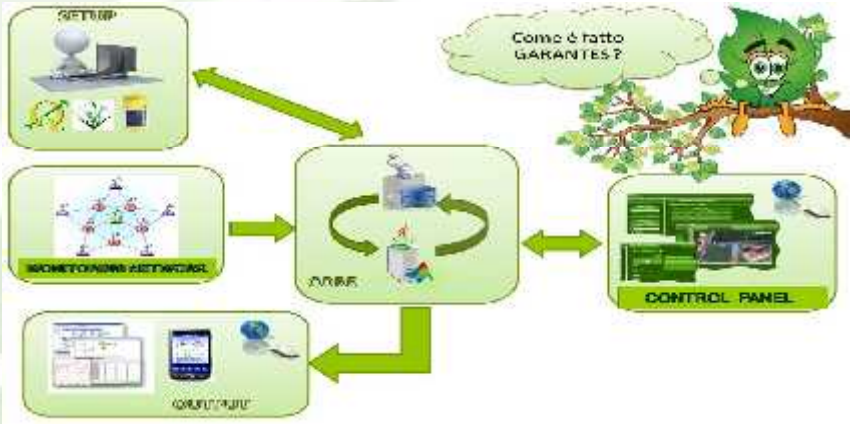
Ligustrum japonicum

Viburnum tinus

Ilex aquifolium

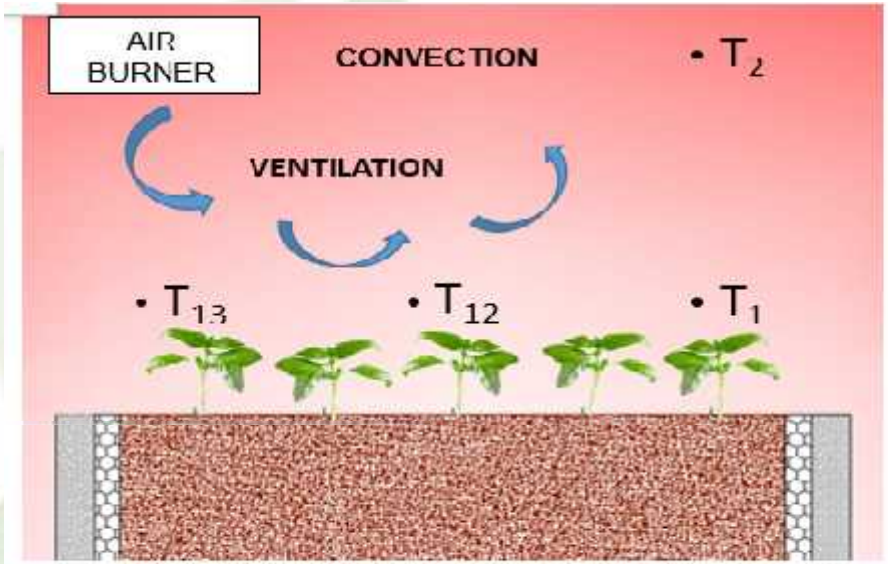
GARDEN MANAGEMENT AND PRECISION AGRICULTURE

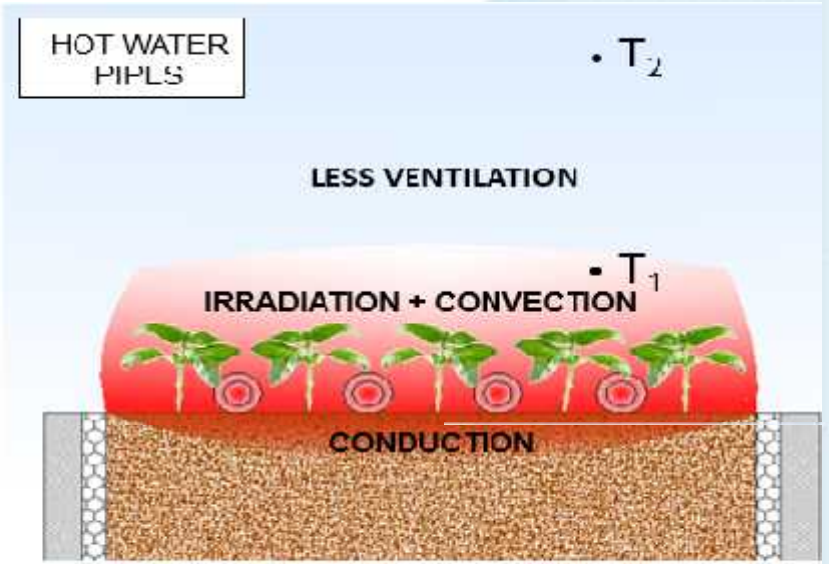
- Automatic irrigation and remote monitoring of root zone moisture
- Crop modelling
- Integration of moisture probes and evapotranspiration models
- Decision support system for pest control and plant management
- Use of sensors for plant and garden monitoring



GREENHOUSE HEATING SYSTEMS

- **Innovative basal heating system for the reduction of energy input**

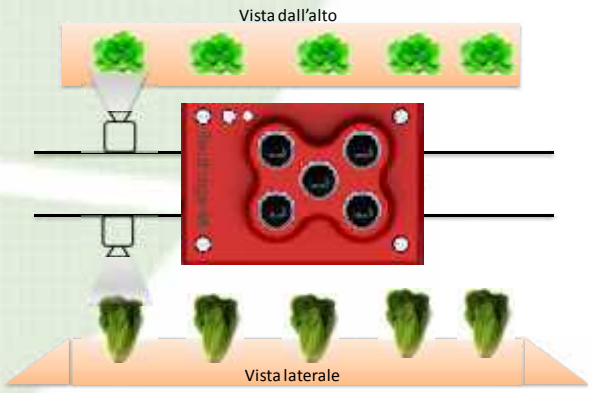




AIR BURNER VS HOT WATER COAXIAL PIPE

HIGH-TECH GREENHOUSE

- NTP, non-thermal plasma technology for disinfection of growth environments
- Sensors for fertigation control
- Cameras for crop monitoring and remote control



LOAD AND TRANSPORT OPTIMIZATION

Coming soon …

- **Monitoring physiological plant alterations during transport with microsensors**
- **Data transmission to Active RFID TAGS**
- **Inserting technical guidelines into TAGS for plant management at arrival on site**
- **Definition of parameters describing plant stresses**
- **Application of an electronic nose for the identification of one or more volatile compounds usable as stress markers**

THANKS FOR YOUR ATTENTION!