Locations of the 23 Research Institutes belonging the Ministry of Agriculture

Goto: www.inea.it/udi/
Fruit Tree Research Center
Structure

Rome DG: chair dr Carmine Damiano

Biology and plant protection
Pomology and Breeding
Field Management
Propagation

Station in Forli: chair Dr. W. FAEDI
Station in Caserta: chair Dr. M. Scortichini (temporary)
Scientific personnel

Gouvernement  Institution  Temporary
3.500.000 US$

Total budget
100,000 US$

Intellectual property
Fruit quality improvement

Reduce chemical treatment

Growth and habit control

Italian government priority

Reduce pollution due to the agriculture, safeguard of consumer health and reduce production costs

Reduce production costs through breeding and orchard practices
<table>
<thead>
<tr>
<th>Funds supplier</th>
<th>Project title</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mi.P.A.F.</strong> P.f. “Frutticoltura”</td>
<td><strong>Fruit culture</strong></td>
</tr>
<tr>
<td><strong>Mi.P.A.F.</strong> P.f. “Formulazione di liste di orientamento varietale dei fruttiferi”</td>
<td><strong>Directory of recommended varieties</strong></td>
</tr>
<tr>
<td><strong>Mi.P.A.F.</strong> P.A.N.D.A. Studio modelli di pescheto a ridotto impatto ambientale. Relazione tra tecniche colturali e qualità della produzione</td>
<td><strong>Orchard modelling to reduce enviro impact</strong></td>
</tr>
<tr>
<td><strong>Mi.P.A.F.</strong> Fenologia per l'agricoltura: sottoprogetto “Sviluppo e taratura di modelli fenologici”</td>
<td><strong>Ecophysiology</strong></td>
</tr>
</tbody>
</table>
| Mi.P.A.F. | "Centro di coordinamento risorse genetiche vegetali"  
| Genetic resources Centre |
| C.N.R. | "Conservazione del germoplasma per via non convenzionale"  
| Non conventional genetic resource conservation |
| UE | GENRES 29 - Conservazione, valutazione e utilizzazione delle specie arboree da frutto minori  
| Conservation of small fruits |
| UE | GENRES 61 - Conservazione, valutazione e utilizzazione delle risorse genetiche del genere Prunus  
| Prunus conservation |
| UE | Fair 6 - Albicocco: la maculatura batterica (*Xanthomonas campestris*) e induzione alla resistenza alla malattia  
| Apricot: study on *Xanthomonas campestris* |
| UE | Miglioramento qualitativo e conservativo del noce  
| Walnut breeding |
Main research actions carried by the Departments

**Biology and Plant Protection:** General Plant Physiology related to the genotype; Crop forecast modelling; Variety disease resistance; Biological Farming

**Pomology and Breeding:** Varieties description, Breeding of Kiwi, Apricot, Nectarine, Peach, rootstocks
Genemapping of Prunus and Molecular Markers

**Fields management:** General physiology related to agricultural practices; rootstock field evaluation
Propagation: Biotechnology applied to the propagation and breeding; Propagation and nursery industry. Cryoconservation

Trento Field Station: Cherries, Apples, Study on scab and mildew,

Forli Field Station: Strawberry, apple, pear, peach, nectarine, plum, breeding,

Caserta Field Station: varieties testing
Map of the Regions where field plots are established
In 1996, the Ministry of Agriculture and Forestry launched a long-term Programme ("Plant Genetic Resources")

- aiming at a systematic approach to the collection, conservation, documentation and sustainable utilization of PGRFA;

- in line with the existing international Agreements (CBD, GPA);

- triennial Working Projects guarantee flexibility to respond to new developments and challenges, on the national and on the international level;

- coordination by the Experimental Institute for Fruit Tree Research in Rome.
1° PHASE: 1996-2003:
Assessment of PGRFA conserved *ex situ* in Italy and of associated information

2 Network activities, involving a number of institutions:

**Involved Institutions:**
- 15 Research Institutes (ex-IRSA) belonging to the Council for Research in Agriculture under the Ministry of Agriculture and Forestry;
- 14 Universities;
- 3 Institutes of the National Research Council (CNR);
- 3 Regional Experimental Institutions.
<table>
<thead>
<tr>
<th>Year</th>
<th>Assessment of PGR conserved in the IRSA</th>
<th>Year</th>
<th>Assessment of Fruit PGR conserved in Italy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2001</td>
<td>21,843 accessions belonging to 366 species within 70 genera are listed and described according to general descriptors</td>
<td>2001-2003</td>
<td>7,418 accessions belonging to 42 species within 18 genera are listed and described according to general descriptors as well as internationally agreed species-specific descriptors</td>
</tr>
</tbody>
</table>

Publication (print and online)
International Treaty

- ratificato dall’Italia il 20 giugno 2004;
- responsabilità di implementazione: MiPAAF;
- strumento di implementazione: Progetto “RGV/ Trattato FAO”
- coordinamento: CRA-Centro di Ricerca per la Frutticoltura, Roma.

- 1ª fase: 2004 – 2006;

1° triennio: 15 ex IRSA + IGV Bari (CNR)
2° triennio: 16 ex IRSA + IGV Bari (CNR) + 7 ONG

- 69 specie di cui 27 incluse nel Trattato FAO
In 2004, the Working programme was revised in accordance with the provisions of the newly ratified FAO International Treaty on PGRFA

Art. 5: promote an integrated approach to the collection and conservation of PGRFA (ex situ and in situ)

Art. 6: promote the utilization of local varieties and strengthen on-farm conservation;

Art. 9: safeguard local traditions and support local farmers;

Art. 11: take measures to ensure the inclusion of Annex I crops in the conservation programmes;

Art. 12: ensure facilitated access to this material as well as to related information.
2° PHASE: 2004-200?:
Implementation of the FAO International Treaty

- *Ex situ* and on-farm conservation;
- Focus on autochthonous genetic resources;
- Inclusion not only of crops included in Annex I of the Treaty but also of other crops which are of strategic importance for Italian Agriculture;
- Strengthening of regional involvement (Interregional Project “Biodiversity”, including all 20 Italian Regions);
- Participation in international programmes.
<table>
<thead>
<tr>
<th>Species included:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IS Agronomico</strong></td>
<td>Mandorlo</td>
</tr>
<tr>
<td><strong>IS Agrumicoltura</strong></td>
<td><em>Citrus</em> spp.</td>
</tr>
<tr>
<td><strong>ISAFA</strong></td>
<td><em>Achillea, Chamomilla, Gentiana, Hypericum, Salvia, Thymus</em></td>
</tr>
<tr>
<td><strong>IS Colture Foraggere</strong></td>
<td><em>Hedysarum</em>, <em>Lolium</em>, <em>Lupino</em>, <em>Medicago</em>, <em>Trifoglio</em></td>
</tr>
<tr>
<td><strong>IS Colture Industriali</strong></td>
<td>Barbabietola da zucchero, Canapa, Lino, Fagiolo*, Patata*</td>
</tr>
<tr>
<td><strong>IS Cerealicoltura</strong></td>
<td>Avena*, Frumenti*, Mais*, Orzo*, Riso*, Sorgo*</td>
</tr>
<tr>
<td><strong>IS Elaiotecnica</strong></td>
<td>Olivo</td>
</tr>
<tr>
<td><strong>IS Floricoltura</strong></td>
<td><em>Euphorbia, Hebe, Limonium, Passiflora, Viburnum</em></td>
</tr>
<tr>
<td><strong>IS Frutticoltura</strong></td>
<td>Albicocco, Ciliegi, Fico, Fragola*, Frutta piccola, Kiwi, Melo*, Nashi, Pero, Pesco e Nettarina, Susino; Castagno, Mandorlo, Nocciolo, Noce, Pistacchio</td>
</tr>
<tr>
<td><strong>IS Olivicoltura</strong></td>
<td>Olivo</td>
</tr>
<tr>
<td><strong>IS Selvicoltura</strong></td>
<td>Abete, Pino, <em>Pseudotsuga</em></td>
</tr>
<tr>
<td><strong>IS Tabacco</strong></td>
<td><em>Nicotiana</em></td>
</tr>
<tr>
<td><strong>IS Viticoltura</strong></td>
<td><em>Vitis</em></td>
</tr>
<tr>
<td><strong>IS Zoologia Agraria</strong></td>
<td>Gelso</td>
</tr>
<tr>
<td><strong>IGV CNR Bari</strong></td>
<td>Carciofo, Farro, Frumenti*, Lathyrus*, Lenticchia*, Peperone*, Pomodoro, Rucola*, Vicia*,</td>
</tr>
</tbody>
</table>
Target issues:
1. PGR perspective:

- Combat genetic erosion: recovery and safeguard of “disappearing” varieties, such as old autochthonous material and/or locally adapted landraces;

- Evaluation of the material for agronomical, qualitative, technological and ornamental characteristics;

- Valorization of the material through its re-introduction to local markets and the promotion of derived products;

- Broadening the genetic base of crops for specific breeding purposes.
Target issues:

2. Agro-ecosystem perspective

• Combat genetic vulnerability: re-introduction of recovered material into local farming systems;

• Promotion of inner- and intraspecific diversity;

• Stabilization and diversification of agro-ecosystems and rural landscapes;

• Strengthening of local farmers and communities;

• Safeguard of local cultures and traditions.
Target issues:

3. Policy and Public initiatives

- Involvement of all possible stakeholders in the collection, characterization, evaluation, documentation and valorization process as well as promotion of close interaction between them;

- Promotion of closer collaboration between different Ministries in thematic cross-cutting issues;

- Fostering the utilization of the sMTA for the exchange of PG material;

- Raising public awareness for PGRFA issues, through publications and educative actions (guided tours through ex situ collections, laboratories, .....).
National Collection of Fruit Tree Germplasm

- Inaugurated in 2006
- Currently, 6,000 different accessions are planted
- In the next years, it is planned to conserve all 12,000 different accessions conserved on the Italian territory
<table>
<thead>
<tr>
<th>Species</th>
<th>Number of accessions*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperate zone species</strong></td>
<td>3.879</td>
</tr>
<tr>
<td>(apple, pear, apricot, cherry, peach and nectarine, plum, nashi)</td>
<td></td>
</tr>
<tr>
<td><strong>Nuts</strong></td>
<td>328</td>
</tr>
<tr>
<td>(almond, chestnut, hazelnut, pecan, pistachio, walnut)</td>
<td></td>
</tr>
<tr>
<td><strong>Small fruits</strong></td>
<td>159</td>
</tr>
<tr>
<td>(blueberry, currants, strawberry, blackberry)</td>
<td></td>
</tr>
<tr>
<td><strong>Other species</strong></td>
<td>109</td>
</tr>
<tr>
<td>(actinidia, cactus-pear, feijoa, fig, hawthorn, kaki)</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4.475</td>
</tr>
</tbody>
</table>
Utilization of the germplasm collected in the NCFG

- 41% research (agronomical, pomological and molecular-biochemical trials)
- 23% exchange with scientific institutions
- 21% breeding
- 7% exchange with private sector
- 8% not utilized (conservation only)

60% are utilized in R & B

Main aspects:

1. **agronomical quality** (tree size and growing habit, regular yield, late flowering; self- compatibility, wide harvest window, low chilling requirements)
2. **pomological quality** (fruit size and shape, taste, juiciness, flesh texture, skin resistance to cracking)
3. **physiological quality** (resistance to diseases and climatic stress)
### Examples of positive characteristics found in Italian autochthonous fruit varieties

<table>
<thead>
<tr>
<th>Species</th>
<th>Trait</th>
<th>Variety</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>Resistance to Apple Scab</td>
<td>Campanino, Decio</td>
<td>Emilia-Romagna</td>
</tr>
<tr>
<td></td>
<td>Compact habitus</td>
<td>Gelata</td>
<td>Central Italy</td>
</tr>
<tr>
<td>Apricot</td>
<td>Resistance to Sharka</td>
<td>Ceccona</td>
<td>Campania</td>
</tr>
<tr>
<td></td>
<td>Resistance to spring frosts</td>
<td>Ivonne Liverani, Bella di Casale</td>
<td>Emilia-Romagna</td>
</tr>
<tr>
<td>Cherry</td>
<td>High nutraceutical value</td>
<td>Amarena Mattarello</td>
<td>Trentino</td>
</tr>
<tr>
<td></td>
<td>Easy harvesting</td>
<td>Visciola Sannicandro</td>
<td>Apulia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Graffione Foresto, Vittoria</td>
<td>Piedmont</td>
</tr>
<tr>
<td>Almond</td>
<td>Self- compatibility</td>
<td>Tuono, Filippo Ceo, Genco</td>
<td>Apulia</td>
</tr>
<tr>
<td>Pear</td>
<td>Resistance to Fire Blight</td>
<td>Volpina</td>
<td>Emilia-Romagna</td>
</tr>
</tbody>
</table>
Dissemination of PGRFA related information – National Inventory on PGRFA conserved ex situ in Italian institutions as defined by “Multicrop Passport Data” (genus, species, origin, genetics etc) and “species-specific descriptors”, as defined by FAO/IPGRI.
Dissemination of PGRFA related information – 2. Newsletter “Notiziario RGV”

- Technical-scientific character
- Target issues: recovery, conservation, characterization and utilization of PGRFA;
- National and international legal frameworks and developments
- Open to contributions from experts working in related fields
- Bilingual (Italian/English)
Fruit Tree Research Center

You are cordially invited to visit us; we will be highly honoured to host these meetings at our Center at any time. Thank you very much
Conservation (Ministry of Agriculture, Alimentation and Forestry Policies)

1996 – launch of National Programme “Plant Genetic Resources”

Coordination: CRA-FRU

- systematic approach to the collection, conservation, documentation and sustainable utilization of PGRFA;

- in line with existing international Agreements (CBD, GPA);

- Involved Institutions:
  15 Research Institutes (ex-IRSA) belonging to the Council for Research in Agriculture;
  14 Universities;
  3 Institutes of the National Research Council (CNR);
  3 Regional Experimental Institutions.
Activities: First nation-wide census on PGRFA conserved ex situ

1999-2001: Assessment of PGR conserved in the 15 IRSA
21,843 accessions belonging to 366 species within 70 genera are listed and described according to general descriptors

2001-2003: Assessment of Fruit PGR conserved in Italy
7,418 accessions belonging to 42 species within 18 genera are listed and described according to general descriptors as well as internationally agreed species-specific descriptors

Publication of the results in paper and electronic format
2004 – revision of the working programme in accordance with the recently ratified FAO International Treaty

Launch of project “PGR/ FAO Treaty”

Coordination: CRA-FRU

1° phase: 2004-2006
2° phase: 2007-2009

• 27 involved Institutions;

• Not limited to the species included in Annex I of the Treaty, but including all those which are of economic, strategic and cultural interest for Italy:

• 69 species included of which 27 are listed in Annex I
Varieties released

- Peach 43
- Plum, Grape, Almond 1
- Strawberry 19
- Apple 11
- Cherry 4
- Apricot, Loquat, Pear, rootstock 2

Other varieties released: 2
Priorities:

Art. 5: promote an integrated approach to the collection and conservation of PGRFA (*ex situ* and *in situ*)

Art. 6: promote the utilization of local varieties and strengthen on-farm conservation;

Art. 9: safeguard local traditions and support local farmers;

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Commento Petra:

Qua si potrebbe arrivare ai due strumenti di diffusione delle attività svolte e dei risultati ottenuti,

quindi l’Inventario Nazionale e il Notiziario

Inventario: accessioni sono caratterizzate attraverso i “Multicrop Passport Data” (genere, specie, origine, status genetico ecc) e “species-specific descriptors”, come definiti in ambito FAO/IPGRI; quest’ultimi, per il momento, esistono solo per le specie da frutto, per tutte le altre i descrittori specifici sono in fase di inserimento nel database (www.rgv-politicheagricole-cra.it)

Per quanto riguarda la tabella che mostra il numero delle varie specie conservate (Temperate zone, small fruits, nuts ecc), può dire che il numero del totale (4.475) riporta quelle che finora sono registrate nell’Inventario, le altre sono state mese a dimora di recente e bisogna ancora inserirle.