



CISIA e BioGenRes Le Risorse Genetiche del CNR

Antonio Logrieco, Giovanni G. Vendramin, Flavia Pizzi





Consiglio Nazionale delle Ricerche
Dipartimento di Scienze Bio-Agroalimentari



Il Progetto CISIA

Conoscenze Integrate per Sostenibilità ed
Innovazione del Made in Italy Agroalimentare

“Implementare, con le tecnologie più avanzate oggi disponibili, la caratterizzazione genético-molecolare di piante, animali e microrganismi che concorrono e sono la base di specifici prodotti agroalimentari Made in Italy.”



La Nascita del Network



CNR-IGV



CNR-IBBA



CNR-ISPA



CNR-ITB



Avviano un processo di analisi delle risorse genetiche e un programma di bioinformatica avanzata per una **banca dati** delle collezioni di risorse genetiche del CNR-DiSBA

Si intende caratterizzare e conservare animali, vegetali e microrganismi di interesse per la silvicoltura, agronomia, industria alimentare e zootecnia sostenibile

**Nasce BioGenRes,
il Network Italiano
delle Risorse Genetiche**

Obiettivi e Finalità del Network



I 12 Istituti partner del Network



CNR-IBAF



CNR-IBBA



CNR-IBIMET



CNR-IGV



CNR-IPP



CNR-ISAFOM



CNR-ISE



CNR-ISPA



CNR-ISPAAM



CNR-ITB



CNR-IVALSA



CNR-IVV

Organizzazione delle Risorse

ANIMALI

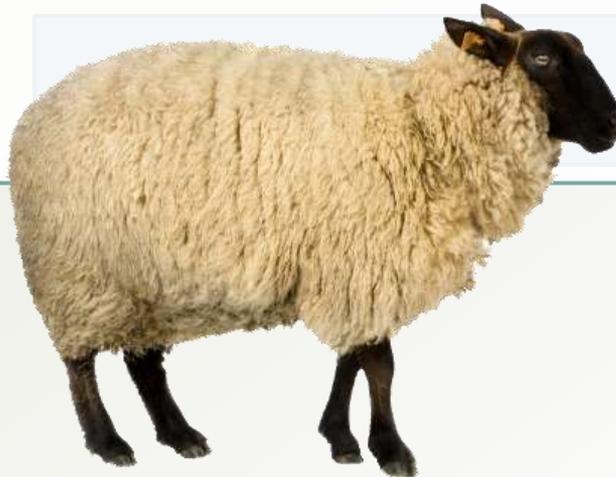
- Nematodi
- Insetti
- Mammiferi

PIANTE

- Pianta erbacee
- Pianta arboree

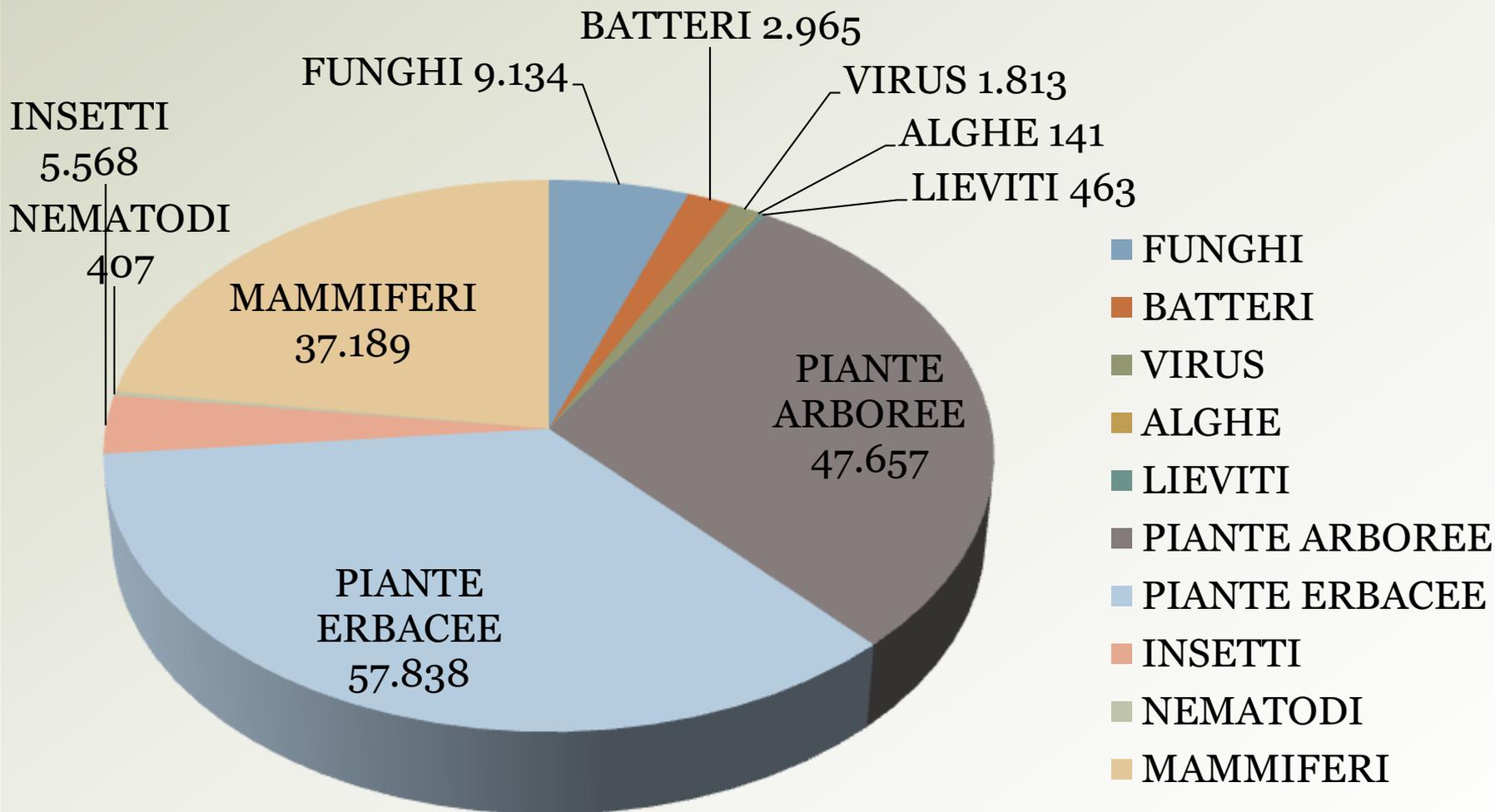
MICROORGANISMI

- Funghi
- Batteri
- Virus
- Alghe
- Lieviti



43 Collezioni

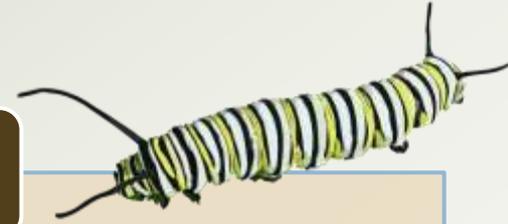
163,175 Accessioni Totali



Sezione Animali

Nematodi

- Esempari viventi e fissati di nematodi parassiti di interesse agrario



Insetti

- Esempari viventi e fissati di insetti di interesse agrario e naturalistico

Mammiferi

- Campioni di materiale seminale crioconservato, campioni di pelo o sangue di mammiferi di interesse zootecnico



Sezione Piante

Piante Erbacee

- Collezioni in campo (conservazione in situ)
- Semi (conservazione ex situ)



Piante Arboree

- Collezioni in campo
- Test di provenienze
- Campioni vegetali e DNA conservati a basse temperature
- Semi



Sezione Microrganismi

Funghi

- Funghi saprofiti
- Funghi micorrizici arbuscolari
- Funghi patogeni di interesse agrario
- Funghi patogeni di interesse forestale
- Funghi di interesse agro-alimentare
- Funghi tossigeni

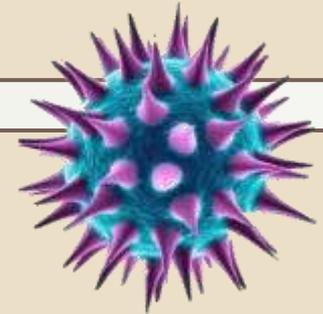


Batteri

- Batteri di interesse agro-alimentare
- Fitoplasmidi di interesse fitopatologico

Virus

- Virus fitopatogeni degli agrumi
- Virus fitopatogeni dell' ulivo
- Virus fitopatogeni delle drupacee
- Virus fitopatogeni delle ortive
- Virus fitopatogeni della vite
- Viroidi fitopatogeni
- Virus fitopatogeni liofilizzati

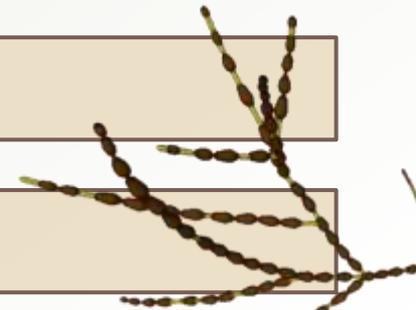


Alghe

- Alghe unicellulari di interesse biotecnologico

Lieviti

- Lieviti di interesse biotecnologico e agroalimentare



Il Network: Prospettive di Crescita



Armonizzare le risorse genetiche a disposizione del sistema CNR, rese fruibili a tutta la comunità scientifica ed economica nazionale ed internazionale

Identificare e proporre **azioni di supporto e coordinamento** per reperire fondi destinati al mantenimento delle collezioni e alla loro caratterizzazione funzionale e genetica

Mettere in rete, **condividere** e discutere le informazioni, le idee e le opportunità

Allargare il Network ad altri Enti di Ricerca ed Istituzioni coinvolti nelle politiche di conservazione e valorizzazione della biodiversità nel settore agro-alimentare e forestale

Applicabilità Risorsa BioGenRes

Microbes and microbial by-products for plant health

Dr. Claudio Altomare, Institute of Sciences of Food Production, CNR-ISP/Alma

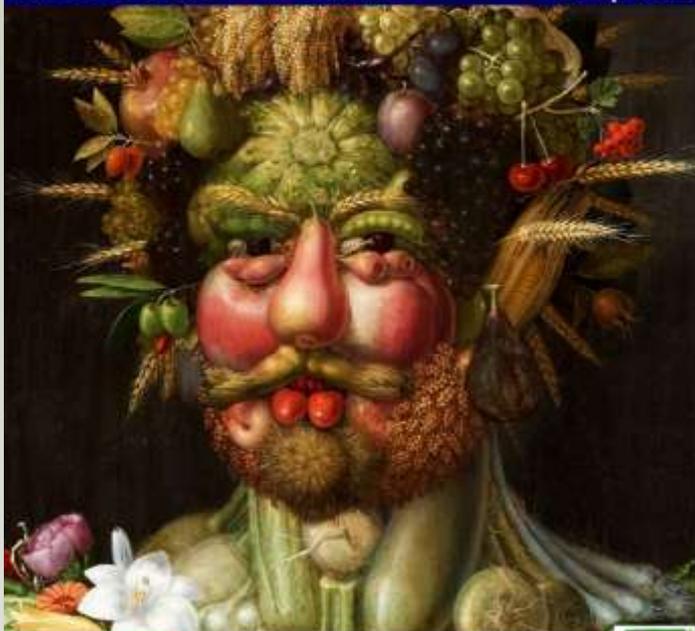
The Problem

The plants whose roots

biodiversity

SUCCESS STORIES

No 1 April 2013



Edited by
BioGenRes - Italian Network of Genetic Resources
www.biogenres.it



'Farro': a new history for an ancient crop

Dr. Damiano Calabrese, Dr. Eusebio Leghetti, Institute of Plant Genetics, CNR-IGV/Italy

Epididymal sperm: a tool for improving gene banking

Dr. Raia Rizi, Institute of Agricultural Biology and Biotechnology, CNR-IBBA Italy

The Problem

The farm animal term refers to animals domesticated producing commodities for man such as food, fiber and draught. Farm animal biodiversity is integral to our culture, history, environment, and economy. Efficient in situ and in situ conservation strategies are obligatory tools in order to implement an appropriate action for the conservation of farm animal biodiversity.



Brianzola sheep breed

In situ preservation for ex-situ management of genetic diversity sometimes is not routinely feasible, due to the lack of facilities (Artificial Insemination centres, laboratories) and expertises near the local breeds farming area. Moreover in local breeds few males are available for semen collection on farm and semen collection training is more complicated due to the fact that animals are not accustomed to contact with farmers. Access to new technologies is important for the banks to develop their collections.

The Solution

When semen collection through standard procedures is problematic, the post mortem recovery of epididymal sperm can be the only possibility to preserve male gametes from animals of high value or from endangered species. After developing the knowledge concerning post mortem testicles

conservation and epididymal sperm recovery (Turri *et al.*, 2012) we have implemented these procedure for setting the genetic reserve of two Italian local breeds: the Brianzola sheep breed and the Nero Siciliano pig breed. In these local breeds, farmed in extensive breeding system in rural and marginal area, no trained males were available to be collect semen directly on farm. In Brianzola breed testicles were collected at local slaughterhouse, after that semen samples were extracted and frozen in our laboratories in Lodi. Whereas in Nero Siciliano testicles were collected on farm in Sicily, after surgical castration, then were transported by air at 5°C and processed within 24 hours in our laboratories. Epididymal sperm were collected by using the retrograde flushing technique.



Nero Siciliano pig breed

Semen volume, total number of sperm and sperm motility were assessed. Overall the quality of the sperm recovered was good allowing the production of viable semen doses. These experience suggests the possibility to extract viable epididymal sperm from testicles transported and processed within 24 hours increasing the opportunities to create semen storages for local genetic resources farmed in marginal areas.

tion

two ago the Istituto di Genetica Vegetale of selected the following four pure lines of farro: "Triventina", "Lucanica" and "Forenza", from genotypically heterogeneous accessions (Za. 1953, Ferrino *et al.*, 1966). These four varieties were selected after six years of trials in Central-South Italy and according to enriching traits. Nowadays these are the first farro patented varieties in Italy that the quality and origin of the product. This has been widely used by Italian and foreign organizations and agribusinesses that today pay relative royalties to the CNR.



to our opinion and experience farro market in southern Italy is still economically profitable, following initiatives tending to quality or extra, or by means of a bettering the efficiency of agricultural production, trading and distribution. The evidence of this conviction are the recent requests of expressions of interest to agreements with IBV by foreign agricultural countries to use in their countries (e.g. Austria, Brazil) the patented varieties selected by

BioGenRes: Il Team

SEZIONE ANIMALI



Dr. ssa Flavia Pizzi
(CNR-IBBA Lodi)



Dr. ssa Alessandra Stella
(CNR-IBBA Lodi)

SEZIONE PIANTE



Dr. Giovanni Vendramin
(CNR-IGV Firenze)



Dr. Domenico Catalano
(CNR-IGV Bari)

SEZIONE MICRORGANISMI



Dr. Antonio Logrieco
(CNR-ISPA Bari)



Dr. ssa Antonella Susca
(CNR-ISPA Bari)

SUPPORTO BIOINFORMATICO



Dr. Vito Flavio Licciulli
(CNR-ITB Bari)

COLLABORATORI



Dr. Massimiliano Morelli
(CNR-ISPA Bari)