CRA
CONSIGLIO PER LA RICERCA
E LA SPERIMENTAZIONE
IN AGRICOLTURA

CRA-API: Sericulture seat of Padua

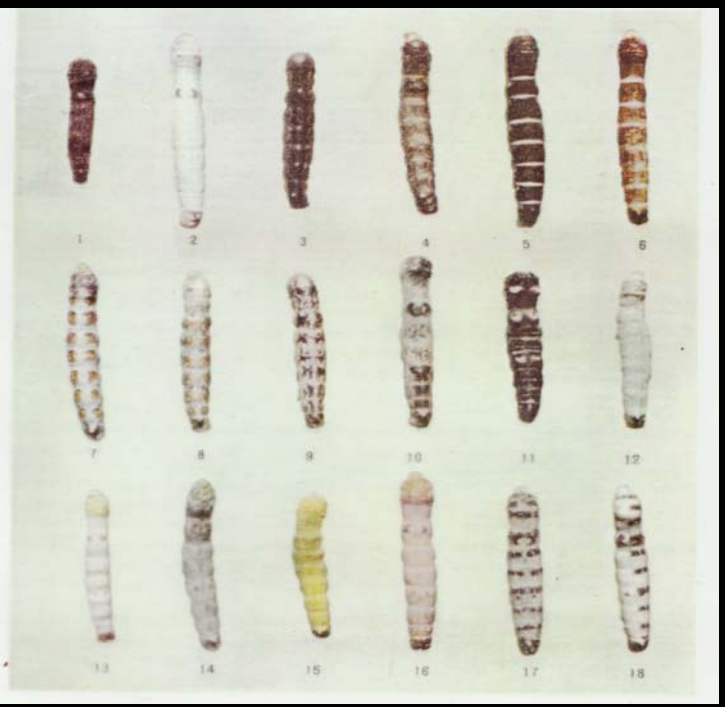
ACTIVITIES

- Silkworm germplasm preservation (around 200 strains)
- Mulberry germplasm preservation (around 60 varieties)
- Commercial silkworm egg production
- Artificial diet production
- Consultancy in sericulture
- Training and education
- Research:

❖ Silkworm breeding and genetic improvement (including transgenesis)
❖ Artificial diets and germfree rearing of the silkworm
❖ Silkworm egg long-term preservation
❖ Mechanization in mori-sericulture
❖ Moriculture for multipurpose utilization
❖ Silkworm pathology
❖ New uses of silkworm apart for textiles

CRA
CONSIGLIO PER LA RICERCA E LA SPERIMENTAZIONE IN AGRICOLTURA

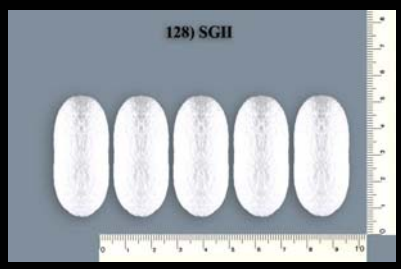
Silkworm germplasm: Genetic variability (larvae)

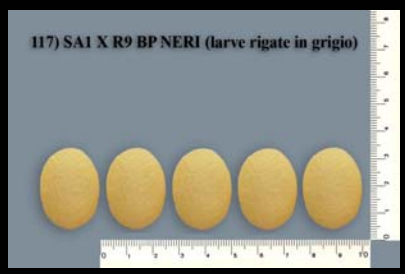


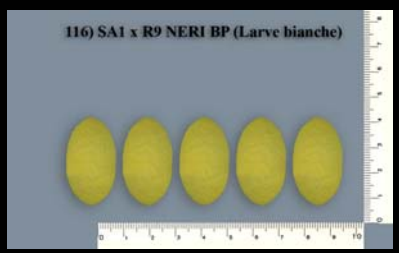
CRA
CONSIGLIO PER LA RICERCA
E LA SPERIMENTAZIONE
IN AGRICOLTURA

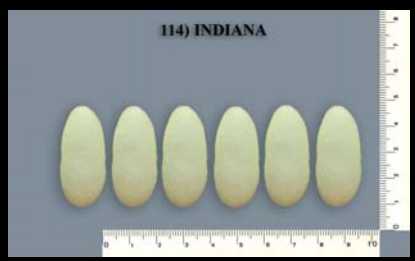
Silkworm germplasm: Genetic variability

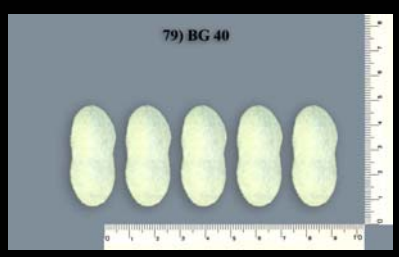
(cocoons)











CRA
CONSIGLIO PER LA RICERCA
E LA SPERIMENTAZIONE
IN AGRICOLTURA

Silkworm germplasm: Genetic variability (eggs)

BIODATI

The project regards biodiversity, data bank management and genetic improvement; this project continues activities of public interest performed by CRA Departments concerning collecting, characterizing, exploiting, ameliorating and preserving plant, animal and microbial germplasm, organizing informatic data banks and all the other services activities.

CRA-API - PD – participates in the project with management and exploitation of mulberry and silkworm germplasm. The project is financed by MIPAAF and it lasts several years.

One of the aims of the project is to create a database similar to that existing in the Japanese “National Bioresources” Project “Silkworm”

Example of informatic database

Silkworm Base
- Silkworm Genetic Resource Database -

Global Search :
Strains Go

Last update
October,11,2011

INTRODUCTION

Japanese | English

Important Notice

Starting from 1st April 2010, we are going to charge handling and shipping fees for any resource request. This change is to be demanded based on the policy of self-sustainability of distribution service of the resources. (MTA) We are also starting WEB service for your resource request.

Thank you for your cooperation.

Pricing of Silkworm (2011/10/11 updated)

Operation of WebOrder

WEB order can be done by "Strain list" of a left menu.

About NBRP "Silkworm"

During the long history of sericulture, the domesticated silkworm has various differentiated into a number of races and strains as can be seen today. Up to 95% of the mutant strains of silkworm in the world are collected and systematically preserved in Japan. They are not only important genetic resources for the research work in Japan but also precious inheritance of human beings.

NBRP Silkworm National BioResource Project

Silkworms are widely used by researchers to study on genetics, physiology, biochemistry, and pathology. Recently, along with the progress of the "silkworm genome project", analysis of genes with special functions ranging from feeding habits and taste, to the resistance and sensitivity to pathogens such as viruses, fungi, and bacteria, and to mold is conducted intensively. These results make silkworm, a Lepidoptera insect, a premier model for studies of pest control and will facilitate the production of new pesticides. Likewise, their relatively large size makes silkworm a good model for the study of brain. With transgenic technologies such as transposon tagging, it is easy to generate mutants related to action pattern, ecology, morphology, and physiology. Comparing mutants with the normal silkworm, we can elucidate the fascinating system of brain, specifically in brain building, and some of these molecules involving mutants may be of value.

This project aims to improve the quality of silkworm resources with more detail trait information and establish a system so that we can supply more reproductive and more stable materials.

The 2011 Silkworm Rearing Schedule NEW

Basically, Kyushu University is breeding the fifth generation of year for the genetic research at the Institute of Genetic Resources Center.

Request>>

Phase	Beginning of rearing	Larval stage	Pupal stage
1	May 6	May 6 - May 26	May 26 - Jun 5
2	Jun 24	Jun 24 - Jul 14	Jul 14 - Jul 24
3	Aug 19	Aug 19 - Sep 8	Sep 8 - Sep 18
4	Oct 7	Oct 7 - Oct 27	Oct 27 - Nov 6
5	Nov 25	Nov 25 - Dec 15	Dec 15 - Dec 25

Details of schedule

NBRP National BioResource Project

Deposit Agreement

In 2009 INRA closed the International Sericulture Unit of Lyon and transferred 60 silkworm strains to Italy.

Exploitation of silkworm strains are at disposal of CRA-API, and only intellectual rights are due to INRA.

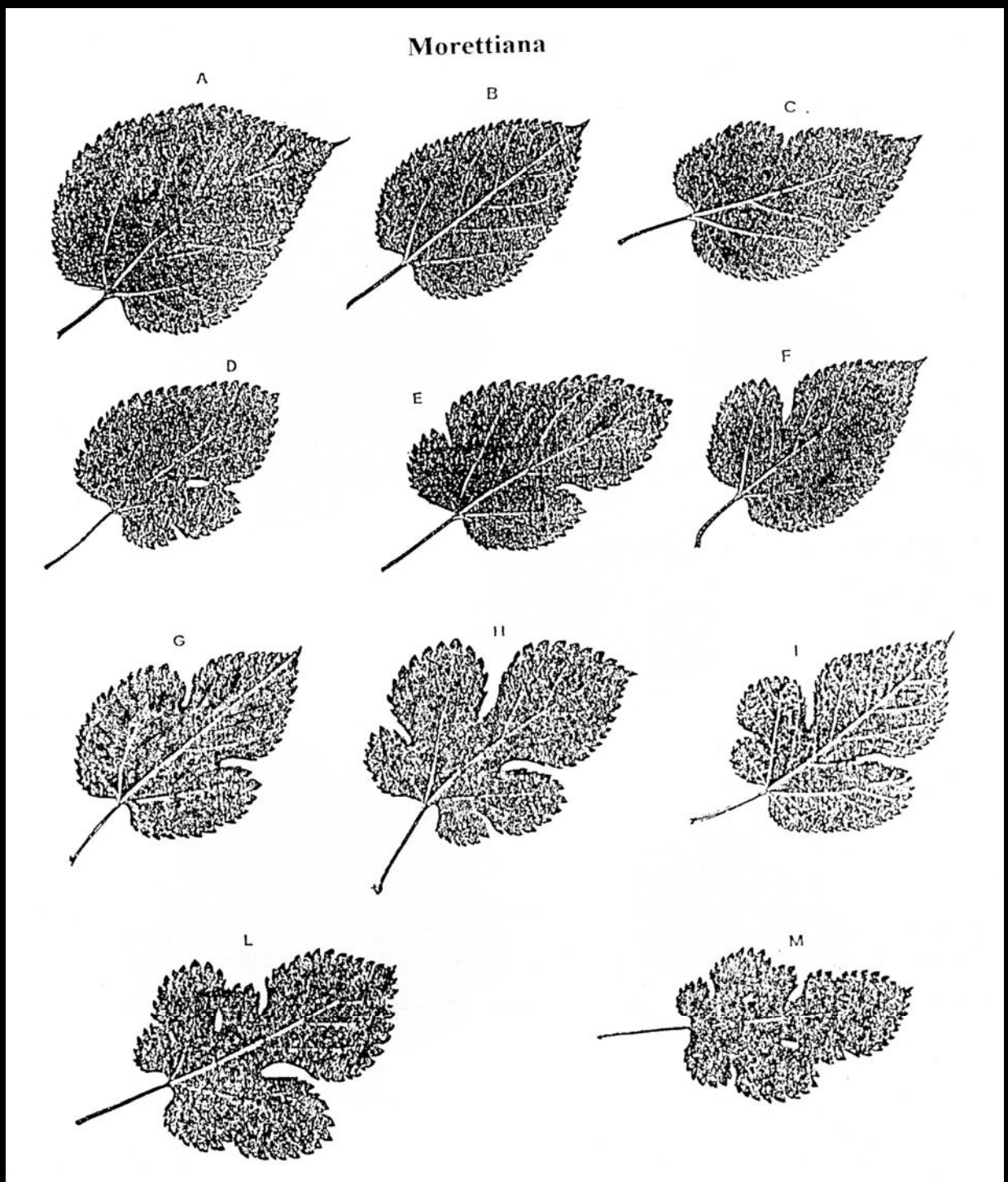
A yearly report on the activity related to the strains should be transmitted to INRA every year.

Bilateral Agreement with Sericulture and Agriculture Station of Vratza (National Academy of Science of Republic of Bulgaria)

On the basis of this agreement exchange of genetic material (silkworm strains and mulberry cuttings) is possible between CRA-API and Vratza Station.

Mulberry germplasm: Genetic variability
leaf inter-specific variation

Mulberry germplasm: genetic variability leaf intra-specific variation



CRA
CONSIGLIO PER LA RICERCA
E LA SPERIMENTAZIONE
IN AGRICOLTURA

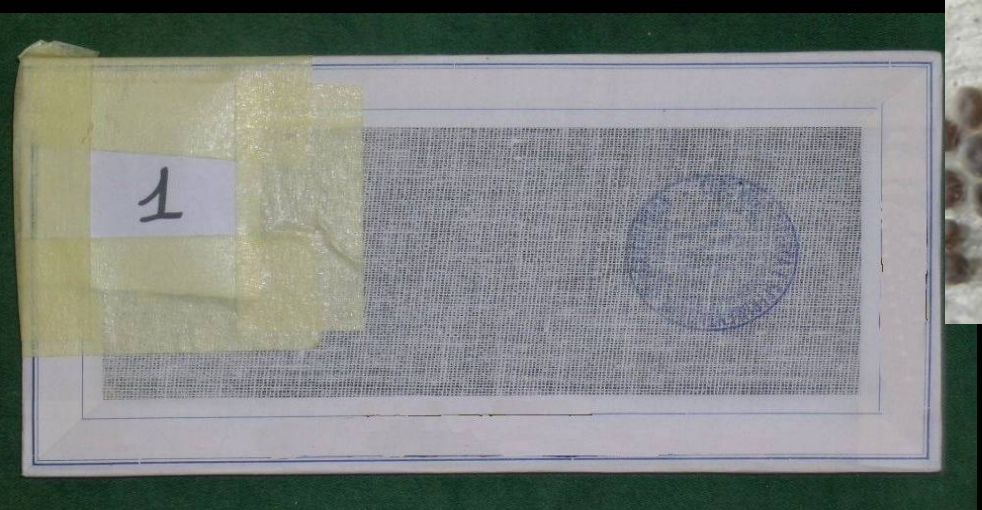
Mulberry germplasm: genetic variability fruit inter-specific variation

Genetic Vegetal Resources (RGV) -FAO

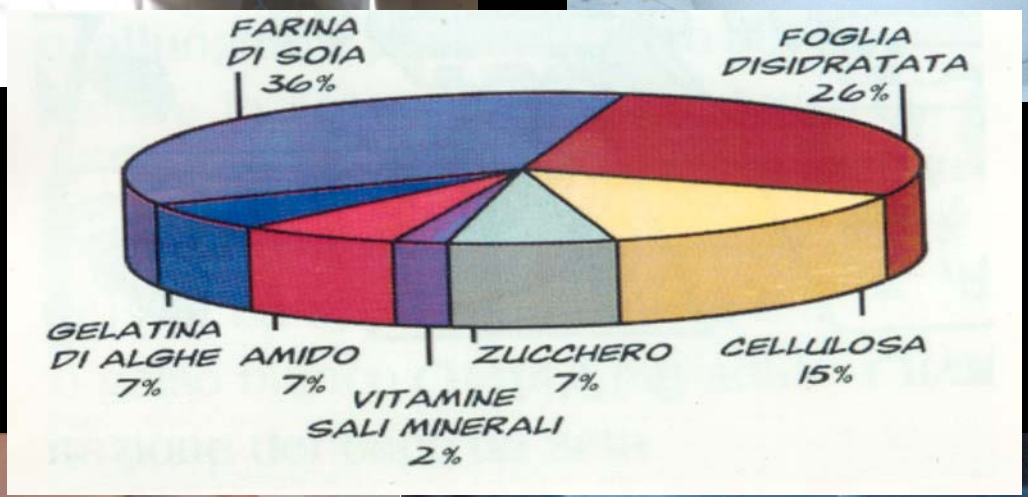
- The project deals with preservation and evaluation of mulberry resources.
- It is especially aimed at the creation of an identical kind of descriptor for all the plant species and all the accessions maintained in the different CRA germplasm collections.
- Project duration of the third re-newal: 2011 -2013

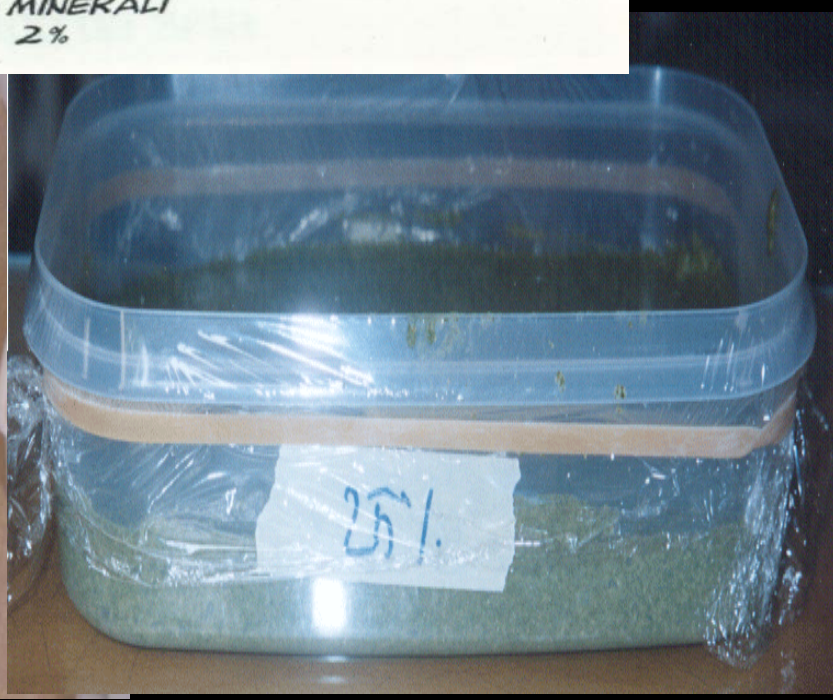
CRA
CONSIGLIO PER LA RICERCA E LA SPERIMENTAZIONE IN AGRICOLTURA

Commercial silkworm egg production



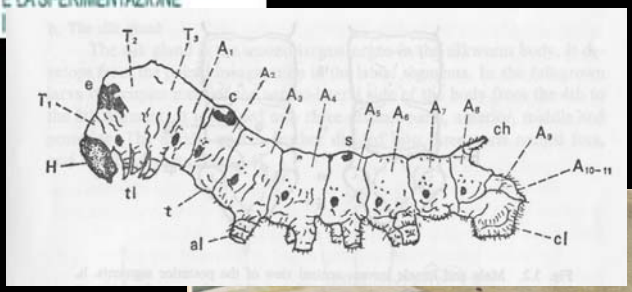
Artificial diet production

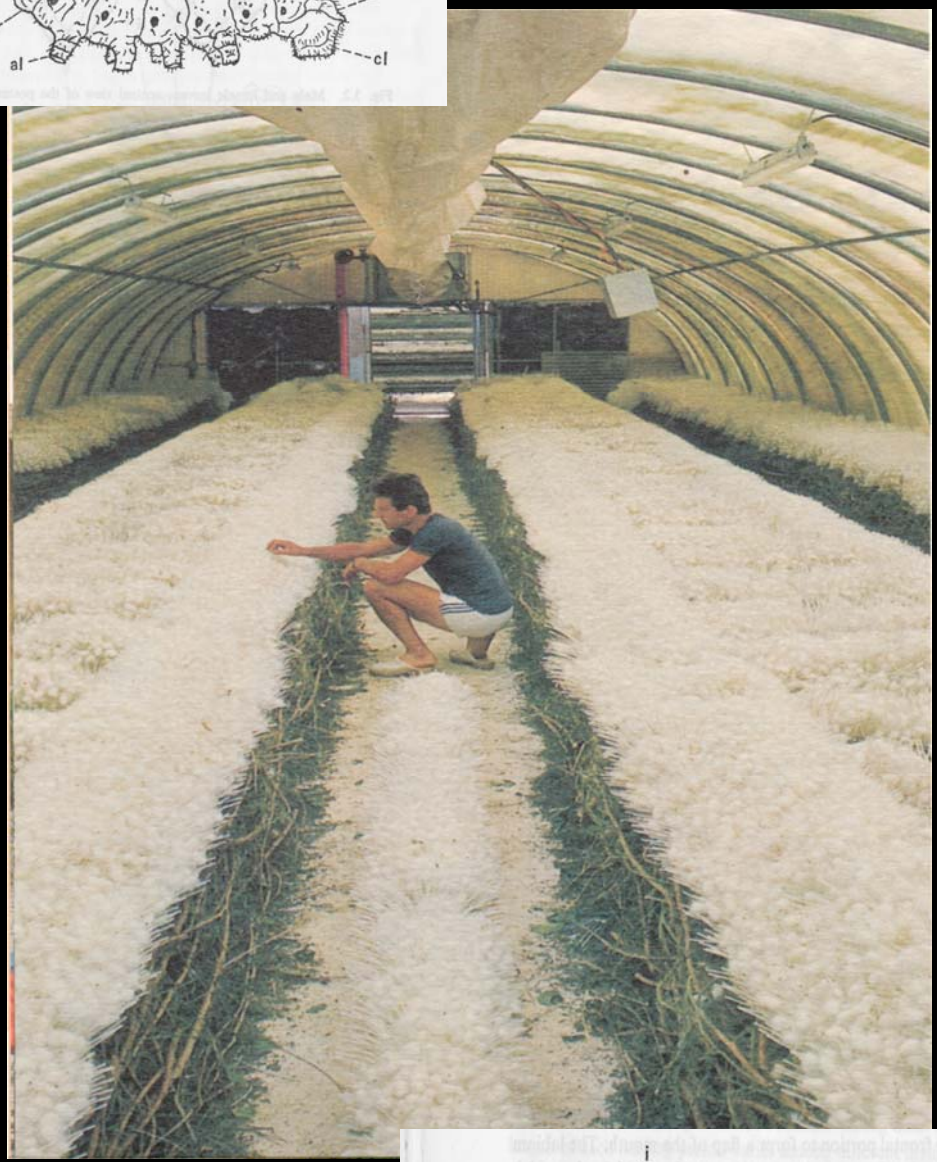


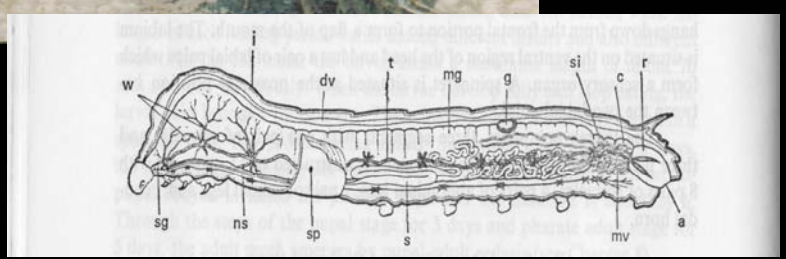


CRA
CONSIGLIO PER LA RICERCA
E LA SPERIMENTAZIONE

Consultancy in sericulture







NOWSILK (CROSSTEXNET)

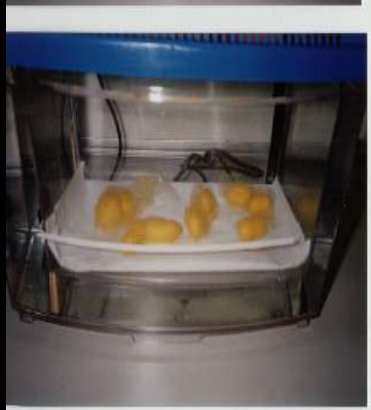
Italian Partners:

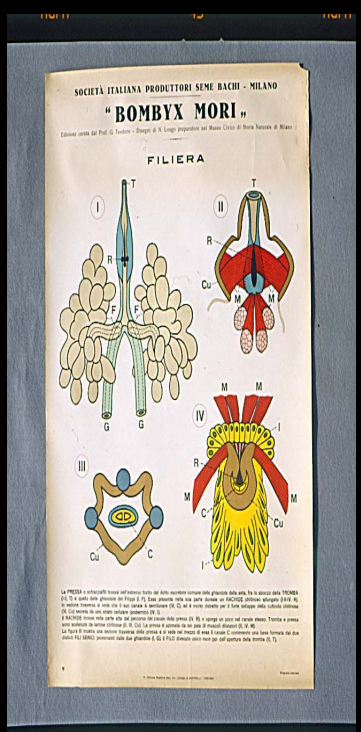
- Tessitura Pertile (coordinator)
- CRA-API (Padua)
- Stazione Sperim. Seta (Milan)

French Partners

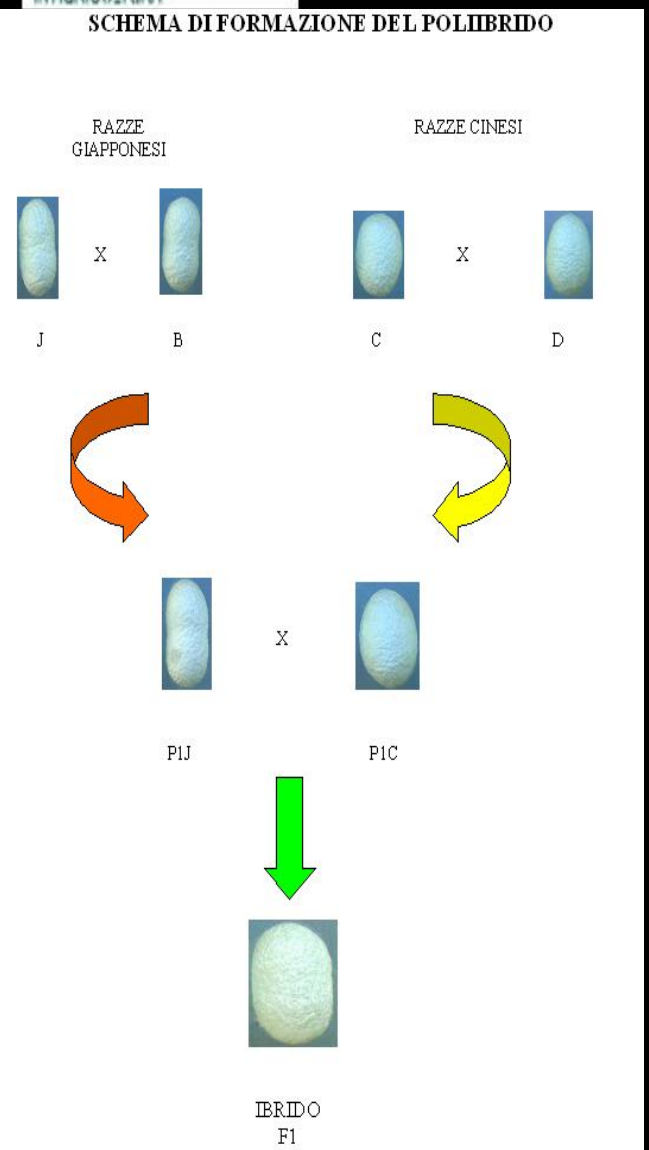
- Centraco
- IFTH (Institut Français de l'habillement et du textile) – Lille
- Teint Fil

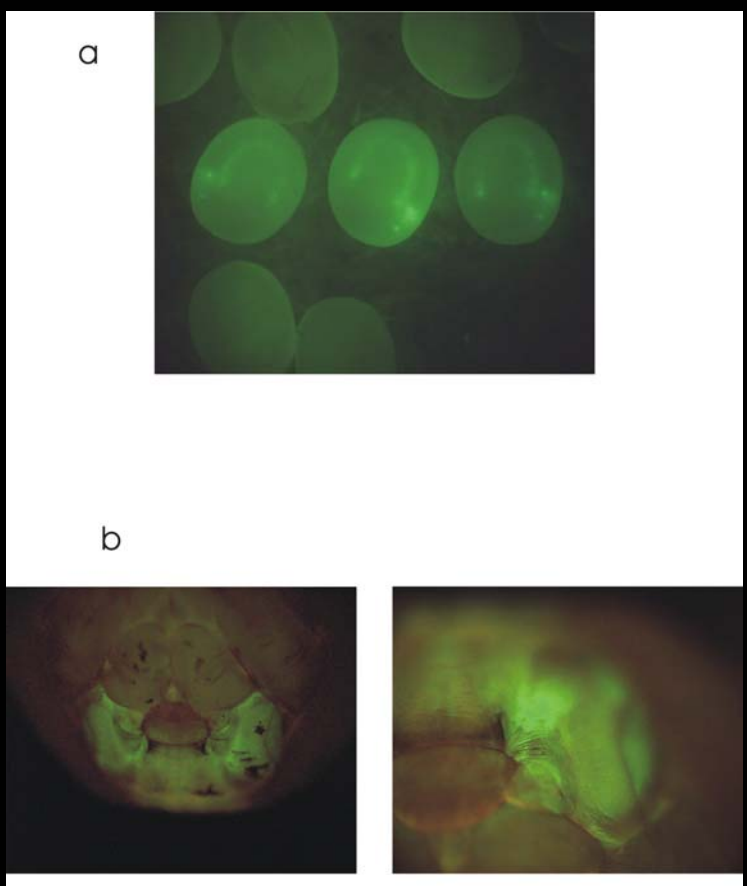
Training and education





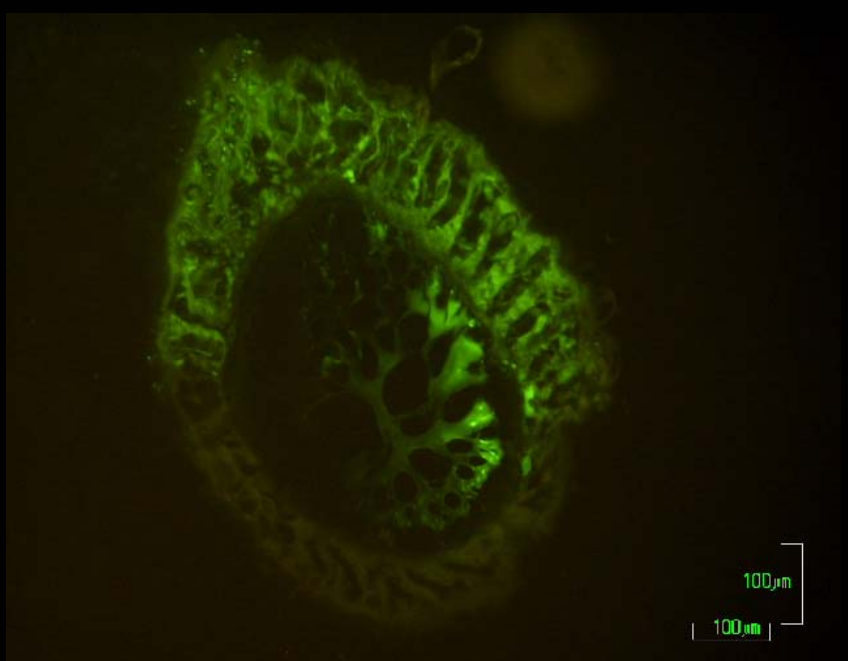
Research: Silkworm breeding and genetic improvement (including transgenesis)





CRA
CONSIGLIO PER LA RICERCA
E LA SPERIMENTAZIONE
IN AGRICOLTURA

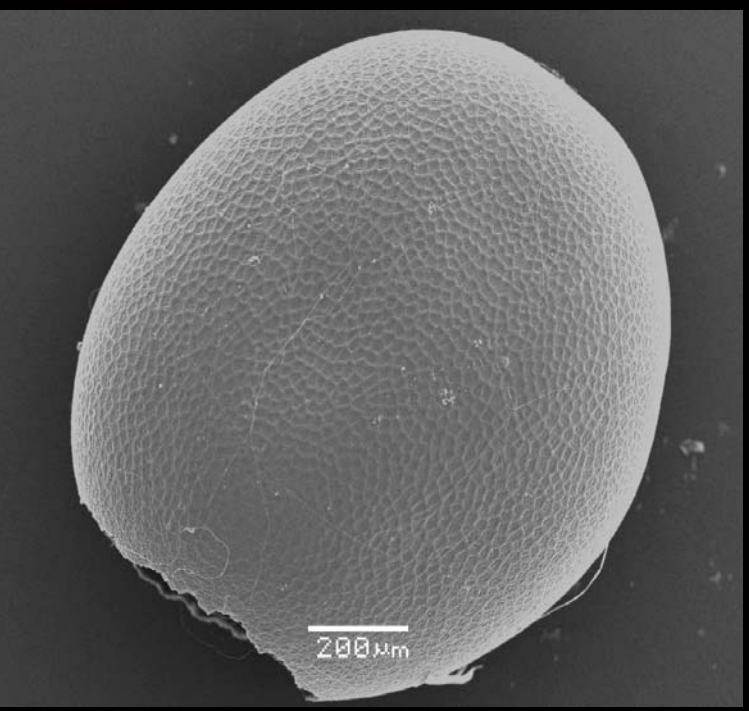
Transgenic silkworms

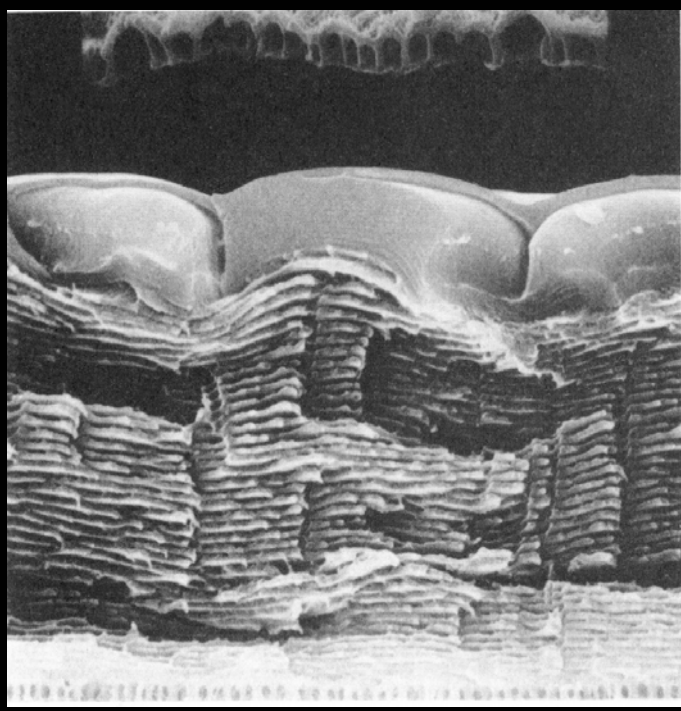


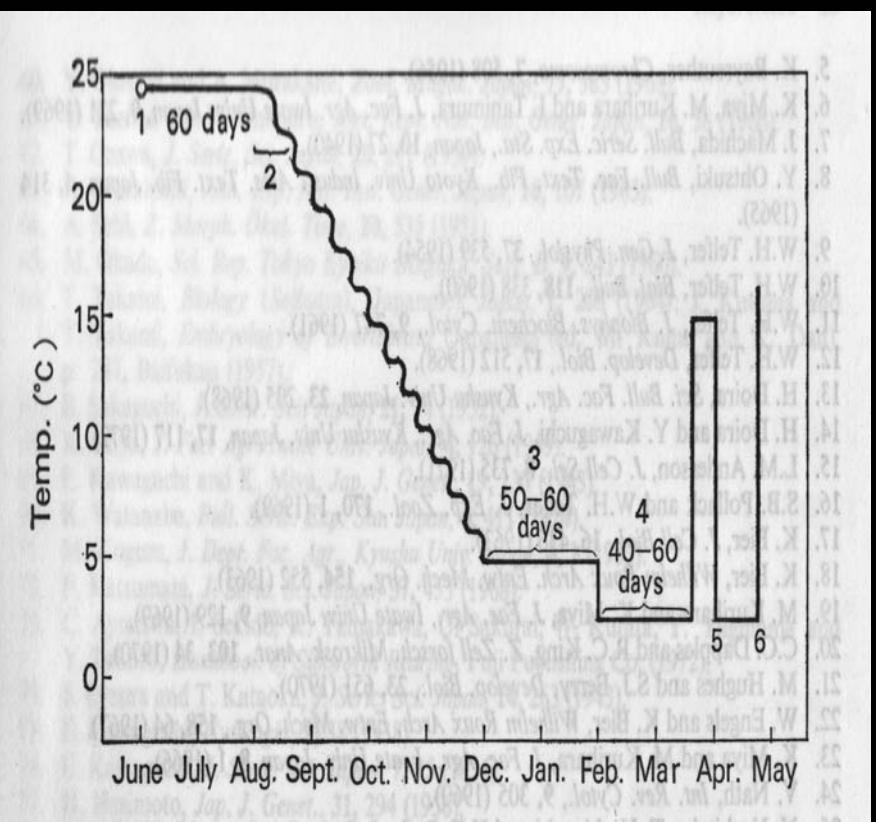
CRA
CONSIGLIO PER LA RICERCA E LA SPERIMENTAZIONE IN AGRICOLTURA

Research: Artificial diets and germfree rearing of the silkworm

Research: Silkworm egg long-term preservation







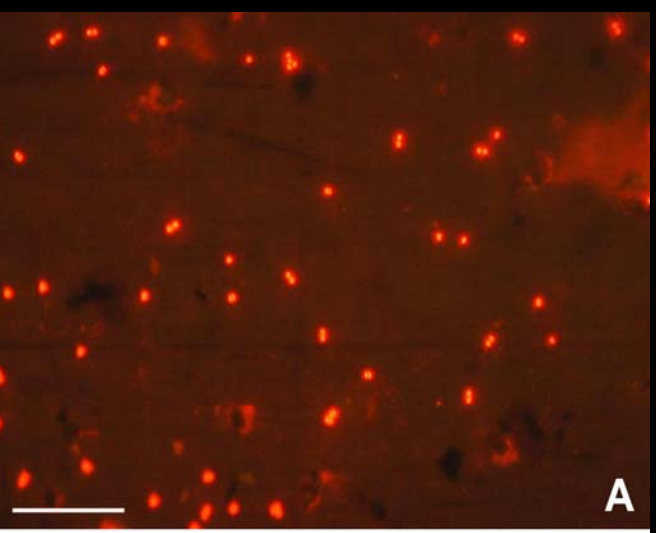
Research: mechanization in mori-sericulture

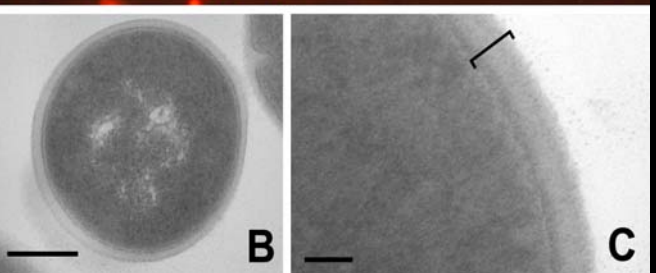
CRA
CONSIGLIO PER LA RICERCA
E LA SPERIMENTAZIONE
IN AGRICOLTURA

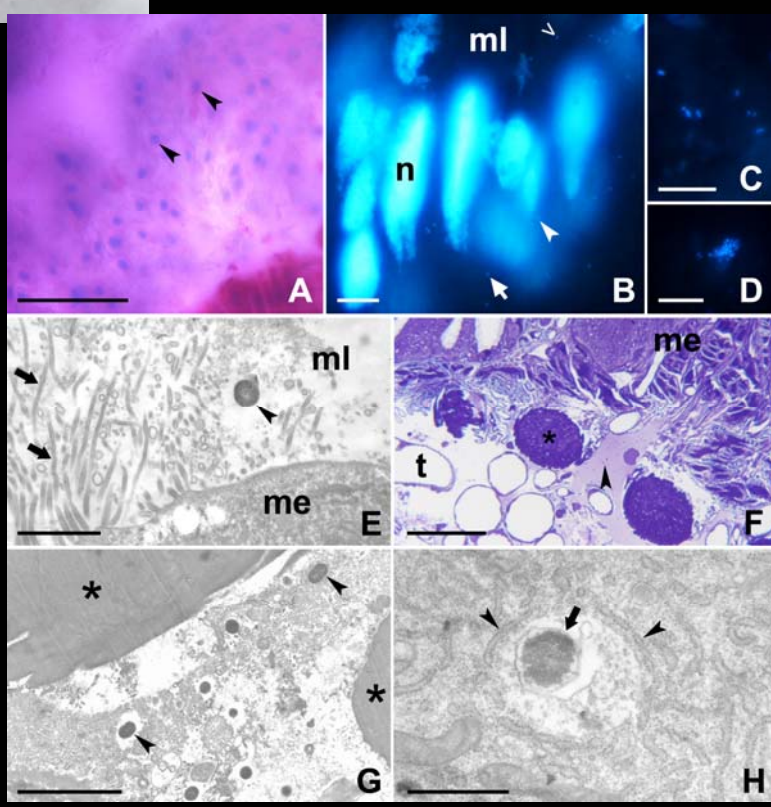
Research: moriculture for multipurpose utilization

CRA
CONSIGLIO PER LA RICERCA
E LA SPERIMENTAZIONE
IN AGRICOLTURA

Research: Silkworm pathology







CRA
CONSIGLIO PER LA RICERCA E LA SPERIMENTAZIONE IN AGRICOLTURA

Research: New uses of the silkworm apart for textiles

Projects recently approved

- SilkBioTech: Bando Metadistretti Lombardi; Section Fashion & New Materials; Coordinator: Staz. Seta (MI).

- Biosilk Road: back to Italy (Fondazione Cassa di Risparmio di PD e RO). Science & Technolgy area. Coordinator: CRA-API.