

Al Presidente del CUIA – Rettorato
Università degli Studi, Piazza Cavour 19/f
62032 Camerino (MC) - cuia.presidenza@unicam.it
E p.c. coordinatore Consiglio Scientifico
Prof.ssa Lucia Strappini – Università Stranieri Siena - strappini@unistrasi.it

Descrizione sommaria del progetto

The common bean (*Phaseolus vulgaris*) is the most important legume for human consumption and the most important source of protein in many countries. Argentina is the ninth producer of beans and the third exporting country in the world. Italy is the third producer in Europe.

The wild form is distributed from northern Mexico to northern Argentina. Domestication occurred at least once in the Andean region, not earlier than 8,000 years ago. Domestic beans from this area and from the other major domestication center in Mesoamerica were imported in Europe after the discovery of the Americas, where hybridized, spread, adapted, differentiated in many varieties, and were taken back to South-America for extensive cultivation in recent times.

The analysis of genetic variation is a powerful tool to study the relationships between wild and domestic forms. In this study we plan to select a representative number of bean wild and domesticated populations in Argentina, including historical materials preserved in museum and herbariums, analyse them using already developed molecular markers, and compare the new genetic data with data already available for both Andean and European samples using Bayesian statistical inference.

Obiettivi

1. Estimate the levels of genetic variation within and between a selected number of wild and domestic common bean groups in Argentina, using both modern and historical samples.
2. Identify important sources of genetic variation in Argentinean common beans to be preserved and possibly exploited in future breeding programs
3. Reconstruct relevant aspects of the domestication and hybridization processes that occurred to common beans in Argentina

Carattere originale ed innovativo rispetto alla macroarea di riferimento

The major innovations we introduce in the genetic study of the common bean and its domestication are i) considering both modern and historical specimens for DNA typing and ii) applying recently developed statistical methods based on simulations

Eventuali collegamenti con i temi della ricerca UE (p.es. VII° Programma Quadro)

The EU allocates around 1.9 billion Euros to the *Cooperation* program called 'Food, Agriculture and Fisheries, and Biotechnology', a research theme under FP7. The primary aim of this program is to build a knowledge-based Bio-Economy, funding Life Sciences and Biotechnology studies that provides the knowledge-base for the sustainable management, production and use of biological resources (e.g. agriculture, food, forestry, fisheries and other bio-based industries).

Esporre le ragioni per cui si ritiene che possa raccogliere l'attenzione dei 2 Paesi e del CUIA

1. New sources of genetic variation in wild beans can be identified, preserved, and possibly used for genetic improvement of domestic varieties.
2. A question regarding the history of domestication and hybridization events which played an important role in shaping the present day economies of Italy and Argentina can be addressed.

Indicare eventuali partner italiani ed argentini interessati

- Laura Nanni (Ricercatrice) e Roberto Papa (Professore Associato), Dipartimento di Scienze Agrarie, Alimentari ed Ambientali, Università Politecnica delle Marche, Ancona
- David Caramelli (Professore Associato), Dipartimento di Biologia Evoluzionistica, Università di Firenze
- Marta Zulema Galvan, Consejo Nacional de Investigaciones Científicas y Técnicas, Instituto de Fisiología Vegetal, La Plata 1900, Buenos Aires, Argentina

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FIRMA:

(Giorgio Bertorelle, Professore Associato in

Genetica, Dipartimento di Biologia ed Evoluzione, Università di Ferrara)