

Cut flower chrysanthemum: varietal improvement methods

Riferimenti

Tipo di progetto

Gruppo Operativo

Acronimo

CRIREC

Tematica

Biodiversità

Information

Time frame

2020 - 2021

Durata

18 months

Partners (no.)

3

Regione

Liguria

Comparto

Florovivaismo

Localizzazione

ITC11 - Torino

ITC31 - Imperia

Costo totale

€99.857,90

Fonte di finanziamento principale

Programma di sviluppo rurale

Programma di sviluppo rurale

2014IT06RDRP006: Italy - Rural Development

Programme (Regional) - Liguria

Parole chiave

Pest /disease control

Farming practice

Genetic resources

Agricultural production system

Sito web

<http://www.progetti.florcoop.it/>

Project status

ongoing



Objectives

Recover, restore and make available to Ligurian growers varieties of cut flower chrysanthemums, very attractive from the commercial point of view and not listed in the catalogs of Dutch and Danish breeders. Examples are Dilana, Snowdon and Turner varieties of chrysanthemum, which are still required by the national market but have lost the intrinsic positive characteristics of the variety due to the viral diseases spread by the continuous agamic propagation.

Activities

Plants of the varieties of chrysanthemum (Dilana, Snowdon and Turner) will be sampled for: 1) the diagnosis of viruses and viroids through Next Generation Sequencing techniques, hunting for known and new viral forms affecting plants and serving for controls in new molecular diagnostic assays for the control of restored plants, to be set in the project, 2) restoration of varieties. The plants will be placed in vitro, heat treated and the meristems will be collected and micropropagated. The restored plants will be set in an insect-proof greenhouse to obtain a pool of mother plants that will be checked for the absence of viruses and used for the production of agamic material that meets the territorial needs

Context

The chrysanthemum market at national level is divided as follows: chrysanthemums grown for 12 months a year (programmed) and single-stemmed uniflora varieties produced and marketed for the commemoration of the dead. The latter product is in great demand and sold in Liguria and neighboring regions. The chrysanthemum is susceptible to viruses and viroids infections that can be transmitted by insects, cultural practices, contact with infected plants or by seed. For these pathogens there is no

cure, only preventive control. The vegetative propagation in the chrysanthemum causes the transmission of infections to the new cuttings and leads to pathogens accumulation, reduction of the vigor of the plant and heavy symptomatology in plants, leaves and flowers. In Italy situation about viral/viroidal infection of chrysanthemum is as follows: a) chrysanthemum carlavirus B is widespread, the symptoms are mosaic or vein clearing of the leaves and poor quality of the flower heads; b) tomato aspermy cucumovirus, induces plant dwarfism, deformation and mottling of the heads; c) tomato spotted wilt tospovirus causes severe necrosis on leaves, stems, flowers, plant dwarfism and scaling in flowering. A further Tospovirus, chrysanthemum stem necrosis virus, transmitted by thrips causes very serious necrosis, and is listed in the EPPO A1 list of quarantine concerning viruses. Chrysanthemum stunt pospiviroid is a very infectious viroid, listed in the EPPO A2 list, and represents a severe chrysanthemum pathogen that causes dwarfism, chlorotic spotting on leaves and discoloration and deformation on flowers. Following virus infection the plants may become even more susceptible to other pathogens, as for example to tracheovorticilliosis attack.

Partenariato

Role	Azienda	Address	Telephone	E-mail
Leader	Florcoop Sanremo società cooperativa agricola	Regione Periane 248 18018 Taggia IM Italy	0184 51650	g.vinci@florcoop.it
Partner	CNR - Istituto per la Protezione Sostenibile delle Piante	Strada delle Cacce 73 10135 Strada delle Cacce TO Italy	011 3977911	segreteria@ipsp.cnr.it
Partner	CREA - OF (San Remo)	Corso degli Inglesi 508 18038 Sanremo IM Italy	0184 69481	of.sanremo@crea.gov.it

Pratiche abstract

Description

Innovative diagnostic tool: the Next Generation Sequencing. This kind of technology has gained huge popularity in recent years thanks to the high potentiality and to the lowering of its costs and it is considered the basis for the setting of new diagnostic approaches. The NGS diagnostic approach is an innovative, powerful and valid tool to identify viruses and viroids new or known infecting plant tissue even with low titers. This technology is currently successfully used to investigate etiology issues in pathogenic syndromes in plant diseases. Several different NGS approaches are available for the virome reconstruction: NGS of total RNA extracts is one of the most efficient approaches and it will be used inside CRIREC project for the reconstruction of chrysanthemum virome.

Description

Protocol for the restoration of cut flower chrysanthemum varieties. The most reliable virosis remediation method results from the harvesting of the meristem from actively growing material combined with heat treatments with high temperatures that allow viral / viroidal inactivation. The harvest of the meristems allows to obtain new plants that micropropagated in vitro on a semi-solid substrate with added hormones, give rise to plants with the same characteristics as the plants of origin. Such plants can be further propagated and set in greenhouses to have mother plants. Established the health of mother plants, portions of stem are used for agamic propagation obtaining plants for the production of virus-free chrysanthemums.

Link utili

Titolo/Descrizione	Url	Tipologia
Sito web Capofila	http://www.florcoop.it/	Link ad altri siti che ospitano informazioni del progetto
Sito web partner	http://www.ipsp.cnr.it/	Link ad altri siti che ospitano informazioni del progetto
Soto web partner	https://www.crea.gov.it	Link ad altri siti che ospitano informazioni del progetto
