

Italy

D'Onghia A.M., Djelouah K., Carimi F., De Pasquale F., Savino V., Catalano L., Scillipoti O.

in

D'Onghia A.M. (ed.), Menini U. (ed.), Martelli G.P. (ed.).
Improvement of the citrus sector by the setting up of the common conservation strategies
for the free exchange of healthy citrus genetic resources

Bari : CIHEAM

Options Méditerranéennes : Série B. Etudes et Recherches; n. 33

2001

pages 171-179

Article available on line / Article disponible en ligne à l'adresse :

<http://om.ciheam.org/article.php?IDPDF=2001707>

To cite this article / Pour citer cet article

D'Onghia A.M., Djelouah K., Carimi F., De Pasquale F., Savino V., Catalano L., Scillipoti O. **Italy**. In :
D'Onghia A.M. (ed.), Menini U. (ed.), Martelli G.P. (ed.). *Improvement of the citrus sector by the setting
up of the common conservation strategies for the free exchange of healthy citrus genetic resources*. Bari
: CIHEAM, 2001. p. 171-179 (Options Méditerranéennes : Série B. Etudes et Recherches; n. 33)



<http://www.ciheam.org/>
<http://om.ciheam.org/>

Italy

Project team

- Mrs. A.M. D'ONGHIA, Mr. K. DJELOUAH, Mediterranean Agronomic Institute of Bari
- Mr. F. CARIMI, Mr. F. DE PASQUALE, Consiglio Nazionale delle Ricerche, Istituto di Ricerca per la Genetica degli Agrumi, Palermo
- Mr. V. SAVINO, Dipartimento di Protezione delle Piante e di Microbiologia Applicata, University of Bari
- Mr. L. CATALANO, Consorzio Vivaistico Pugliese (COVIP), Bari
- Mr. O. SCILLIPOTI, La Palmara Vivai, Furnari (Messina)



Citrus varieties

Species/Varieties	Cultivated areas	Superficies (Ha)	Yield/Ha (q)	Exportation 1000/T
Common Oranges Belladonna, Biondo Comune, Ovale Calabrese, Salustiana, Valencia Late Campbell, Valencia Late Olinda	Sicily, Calabria, Apulia, Campania, Sardinia	1970	90	18
Navel Oranges Washington, Navelina ISA, Navelate, Newhall	Sicily, Calabria, Apulia, Sardinia	1240	100	12,4
Blood Oranges Moro, Sanguinello Comune, Sanguinello Moscato, Sanguigno, Tarocco, Tarocco Catania, Tarocco Giallo, Tarocco Meli, Tarocco Messina, Tarocco Liscio, Tarocco Rosso, Tarocco Sciré, Tarocco Tapi	Calabria, Sicily	1000	93	93,3
Sour Oranges Bergamot, Citron	Calabria	4015	65	26,1
Mandarins and Mandarins-like Mediterranean, Avana Apireno, Avana Tardivo, Fortune, Nova, Palazzelli	Apulia, Calabria	1000	79	7,9
Clementine Clementine comune, Di Nules, Oroval, Satsuma Miyagawa	Apulia, Calabria, Sicily, Sardinia	6950	80	55,6
Lemons Feminello Comune, Femminello Ovale, Feminello Zagara Bianca, Interdonato, Mesero, Monachello, Sfusato, Amalfitano, Vilafranca	Sicily, Calabria, Campania	36	100	60
Grapefruit Marsh Seedless, Star Ruby	Sicily	470	100	4,7
Totale		16 731		280

Citrus phytosanitary problems

Pathogens		Diseases		References
Virus and virus-like				
CVV	X	Inf. variegation/Crinkly leaf	X	Majorana and Martelli, 1968
CiLRV	X	Leaf rugose	X	
CPsV	X	Psorosis	X	Catara and Grasso, 1968 D’Onghia <i>et al</i> ; 1998
SDV		Satsuma dwarf		
CTLV		Tatterleaf/Citrange stunt		
CTV		Tristeza		Davino and Catara, 1986 D’Onghia, 1998
CVEV		Vein enation/Woody gall		
		Concave gum	X	Scaramuzzi and Salerno, 1959 D’Onghhia <i>et al.</i> , 1994
		Cristacortis	X	Scaramuzzi and Catara, 1968 D’Onghia, 1998
		Impietratura	X	Ruggieri, 1955; Catara, 1984
CEVd	X	Exocortis	X	Catara, 1984; D’Onghia, 1998 Albanese <i>et al.</i> , 2000
CCaVd	X	Cachexia	X	Servazzi <i>et al.</i> , 1965; Catara, 1984; D’Onghia, 1998; Albanese <i>et al.</i> , 2000)
CVds	X	Citrus viroids	X	Albanese <i>et al.</i> , 2000
		Chlorotic dwarf disease		
		Gummy bark		
Fungus				
<i>Phytophthora sp</i>	X	Phytophthora gummosis	X	Favaloro and Sammarco, 1973; Ippolito <i>et al.</i> , 1990; 1991
<i>Fusarium sp</i> , <i>Roselinia sp</i>	X	Root rot	X	
<i>Phoma tracheiphila</i>	X	Mal secco	X	Salerno and Cutuli, 1981; De Cicco <i>et al.</i> , 1986
Bacteria and Bacteria-like				
<i>Pseudomonas syringae</i>		Blast and Black pit	X	De Cicco <i>et al.</i> , 1978
<i>X. axonopodis pv citri</i>		Citrus canker		
<i>Candidatus L. asiaticus</i>		Greening		
<i>Candidatus L. africanum</i>				
Nematodes				
<i>Tylenchulus semipenetrans</i>	X		X	Vovlas <i>et al.</i> , 1993
<i>Pratylenchus vulnus</i>	X		X	Vovlas <i>et al.</i> ,, 1998
Phytoplasmas				
<i>Spiroplasma citri</i>		Stubborn	X	Ruggieri, 1965; Catara, 1984
		Witches’ broom		

X= present in the country

Citrus germplasm

Location	Date of creation	N° of accessions*	Characterization		
			morphological	trueness-to-type	sanitary
National					
Istituto Sperimentale per l'Agrumicoltura, Acireale Catania (ISA)	1960	770	X	X	X
Istituto di Ricerca per la genetica degli agrumi, CNR and University of Palermo	1976	300	X	X	X
Mediterranean Agronomic Institute, Bari (IAMB), Centro Basile e Caramia, Bari (CRSA) and University of Bari	1992	120	X	X	X
University of Catania	1970	320	X	X	X
Consorzio interprovinciale di Frutticoltura (CIF), Cagliari	1992	122	X	X	X
Centro Nazionale delle Ricerche (CNR),, Sassari	1990	160	X	X	X

List of certified *Citrus* spp.

Variety	Clone	Selection	Code	Ministerial list
Sweet orange <i>Citrus sinensis</i> (L.) Osbeck				
Fisher Navel C 4068	PAL 2-13-32	ISA	CSI 0028	22 03 2001
Moro nuc. 58-8D-1	PAL 8-3-7	ISA	CSI 0001	23 09 1997
Madame Vinous	A0017	IAM-UBA	CSI0029	25 02 1998
Navelate ISA 105	PAL 11E-4-1	ISA	CSI 0002	23 09 1997
Navelina ISA 315	PAL 8-16-6	ISA	CSI 0003	23 09 1997
Navelina V.C.R.	PAL 8-15-7	ISA	CSI 0004	23 09 1997
Navelina	A0006	IAM-UBA	CSI 0024	25 02 1998
Navel tardivo	A0009	IAM-UBA	CSI 0025	25 02 1998
Newhall V.C.R.	PAL 8-25-5	ISA	CSI 0005	23 09 1997
Sanguinello Moscato Cuscunà nuc.58-52F-1	PAL 8-25-15	ISA	CSI 0006	23 09 1997
Sanguinello Moscato nuc. 49-5-5	PAL 8-5-6	ISA	CSI 0007	23 09 1997
Sanguinello S.S.A. nuc. 66-SSA-12	PAL 8-27-9	ISA	CSI 0008	23 09 1997
Tarocco Gallo V.C.R.	PAL 8-2-4	ISA	CSI 0009	23 09 1997
Tarocco nuc. 57-1E-1	PAL 8-1-6	ISA	CSI 0010	23 09 1997
Tarocco Rosso V.C.R.	PAL 8-4-5	ISA	CSI 0011	23 09 1997
Tarocco Scirè V.C.R.	PAL 8-10-3	ISA	CSI 0012	23 09 1997
Tarocco	A0012	IAM-UBA	CSI 0026	25 02 1998
Tarocco Scirè nuc. D 2071	PAL 11B-4-17	ISA	CSI 0015	22 03 2001
Tarocco Scirè nuc. D 2062	PAL 11B-4-14	ISA	CSI 0016	22 03 2001
Tarocco Meli nuc. C 8158	PAL 11B-4-26	ISA	CSI 0017	22 03 2001
Tarocco Tapi	PAL 3-1-13	ISA	CSI 0018	22 03 2001
Tarocco Sciara nuc. C 1882	PAL 11A-2-21	ISA	CSI 0019	22 03 2001
Tarocco Gallo nuc. C 898	PAL 11A-7-3	ISA	CSI 0020	22 03 2001
Tarocco Messina nuc. C 1635	PAL 11A-1-2	ISA	CSI 0021	22 03 2001
Thomson Navel nuc.	PAL 11E-5-2	ISA	CSI 0013	23 09 1997
Valencia Olinda nuc. C.E.S. 2750	PAL 1B-5-6	ISA	CSI 0022	22 03 2001
Valencia Campbell nuc. S2 G-18-19	PAL 1B-5-3	ISA	CSI 0023	22 03 2001
Washington Navel nuc. C.E.S. 3033	PAL 1B-19-3	ISA	CSI 0014	23 09 1997
Washington Navel	A0005	IAM-UBA	CSI 0027	25 02 1998
Bergamotto <i>Citrus bergamia</i> Risso				
Castagnaro V.C.R.	SG 5-10-6	ISA	CBE 0001	23 09 1997
Fantastico V.C.R.	SG 5-19-10	ISA	CBE 0002	23 09 1997
Femminello V.C.R.	SG 5-19-16	ISA	CBE 0003	23 09 1997
Calamondin <i>Citrus mitis</i> o <i>madurensis</i> (Lour)				
Calamondin	CSSA 1M	ISA	CMI 0001	22 03 2001

continued

Variety	Clone	Selection	Code	Ministerial list
Citron <i>Citrus medica</i> L.				
Diamante V.C.R.	SG 1-5-5	ISA	CME0001	23 09 1997
Etrog	A0018	IAM-UBA	CME0002	25 02 1998
Mano di Budda	CSSA 0-35-3	ISA	CME 003	22 03 2001
Lime <i>Citrus limonia</i> (Osbeck)				
Rossa S. Barbara	CSSA 0-21-7	ISA	CLM 0001	22 03 2001
Lime <i>Citrus aurantifolia</i>				
Limetta messicana	A0013	IAM-UBA	CAU 0001	25 02 1998
Clementine <i>Citrus clementina</i> Hort. Ex Tanaka				
Comune	A0003	IAM-UBA	CCL 0004	25 02 1998
Comune ISA V.C.R.	PAL 8-30-12	ISA	CCL 0005	22 03 2001
Comune SRA 63	PAL 6-20-2	ISA	CCL 0006	22 03 2001
Comune	A0010	IAM-UBA	CCL 0007	25 02 1998
di Nules V.C.R.	PAL 8-28-12	ISA	CCL 0001	23 09 1997
Fedele	A0001	IAM-UBA	CCL 0008	25 02 1998
Fedele	A0002	IAM-UBA	CCL 0009	25 02 1998
Hernandina V.C.R.	CSSA	ISA	CCL 0010	22 03 2001
Marisol V.C.R.	PAL 11G-2-29	ISA	CCL 0002	23 09 1997
Monreal apireno V.C.R. rosso	PAL 8-31-7	ISA	CCL 0011	22 03 2001
Monreal apireno V.C.R. verde	PAL 8-13-8	ISA	CCL 0012	22 03 2001
Oroval V.C.R.	PAL 8-18-11	ISA	CCL 0003	23 09 1997
Oroval	A0011	IAM-UBA	CCL 0013	25 02 1998
Rubino B V.C.R.	PAL 8-21-5	ISA	CCL 0014	22 03 2001
Spinoso	A0004	IAM-UBA	CCL 0015	25 02 1998
Spinoso V.C.R.	PAL 8-14-4	ISA	CCL 0016	22 03 2001
Kumquat <i>Fortunella</i> spp.				
Ovale	CSSA 14M	ISA	FMA0001	22 03 2001
A frutto grande e rotondo (Meiwa)	CSSA 5M	ISA	FCR 0001	22 03 2001
A frutto grande e obovato	CSSA 0-44-11	ISA	FOB 0001	22 03 2001
A frutto rotondo e piccolissimo	CSSA 0-38-4	ISA	FHI 0001	22 03 2001
Lemon <i>Citrus limon</i> (L.) Burm. f.				
Adamo V.C.R. 103	CSSA	ISA	CLI 0001	23 09 1997
Cerza V.C.R.	CSSA	ISA	CLI 0002	23 09 1997
Eureka	A0020	IAM-UBA	CLI 0004	25 02 1998
Femminello comune nuc. 46-644	CSSA	ISA	CLI 0005	22 03 2001
Femminello siracusano nuc. 2KR	CSSA	ISA	CLI 0006	22 03 2001
Monachello nuc. 51-17C-8	FOC -1A-14-3	ISA	CLI 0003	23 09 1997
Sfusato amalfitano	A0008	IAM-UBA	CLI 0007	25 02 1998
Meyer	A0021	IAM-UBA	CLI 0008	25 02 1998
Rough lemon <i>Citrus jambhiri</i>				
Limone rugoso	A 0019	IAM-UBA	CJB 0001	25 02 1998
Grapefruit <i>Citrus paradisi</i> Macf.				
Duncan	A 0022	IAM-UBA	CPA 0002	25 02 1998
Marsh seedless nuc. 50-27C-1	PAL 8-11-5	ISA	CPA 0001	23 09 1997
Mandarin <i>Citrus deliciosa</i> Ten				
Avana apireno nuc. 62-Ap-9	PAL 8-17-16	ISA	CDE 0001	23 09 1997
Tardivo di Ciaculli nuc. 60-22A-2	PAL 8-20-8	ISA	CDE 0002	23 09 1997

continued

Variety	Clone	Selection	Code	Ministerial list
Microcitrus <i>Microcitrus papuana</i>				
Papuana	CSSA 0-35-1	ISA	MPA 0001	22 03 2001
Satsuma <i>Citrus unshiu</i> Marc				
Miyagawa nuc.	PAL 8-7-13	ISA	CUN 0001	23 09 1997
Tangerine <i>Citrus tangerina</i>				
Parson's Special	A 0016	IAM-UBA	CTG 0001	25 02 1998
Hybrids				
Cami	PAL 11F-8-3	ISA	CIB 0001	23 09 1997
Fortune	PAL 11F-18-3	ISA	CIB 0002	23 09 1997
Palazzelli 52-15F-276	PAL 8-15-16	ISA	CIB 0003	23 09 1997
Mapo 50-27 A-32	PAL 6A-5-1	ISA	CIB 0004	23 09 1997
Minneola	PAL 11E-2-8	ISA	CIB 0005	23 09 1997
Nova	PAL 11F-14-5	ISA	CIB 0006	23 09 1997
Ortanique nuc.	PAL 8-32-8	ISA	CIB 0007	23 09 1997
Siamelo CRC 2486	CSSA 0-29-6	ISA	CIB 0008	23 09 1997
Tangor Dweet	A0014	IAM-UBA	CIB 0014	25 02 1998
Triploide Tacle	PAL 3A-3-1	ISA	CIB 0009	22 03 2001
Triploide Reale	PAL 3A-1-2	ISA	CIB 0010	22 03 2001
Triploide Clara	PAL 3-1-9	ISA	CIB 0011	22 03 2001
Triploide Camel	PAL 1A-2-24	ISA	CIB 0012	22 03 2001
Pursha x Chinotto	CSSA 0-9-9	ISA	CIB 0013	22 03 2001

Citrus programmes

Programmes	Proposed	Running	Legislation
Clonal and sanitary selection	1995 EU Plurifund Operational Programmes (POP), Projects - Apulia - Sicily - Calabria - Sardinia	1997	
Monitoring, eradication and control of quarantine pests		1996	Ministerial Decree 1996
Certification (voluntary)		1997	Ministerial Decree 1993
CAC certification			European directive 1997
Quarantine		1931	Ministerial Decree 2000
Others	1999 Variety list programme	1999-present	

Public and private institutions working in citrus

Institutions or others	Location	Type of activity	Personnel		Facilities
			No.	Qualifications	
Public					
Istituto Sperimentale per l'Agrumicoltura	Acireale (CT)	Research Conservation Center Breeding	10	5 researchers 5 technicians	In vitro lab Breeding lab Diagnosis lab Experimental fields
Istituto di Ricerca per la Genetica degli Agrumi CNR	Palermo	Research Breeding	8	5 researchers 3 technicians	In vitro lab Variety lab
MAIB	Valenzano (Bari)	Research Breeding	6	2 Researchers 3 Technicians	Screenhouse Indexing greenhouse Diagnosis lab. In vitro lab Experimental fields
CRSA	Locorotondo (Bari)	Premultiplication Center	4	2 Researchers 2 Technicians	Screenhouses Indexing greenhouse Diagnosis lab In vitro lab Experimental fields
University of Bari	Bari	Research Breeding Conservation Center	8	5 Researchers 3 Technicians	Screenhouses Indexing greenhouse Diagnosis lab In vitro lab Experimental fields
University of Catania	Catania	Research Breeding	8	5 Researchers 3 Technicians	In vitro lab Breeding lab Diagnosis lab Experimental fields
University of Napoli	Napoli	Research	4	2 Researchers 2 Technicians	Diagnosis lab
University of Reggio Calabria	Reggio Calabria	Research	4	4 Researchers	Diagnosis lab
Consorzio interprovinciale di Frutticoltura	Cagliari	Research Breeding	4	2 Researchers 2 Technicians	Diagnosis lab
CNR-Sassari	Sassari	Research	4	4 Researchers	In vitro lab Varietal analysis lab Diagnosis lab
Private					
Consorzio Vivaistico Pugliese (COVIP)	Bari	Multiplication center	2	2 Technicians	Multiplication field Net tunnels
Mangiapane vivai	Lamezia Terme (CZ)	Multiplication center	3	3 Technicians	Multiplication field Net tunnels Screenhouse
La Palmara vivai	Furnari (ME)	Variety collection Propagation	3	3 Technicians	Multiplication field Net tunnels
Tintori Vivai	Pescia (PS)	Variety collection Propagation	4	4 Technicians	Multiplication field Net tunnels Greenhouse

Financial Table

Project steps	Facility/instruments/activity	Units	Cost (€)
Inventory	GPS	3	15.000
	GIS	1	8.000
Conservation for characterization	Planting and equipments for the conservation field	3 Ha	75.000
Genetic and agronomic characterization	Laboratory equipments, furnitures and running materials	1	200.000
Physiological WUE characterization	Laboratory equipments, furnitures and running materials	1	50.000
Sanitary assessment	Laboratory equipments, furnitures and running materials	1	85.000
	1 Indexing greenhouse, equipments (benches, shade etc...) and running materials	100 m ²	100.000
	1 Insect-proof screenhouse	300 m ²	120.000
Sanitation	Equipments for <i>in vitro</i> laboratory	1	100.000
	1 thermotherapy chamber	1	30.000
	1 conditioned greenhouse	200 m ²	100.000
Conservation in vitro	Equipments for <i>in vitro</i> laboratory	1	100.000
Conservation in vivo and assessment of pomological traits	1 Insect-proof screenhouse	700 m ²	300.000
Training	Short-courses		100.000
	Stages		100.000
	Technical visits		80.000
	Travel expenses		80.000
Missions and part time personnel			160.000
Supply	Transport vehicle	1	30.000
	Books, publications, CD		3.000
	PC and printer	1	3.000
General expenses			183.900
TOTAL			2.022.900