

Portugal

Nolasco G.

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for the free exchange of healthy citrus genetic resources

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Project team

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Importance of citriculture

In Portugal citrus industry is very important by the economical and historical point of view. In the last years, the Governmental politics has financially supported the renewing the existing orchards through the re-grafting and new plantation programme in order to substitute as well as belting in new plantations. This with the aim to improve the quality and to extend the harvesting seasons. At the same time the re-structures and modernisation of nurseries was also encouraged through co-financed programmes of Portuguese Government and EU.

Citrus distribution map



Citrus varieties

Species/Varieties	Cultivated areas	Area (Ha)	Yield/Ha (q)
Oranges		10 328	125
<i>Valencia Late, Vulgar</i>			
<i>Common</i>			
<i>Navel</i>		7 697	125
<i>Blood</i>			
Mandarins and mandarin-like		4 565	95
Tangerine			
Lemons		790	130
Grapefruit		22	100
Totale		23402	

Citrus phytosanitary problems

Pathogens		Diseases		References
Virus and virus-like				
CVV	X	Inf. variegation/Crinkly leaf	X	Bennani <i>et al</i> in press -EJPP
GiLRV		Leaf rugose		
CPsV		Psorosis	X	
SDV		Satsuma dwarf		
CTLV		Tatterleaf/Citrange stunt		
CTV	X	Tristeza Usually mild strains in mainland introduced from Spain Severe stem pitting strains on Madeira island	X	No natural transmission until now in Mainland. T. citricida present on Madeira island (Nolasco <i>et al</i> - IOCV 98)
CVEV		Vein enation/Woody gall		
		Concave gum	X	unpublished
		Cristacortis		
		Impietratura	X	unpublished
CEVd	X	Exocortis	X	unpublished
CcaVd	X	Cachexia	X	unpublished
CVds	X	Citrus viroids	X	unpublished
		Chlorotic dwarf disease		
		Gummy bark		
Fungus				
<i>Phytophthora sp</i>	X	Phytophthora gummosis	X	unpublished
<i>Fusarium sp, Roselinia sp</i>	X	Root rot	X	unpublished
<i>Phoma tracheiphila</i>		Mal secco		
Bacteria and Bacteria-like				
<i>Pseudomonas syringae</i>		Blast and Black pit		
<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	X		X	unpublished
<i>Pratylenchus vulnus</i>				
Phytoplasmas				
<i>Spiroplasma citri</i>		Stubborn	X	(Bové 1995)
		Witches' broom		

X= present in the country

Citrus germplasm

Location	Date of creation	N° of accessions*	Characterization		
			morphological	trueness-to-type	sanitary
National					
Centro Citricultura/Direcção regional Agricultura Algarve	1995 Field collection”	112	-	-	Partial
Centro Citricultura/Direcção regional Agricultura Algarve	1995 ENFVN collection	91	-	-	Partial
Centro Citricultura/Direcção regional Agricultura Algarve	collection Corsica (San Giuliano) Used as foundation material for CAC	41	X	X	X

Citrus programmes

Programmes	Proposed	Running	Legislation
Clonal and sanitary selection		1995	no
Monitoring, eradication and control of quarantine pests		1995 -CTV	no
Certification			Not mandatory Law Decree 277/91 Port. 416/94 norm. 21/99 CAC mandatory
Quarantine			National law
Others			

Public and private institutions working in citrus

Institutions or others	Location	Type of activity	Personnel		Facilities
			Number	Qualifications	
Public					
Centro Citricultura	Faro, Algarve		2	superior	-----
Direcção Regional de Agricultura	Faro, Algarve	Governmental services Citrus repository			Insect proof Greenhouse, screenhouse, Diagnose and tissue culture labs
CDCTPV - University of Algarve	Faro, Algarve	Research (virology, Genetics and breeding, Nutrition)	40	21 PhD, 15PhD students. (Citrus related only: 4 PhD, 5 students)	Insect proof Greenhouse, Research Labs
Private					
Viveiros Foral (Welsh)	Foral, Algarve	Nursery			

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 <i>in vitro</i>	Equipments for <i>in vitro</i> laboratory	1	100.000
Conservation <i>in vivo</i> 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