

Table S1 Main features of the investigated Mediterranean cropping systems.

Orchard characteristics	Strawberry C	Strawberry I	Strawberry O	Hazelnut C	Hazelnut I	Hazelnut O	Apricot I-1	Apricot I-2	Apricot B	Kiwi fruit I	Peach I
Cultivar	<i>Melissa</i> <i>Sabrina</i> <i>Flaminia</i> <i>Nabila</i>	<i>Melissa</i> <i>Sabrina</i>	<i>Melissa</i>	<i>S. Giovanni</i>	<i>S. Giovanni</i>	<i>S. Giovanni</i>	<i>Ninfa</i>	<i>Orange Rubis</i>	<i>Ninfa</i>	<i>Hayward</i>	<i>UFO4</i>
Production cycle duration (years)	1	1	1	35	35	35	20	20	20	20	15
Planting density (trees ha-1)	75000 (0.35m x 0.20m)	99500 (0.30m x 0.30m)	99500 (0.30m x 0.30m)	400 (5m x 5m)	500 (4m x 5m)	400 (5m x 5m)	330 (6 m x 5 m)	400 (5 m x 5 m)	1000 (5 m x 2 m)	889 (4,5 m x 2,5 m)	1,482 (4,5 m x 1,5 m)
Training system	Double rows	Double rows	Double rows	single trunk	single trunk	multi-stem trunk	Vase	Vase	Y-transverse	Pergoletta	Y-transverse
Cultivation system	Conventional	Integrated	Organic	Conventional	Integrated	Organic	Integrated	Integrated	Biodynamic	Integrated	Integrated
Irrigation	Drip emitter	Localized	Localized	-	-	-	Micro-jet	Drip emitter	Micro-jet	Drip emitter	Drip emitter
Covering structures	Greenhouse	Greenhouse	Greenhouse	-	-	-	-	-	Greenhouse	-	-
Characteristics of support structures and irrigation system	-	-	-	-	-	-	Reinforced concrete poles; main pipe in PVC;	Reinforced concrete poles; main pipe in PVC;	Reinforced concrete poles; main pipe in PVC;	Reinforced concrete poles; main pipe and	Chestnut wood poles; in pvc; dispersing tubes and wings in

							dispersing tubes in zinc and polyethylen e	dispersing tubes in zinc and polyethylen e	dispersing tubes in zinc and polyethylen e	dispersing tubes in pvc and polyethyle ne	polyethylene
Pruning method	-	-	-	Manual	Manual	Manual	Manual	Manual	Manual	Manual	Manual
Pruning residues management	-	-	-	Firewood	Firewood	Used as soil mulching	Used as soil mulching	Used as soil mulching	Used as soil mulching	Used as soil mulching	Used as soil mulching
Fertilization	Mineral	Mineral/org anic	Mineral/org anic	Mineral/a nnual	Mineral/a nnual	-	Mineral/an nual	Mineral/an nual	-	Mineral/a nnual	Mineral/annual
Soil management/ weed control	-	-	-	Temporar y natural grass cover - Disk harrowing	Temporar y natural grass cover - Disk harrowing	Temporar y natural grass cover - Disk harrowing	Temporary natural grass cover - Disk harrowing	Temporary natural grass cover - Disk harrowing	Seeded grass cover/ Mulching/s hallow milling	Temporar y natural grass cover - Disk harrowing	Temporary natural grass cover - Disk harrowing
Disease control	Convention al products	Organic products	Organic products	Conventio nal products	Conventio nal products	-	Convention al products	Convention al products	Natural products	Conventio nal products	Conventional products
Harvesting method	Manual	Manual	Manual	Mechanize d	Mechanize d	Mechanize d	Manual	Manual	Manual	Manual	Manual
Average yield (kg ha⁻¹ year⁻¹)	38000	43550	24000	3300	3500	2200	20000	13500	20000	26000	26615

Table S2 Main features of the investigated Mediterranean cropping systems.

Orchard characteristics	Olive O1	Olive O2	Olive I-1	Olive I-2	Olive HO-1	Olive HO-2	Grapevine O-1	Grapevine O-2	Grapevine I	Grapevine C
Cultivar	<i>Salella</i> <i>Leccino</i> <i>Frantoiana</i>	<i>Rotondella</i> <i>Salella</i>	<i>Rotondella</i>	<i>Leccino</i> <i>Frantoio</i> <i>Carpellese</i>	<i>Rotondella</i> <i>Ogliarola</i>	<i>Rotondella</i> <i>Carpellese</i>	Aglianicone	Aglianicone	Aglianicone	Aglianico
Production cycle duration (years)	Secular	Secular	Secular	Secular	Secular	Secular	30	40	30	40
Planting density (trees ha-1)	156 (8 m x 8 m)	278 (6 m x 6 m)	833 (6 m x 2 m)	400 (5 m x 5 m)	333 (5 m x 6 m)	333 (5 m x 6 m)	5051 (2,20 m x 0,90 m)	5208 (2,40 m x 0,80 m)	3175 (1,5 m x 2,10 m)	3300 (2,5 m x 1,20 m)
Training system							Double Guyot	Spurred cordon	Single espalier	Bilateral Guyot
Cultivation system	Certified organic	Certified organic	Integrated	Intensive Integrated	Organic	Organic	Organic	Organic	Integrated	Conventional
Irrigation	-	-	-	-	-	-	-	-	-	-
Covering structures	-	-	-	-	-	-	-	-	-	-
Characteristics of support structures and irrigation system	-	-	-	-	-	-	Chestnut poles; Reused zinc head poles; reed rods; Galvanized	Chestnut poles; galvanized wire; reeds rods	Chestnut poles and braces; galvanized wire; nylon	Chestnut poles; galvanized poles; PVC wire

wire

twine

Pruning method	Manual	Manual	Manual	Manual	Manual	Manual	Manual	Manual	Manual/se mi- mechanized	Manual
Pruning residues management	Used as soil mulching	Composting	Firewood	Used as soil mulching	Firewood	Firewood	Used as soil mulching	Used as soil mulching	Burying by milling	Used as soil mulching
Fertilization	Annual/organic	Annual/organic	Annual/mineral	Annual/mineral	Annual/organic	-	Annual/organic	Three-year/organic	Annual/organic	Three-year/mineral
Soil management/weed control	Temporary natural grass cover - Disk harrowing	Temporary natural grass cover - Disk harrowing	Temporary natural grass cover - Disk harrowing	Disk harrowing - Glyphosate	Temporary natural grass cover - Disk harrowing	Temporary natural grass cover - Disk harrowing	Permanent natural grass/shredding	Permanent natural grass/shredding	Temporary natural grass cover - Disk harrowing	Temporary natural grass cover - Disk harrowing
Disease control	Organic products	Organic products	Conventional products	Conventional products	-	-	Organic products	Synthetic products/resistance promoters	Conventional products	Conventional products
Harvesting method	Mechanized	Mechanized	Manual	Mechanized	Manual	Manual	Manual	Manual	Manual	Manual
Average yield (kg ha⁻¹ year⁻¹)	8300	3500	8000	8500	4300	7400	10600	4700	7600	4900

Table S3 Farm inputs used in the investigated cropping systems in the reference period equal to the species productive cycle.

	Strawberry C	Strawberry I	Strawberry O	Hazelnut C	Hazelnut I	Hazelnut O	Apricot I-1	Apricot I-2	Apricot B	Kiwi fruit I	Peach I
Time horizon of the analysis (years)	1	1	1	35	35	35	20	20	20	20	15
Fertilizers (kg ha⁻¹)											
Compost											
Humus							330	400			
Organic nitrogen									100		
Organic Potassium									25		
Manure										3000	3000
Vegetable/organic fertilizer	1500										
Dermazoto N11											
Perphosphate							1000	1000			
Magnesium sulphate		250	2300								
Potassium sulphate			2326								
Ammonium sulphate			200								
Calcium nitrate	30	550								2160	1560
Potassium nitrate	25		350				1260	1440		1008	
Ammonium nitrate	300	50					1800	1800			
Magnesium nitrate		100									
Urea	75	450					1080	1080		2952	1456
NPK				23230	13200		7200	7200	500	2160	1560

Amminoram			
Euroalg			
Euroligo			
Biokalium			
Sequelane			1080
Hydromix	25	1290	
Resolvine 500	15	65	
Siapton	40	6265	
Fertildungstallatico		20	
Auxine e citochinine		1584	
Solubordf	11		
Partner 700	30		
Nutrimix	10		
Novatecsolub	150		
Maxiron 4,8	8		
Fosfoman	120		
Bio calcium	10		
Biocal	4		
Bioup	0,5		
Fertifield			
K-max			
N	85	85	
P ₂ O ₅	45	45	
K ₂ O	90	90	
Mg	8	8	

Chemicals (kg ha⁻¹)

Idrorame (kg)	218	218	2
Ramezin combi (kg)			
Sarmox 22 (kg)			
Prosper (kg)			
Success (kg)			
Previen (l)			
Fertirame 30 (l)			
Tribase 15 (kg)			
R6 trevi (kg)			
Flint (kg)			
Spirodiclofen (kg)			
Bordeaux mixture (kg)	324	324	
Lime (kg)			
Kaolin (kg)			
Vitabor (kg)			
Copper, Sulfur, Zeolite (kg)			
Idrofloral (kg)			
Iperion (kg)			
Boron (kg)			
Epik (kg)			
Judo (kg)	4.6	4.6	
Nimrod (kg)	27	27	
Tmtd (kg)	45	45	

Folicur (kg)						32.4	32.5		
Caddy (kg)						2.25	2.25		
Cloropitrina (lt)	180								
Dicloropropene (nematocida) (lt)	240								
Signum (kg)	3								
Piretrine (lt)		4.6	4.6						
Spinosad (lt)		0.4	0.4						
Piraclostobin (lt)		3	3						
Copper hydroxide (kg)				99					
Copper oxychloride (kg)		4.2	4.2	396	330	198			
Cuprous oxide (kg)				99					
Clofentezine (lt)			0.3						
Metaldeide (kg)			5						
Pirimetalin (lt)			2						
Micronized sulfur (lt)			1.2						
Copperic fungicide (kg)								70	
Difenoconazole (kg)				26.4	26.4				
Etofenprox (kg)				16.5	16.5				
Lambda-cyhalothrin (kg)				10					
Deltametrina (kg)				16.5	16.5				
Ziram (kg)									111
Imidacloprid (kg)									8.8
Tebuconazole (kg)									8.9
Sulfur (kg)		4	4	396	396	54	54	54	4.8

Thiophanate methyl (kg)				133	132						6.9
Mineral oil (kg)											31
Penconazole (kg)											12.4
Thiamethoxam (kg)											6.9
Azocyclotin (kg)											13.8
Sorbitan mono oleate (kg)											5.2
Glyphosate (kg)				128	30		54	54		85	63
Tiospor (kg)											
Propolis (kg)									66		86.4
Allego (kg)											
Iron structures (kg ha⁻¹ year⁻¹)	678	40	40								
Supporting structures (kg ha⁻¹)							3113	3340	23902		
Plastics (films, pipes, containers) (kg ha⁻¹year⁻¹)	1749	1118	1118				1397	1315	1603		
Human labour (h ha⁻¹)	4063	6150	3192	1530	1530	2556	17719	18259	11661	12506	10433
Machinery and farm tools (h ha⁻¹)				3424	3424	3763	4011	4011	1892	1142	776
Diesel (kg ha⁻¹)	234	201	201	6866	6866	6599	8097	8097	3910	5567	5115
Lubricants (kg ha⁻¹)	2	3	3	77	77	225	133	133	64	81.39	63.25
Electricity (kWh ha⁻¹)	4000	1275	1275								
Water (m³ ha⁻¹)	4440						90000	45000	72000		

Table S4 Farm inputs used in the investigated cropping systems in the reference period equal to the species productive cycle.

	Olive O1	Olive O2	Olive I-1	Olive I-2	Olive HO-1	Olive HO-2	Grapevine O-1	Grapevine O-2	Grapevine I	Grapevine C
Time horizon of the analysis (years)	1	1	1	1	1	1	30	40	30	40
Fertilizers (kg ha⁻¹)										
Compost	400									
Humus										
Organic nitrogen			800	800						
Organic Potassium										
Manure							44000	1000	40000	390000
Vegetable/organic fertilizer										
Dermazoto N11								14000		
Perphosphate										
Magnesium sulphate										
Potassium sulphate										
Ammonium sulphate										
Calcium nitrate										
Potassium nitrate										
Ammonium nitrate										
Magnesium nitrate										
Urea										
NPK					300					3237
Amminoram							206			
Euroalg							455			
Euroligo							224			
Biokalium							84			

Sequelane

Hydromix

Resolvine 500

Siapton

Fertildungstallatico

Auxine e citochinine

Solubordf

Partner 700

Nutrimix

Novatecsolub

Maxiron 4,8

Fosfoman

Bio calcium

Biocal

Bioup

Fertifield

13500

K-max

81

N

P₂O₅

K₂O

Mg

Chemicals (kg ha⁻¹)

Idrorame (kg)

Ramezin combi (kg)

168

Sarmox 22 (kg)

65

Prosper (kg)

83

Success (kg)

22

Previen (l)

94

Fertirame 30 (l)					56	
Tribase 15 (kg)					70	
R6 trevi (kg)						278
Flint (kg)						17
Spirodiclofen (kg)						6,4
Bordeaux mixture (kg)	3					
Lime (kg)		1.5				
Kaolin (kg)	1	1.5				
Vitabor (kg)	1.5					
Copper, Sulfur, Zeolite (kg)		1				
Idrofloral (kg)			6.5	6.5		
Iperion (kg)			9	9		
Boron (kg)	1		2	2		
Epik (kg)			1.2	1.2		
Judo (kg)						
Nimrod (kg)						
Tmtd (kg)						
Folicur (kg)					112	
Caddy (kg)						
Cloropitrina (lt)						
Dicloropropene (nematocida) (lt)						
Signum (kg)						
Piretrine (lt)						
Spinosad (lt)						
Piraclostobin (lt)						
Copper hydroxide (kg)						
Copper oxychloride (kg)					2.1	600
Cuprous oxide (kg)						

Clofentezine (lt)										
Metaldeide (kg)										
Pirimetalin (lt)										
Micronized sulfur (lt)										
Copperic fungicide (kg)										
Difenoconazole (kg)										
Etofenprox (kg)										
Lambda-cyhalothrin (kg)										
Deltametrina (kg)										
Ziram (kg)										
Imidacloprid (kg)										
Tebuconazole (kg)										
Sulfur (kg)							3	47		
Thiophanate methyl (kg)										
Mineral oil (kg)										
Penconazole (kg)										
Thiamethoxam (kg)										
Azocyclotin (kg)										
Sorbitan mono oleate (kg)										
Glyphosate (kg)				4						
Tiospor (kg)							518			
Propolis (kg)								47		
Allego (kg)								141		
Iron structures (kg ha⁻¹year⁻¹)										
Supporting structures (kg ha⁻¹)							2662	15450	28808	4749
Plastics (films, pipes, containers) (kg ha⁻¹ year⁻¹)									20	600
Human labour (h ha⁻¹)	257	85	501	120	186	52	16795	11477	5360	23886

Machinery and farm tools (h ha⁻¹)	117	69	134	106	130	66	3553	6117	5850	6175
Diesel (kg ha⁻¹)	181	66	81	80	54	58	8466	7677	15148	16954
Lubricants (kg ha⁻¹)							128	109	140	392
Electricity (kWh ha⁻¹)										
Water (m³ ha⁻¹)										
