

Strategie di controllo per ridurre l'infezione da fumaggini in melicoltura biologica

Problema

Le fumaggini sono costituite da molti agenti patogeni che variano di anno in anno, ma anche durante la stagione. Il danno è evidenziato da macchie scure sulla superficie del frutto (foto A-B). Durante la conservazione le macchie possono aumentare la loro dimensione (foto C)

Soluzione

- Utilizzando sistemi di coperture in campo (p. es. keep in touch system) si riduce la pressione delle fumaggini (foto D).
- L'impiego di macchine spazzolatrici sui frutti dopo la conservazione favorisce la pulizia dei frutti dalle macchie (foto E).

Benefici

Il rischio di avere un attacco da fumaggini è minore quando il frutteto è localizzato in zone arieggiate e se si utilizzano varietà a maturazione precoce.

Raccomandazioni pratiche

- Applicare tutte le misure preventive che mantengano l'impianto in condizioni asciutte:
 - la chioma degli alberi non dev'essere troppo densa.
 - Bisogna tagliare l'erba sotto il filare effettuando costanti passaggi.
 - Evitare tutti i fattori che prolungano la bagnatura delle foglie e aumentano l'umidità.
 - Evitare sistema di irrigazione sopra chioma. La bagnatura prolungata delle foglie aumenta il rischio di attacco.
- Evitare infestazioni di afidi. La melata prodotta dagli afidi provoca un elevato rischio di attacco.
- Evitare l'uso di fertilizzanti fogliari (preparati di alghe o composti azotati anche organici).
- Evitare condizioni di umidità troppo elevate durante la conservazione.
- I prodotti fitosanitari maggiormente utilizzati sono: rame, polisolfuro, bicarbonato di potassio e sodio. L'efficacia attualmente non è chiara in quanto gli agenti patogeni sono diversi e cambiano da regione a regione.
- Si effettuano trattamenti a base di saponi. Ha anche un'azione indiretta contro le fumaggini, poiché riesce a sciogliere la melata prodotta dagli insetti fitofagi, ed inoltre aiuta a eliminare le uova deposte sulle foglie. Si consiglia di non effettuare trattamenti troppo frequenti, in quanto può favorire la comparsa di *Neofabraea* spp.
- Eliminare dal frutteto le mummie in quanto provocano un alto rischio di infezione (Foto F).

Casella di applicabilità

Tema

Crop production- Disease & Pest control

Parole chiave

Fumaggini, misure preventive, coperture, macchina spazzolatrice, varietà precoci, riduzione dell'umidità in campo e durante la conservazione.

Contesto

Norte e Centro Euripa.

Tempo di applicazione

Estate: barriere fisiche (Keep in touch system)

Autunno: macchine spazzolatrici

Periodo di incidenza

Durante l'estate: elevate condizioni di umidità (piogge, rugiada, trattamenti) aumentano il rischio di attacco

Attrezzatura

Impiegare macchine spazzolatrici dopo la conservazione in cella



Photo A: macchie superficiali sul frutto prima della raccolta.

Photo B: cassetta di mele affette da fumaggini dopo la raccolta.

Photo C: accrescimento delle macchie superficiali durante la conservazione in cella.

Photo D: keep and touch system.

Photo E: macchina spazzolatrice. Si evidenzia l'effetto del trattamento (before- afterbrush)

Photo F: mummie e presenza di fumaggini sul frutto

© A-D: Claudio Casera. E-F: Alfredo Mora Vargas. Research Centre Laimburg

Ulteriori informazioni

Further reading

- M. Kelderer, C. Casera, A. Mora Vargas and S. Öttl (2020). Approaches how to reduce sooty mold on organically produced apples. Proceedings Ecofruit conference 2020. Available at: https://www.ecofruit.net/wp-content/uploads/2020/04/6_Kelderer_41-46.pdf.

Informazioni

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Annex – Themes and keywords (can be removed when the template is filled in)

Associating the practice abstract with the appropriate themes and keywords is important, as allows the links the tool properly on the Organic Farm Knowledge platform theme pages and makes it easily searchable in the toolbox. This allows better user experience on the platform. To associate tools to certain themes, we use the FAO's Agrovoc multilingual thesaurus, more information [here](#).

Please choose the most applicable theme(s), sub-theme(s) and sub-sub-theme(s), then follow the row to the last column (AGROVOC keywords) to choose the most suitable keywords associated with your chosen theme(s). Please select a maximum of 5 themes, sub-themes, sub-sub-themes, and maximum 5 Agrovoc keywords. Note: Some sub-themes do not have sub-sub-themes; this is indicated in the table as [no sub-sub-theme].

Theme	Sub-theme	Sub-sub-theme	Agrovoc keywords
Crop production			Crop production; Crop management
	Cropping systems	[no sub-sub-theme]	Cropping systems; Diversification; Arable farming; Low input agriculture; Intercropping; Monoculture; Permaculture; Precision agriculture; Conservation tillage; Crop rotation; Agroforestry; Agropastoral systems; Climate-smart agriculture; Irrigation; Catch crops; Cover plants; Protected cultivation; Seedbed preparation; Direct sowing
	Arable crops		Arable farming
		Cereals	Cereal crops
		Legumes	Legumes
		Oilseeds	Oil crops
		Feed crops and grasses	Feed crops; Feeds; Grasses; Forage
		Fibre crops	Fibre crops
		Root crops	Root crops
		Cover and catch crops	Catch crops; Cover plants
	Horticulture		Horticulture
		Vegetables	Vegetables; Herbaceous plants
		Temperate fruits	Temperate fruits
		Subtropical and Tropical fruits	Subtropical and tropical fruits
		Citrus fruits	Citrus
		Grapes	Viticulture; Grapes
		Olives	Olives
		Nuts	Nut crops
		Berries	Soft fruits

		Ornamentals, flowers and trees	Ornamental plants; Floriculture; Woody plants
		Protected cultivation	Greenhouse crops
	Weed management	[no sub-sub-theme]	Plant protection; Weed control; Mechanical weed control; Annual weeds; Perennial weeds
	Disease and pest control	[no sub-sub-theme]	Plant protection; Plant disease control; Disease Prevention; Diseases; Pest control; Integrated pest management; Biological control; Natural enemies; Disease tolerance; Tolerance to pests; Biological disease control; Copper
	Nutrient management	[no sub-sub-theme]	Nutrient management; Green manures; Organic fertilizers; Plant nutrition; Nitrogen; Phosphorus; Nitrates; Potassium; Nutrient deficiencies; Nutrient cycling in ecosystems; Leaching; Ammonia; Composts; Fertilizers
	Seeds and breeding		Seeds
		Seed production	Seed production; Seed characteristics; Seed treatment
		Seed quality and health	Seed quality; Seed storage; Genetic control; Germinability
		Plant breeding	Seed testing; Plant breeding; Selection criteria; Varieties; Genetic diversity (as resource); Genetic markers; Genetic resistance; Genetic resources; Genotypes; Germplasm; Breeding methods
		Economics and regulations	Seed certification; Seed industry; Gene banks
	Grasslands and forages	[no sub-sub-theme]	Grassland management; Grasses; Grasslands; Grazing lands; Rangelands; Agropastoral systems
	Postharvest management	[no sub-sub-theme]	Postharvest technology; Postharvest equipment; Processing; Handling; Postharvest physiology
Animal husbandry			Animal husbandry
	Production systems		Animal production
		Poultry	Poultry; Broiler chickens; Layer chicken; Ducks; Geese; Turkeys
		Pigs	Swine; Barrows; Boars; Piglets; Sows
		Cattle	Cattle; Beef cattle; Dairy cattle; Heifers; Bulls; Calves
		Aquaculture	Aquaculture
		Apiculture and insects	Apiculture; Insect farming
		Small ruminants	Small ruminants; Goats; Sheep; Guanacos

	Breeding and genetics	[no sub-sub-theme]	Animal breeding; Animal genetics; Artificial insemination
	Feeding and nutrition		Feeding; Animal nutrition; Costs
		Nutritive values and needs	Feed requirements; Feed composition; Nutritive value; Feeds; Feed crops; Feed conversion efficiency; Amino acids; Vitamins; Feed additives; Digestibility; Proteins; Insect farming; Feed formulations; Nutrient intake; Nutritional requirements
		Ration planning	Ration planning; Feeds; Grazing; Feeding costs; Rations; Forage
		Feed processing and handling	Feed processing; Feed quality; Feed technology
	Animal health and welfare		Animal health; Animal welfare
		Animal welfare	Animal protection; Transport of animals; Slaughtering
		Animal housing and equipment	Animal housing; Animal husbandry equipment; Farm buildings
		Veterinary medicine	Veterinary medicine; Homeopathy; Phytotherapy; Disease control; Disease prevention; Parasite control; Dairy hygiene; Meat hygiene
Soil			Soil
	Soil health and quality	[no sub-sub-theme]	Soil quality; Soil organic matter; Organic matter; Humus; Nitrogen; Nitrogen fixation; Nutrient cycling; Nutrient deficiencies; Phosphorus; Soil compaction; Soil degradation; Soil fertility; Soil ph; Soil structure; Trace elements; Soil pollutants; Soil functions
	Soil biology	[no sub-sub-theme]	Soil biology; Soil microorganisms; Soil flora; Soil fungi; Soil fauna; Earthworms
	Soil management	[no sub-sub-theme]	Soil management; Soil conservation; Salinity control; Soil improvement; Tillage; Minimum tillage; Seedbed preparation; Integrated land management; Soil analysis; Soil fertility; Soil amendments; Soil water balance

Food chain management			Postharvest technology
	Processing	[no sub-sub-theme]	Processing; Food processing; Feed processing; Processed products; Food technology; Byproducts
	Packaging	[no sub-sub-theme]	Packaging; Packaging equipment
	Storage	[no sub-sub-theme]	Storage; Storage equipment
	Transportation	[no sub-sub-theme]	Transport; Transport safety; Transport of animals; Food traceability
	Food quality	[no sub-sub-theme]	Food quality; Product quality; Food hygiene; Food traceability; Food inspection; Quality assurance
Environment and society			Environment; Society
	Biodiversity and nature conservation	[no sub-sub-theme]	Biodiversity; Nature conservation; Ecosystem services; Pollinators; Natural enemies; Functional biodiversity; Life cycle assessment; Biodiversity conservation
	Environmental protection	[no sub-sub-theme]	Environmental protection; Resource conservation; Environmental impact assessment; Pollution control; Waste management
	Climate	[no sub-sub-theme]	Climate change; Climate change adaptation; Climate-smart agriculture; Drought resistance; Heat tolerance; Disease tolerance; Tolerance to pests; Salt tolerance; Tolerance to heavy rainfall; Carbon sequestration; Emission reduction; Renewable energy; Environmental impact assessment; Sustainability; Life cycle assessment; Resilience
	Sustainable communities	[no sub-sub-theme]	Sustainable livelihoods; Sustainable development; Socioeconomic development; Indigenous knowledge; Health foods; Recreation; Agrotourism; Food security; Cooperative farming; Agricultural organizations; Sustainability; Educational resources; Resilience
	Agroecology	[no sub-sub-theme]	Agroecology; Sustainability; Ecological production; Agroecosystems
Farm management			Farm management; Monitoring and evaluation
	Capital and finance	[no sub-sub-theme]	Farm economics (agricultural economics); Production economics; Costs
	Farm technology and equipment	[no sub-sub-theme]	Farm buildings; Farm equipment; Information technology; Digital technology; Measuring instruments
	People and skills	[no sub-sub-theme]	Human resources management

	Marketing and agricultural trade	[no sub-sub-theme]	Marketing; Agricultural trade
	Standards, regulations and certification	[no sub-sub-theme]	Standards; Organic certification; Conversion factors