

Postharvest technology of peach fruit

Meeting industry's needs and consumers' expectations

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The fruit production sector

The reality:

- High costs for **land** use and **energy**
- **Labor** cost and labor availability
- **Irrigation** cost and scarcity of water
- Exponential growth of **transportation** costs

The challenges:

- ✓ High yield efficiency
- ✓ Extended storage potential
- ✓ Availability throughout the year
- ✓ **Sustainability** (environmentally / economically viable)
- ✓ Reduction of food loss and food waste





Need to shift to a systems approach in production agriculture: To study the postharvest system taking into account what happens preharvest

Food loss and food waste

- Global population is expected to exceed **9 billion** people by **2050**
- **ca. 1/3 of the total production of fruits is never being consumed**
- **Food loss:** poor supply chain management protocols and lack of knowledge to limit spoilage and wastage (**developing countries**)
- **Food waste:** spoilage and wastage mainly occurs at consumer level (**developed countries**)

Food wastage includes both:

Food loss:

◦ A decrease in quality (e.g. nutritional value) or quantity (dry matter) of food intended for people to eat

Food waste:

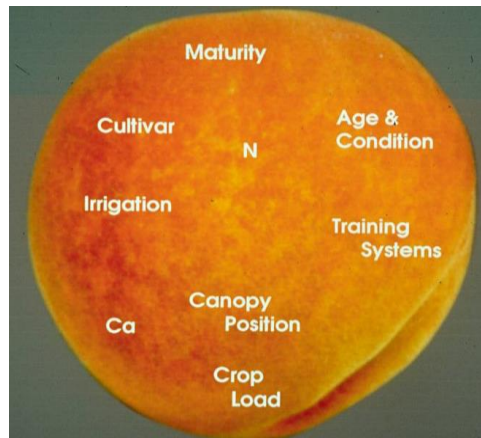
◦ Food thrown away that was earlier good enough for people to eat



Quality is built in the orchard

Preharvest factors affecting fruit quality

- Crop load
- Fruit canopy position
- Training systems
- Nutrient status (N, Ca, K content)
- Maturity stage
- Rootstock
- **Cultivar**



The **cultivar** factor is crucial (**the breeding effect**):
no ideal cultivar (**one-size-fits-all**) exists per species (**trade off**)

The peach fruit industry nowadays

- > 1000 cultivars available into the market
- Limited storage potential
- Descending trend in consumption (consumer claims)
- Reduced profit for the farmer



Driving force to purchase a peach/nectarine fruit: consistency in quality



A highly susceptible crop



Mealiness (dry texture)



Internal breakdown (Browning)



Brown rot



Gray mold



Sour rot



Rhizopus rot



The fruit ripening syndrome of peach

- Ripening is a highly regulated process, comprised of complex regulatory events
- Small genome, fully mapped with increasing amount of information
- Cultivars with different ripening and softening properties



[Melting flesh]



[Non-Melting flesh]



[Stony hard]

**Harvest timing influences post-harvest ripening dynamics
and thus storage success**



Harvest at advanced maturity stage

The most desirable sensorial attributes developed on-tree

(optimum sensory maturity)



Harvest at tree-ripe stage



Fungicide	Common Name	Brown Rot	Gray Mold	Rhizopus Rot	Green mold	Blue mold
Allisan	Dicloran	+	++	+++	-	-
Elite	Tebuconazole	+++	+	++	+++	++
Scholar	Fludioxonil	+++	+++	+++	+++	+++
Elevate	Fenhexamid	+++	+++	-	-	-
Pristine	Pyraclostrobin/Boscalid	+++	+++	++	-	+++
Penbotec	Pyrimethanil	++	+++	-	+++	+++
Abound	Azoxystrobin	+	+	-	+++	?

* - Elite is registered for postharvest use on sweet cherry only.

Globally recognized and registered

AgroFresh is committed to the regulations of each country. So far, registrations have been obtained in over 70 countries worldwide. Registrations include the U.S. Environmental Protection Agency and the European Union*. As worldwide demand for our products and services continues to grow, AgroFresh continuously seeks new registrations.

— SELECT COUNTRY —

SCHOLAR 230 SC

— SELECT CROP —

Country	Technology	Crop
Greece	SCHOLAR 230 SC	Citrus
Greece	SCHOLAR 230 SC	Apple
Greece	SCHOLAR 230 SC	Pear
Greece	SCHOLAR 230 SC	Peach
Greece	SCHOLAR 230 SC	Nectarine
Greece	SCHOLAR 230 SC	Plum
Greece	SCHOLAR 230 SC	Cherry

*Always confirm that a product is approved for use on a specific crop in a specific country.

Application of 'reduced risk' postharvest fungicides

Harvest at pre-ripe maturity stage



Packaging



**36-48 h
(20°C, 95% RH)**



**Forced-air
cooling**

Application of 'reduced risk' postharvest fungicides



A sustainable solution to revamp peach production

- ✓ Each peach producing area/country to set up a list of **recommended cultivars** with scalar ripening and similar qualitative attributes
- ✓ Schedule cultivar **harvest stage** based on the **market needs**
- ✓ **Breeding** efforts to be directed on **CI-tolerant cultivars**
- ✓ To develop **biopesticides** for postharvest applications
Natamycin: high efficiency against brown rot, gray mold



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