



Hybrid seed production in vegetables

1. Tomato, pepper

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1.1. Introduction

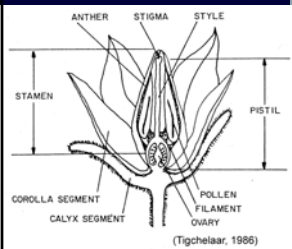
a) Solanaceae Family



1.1. Introduction

b) Reproductive structures of tomato and peppers

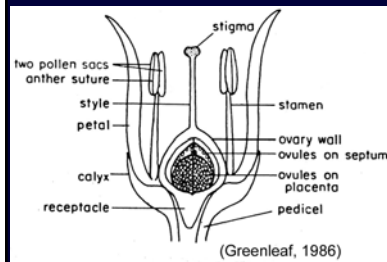
Tomato flower:



1.1. Introduction

b) Reproductive structures of tomato and peppers

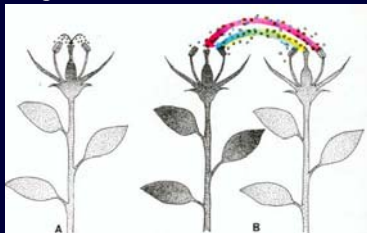
Pepper flower:



(Berke, 2000)

1.1. Introduction

c) Natural pollination mechanisms



Self-pollination

Cross-pollination

Tomato

Pepper

Cucumber

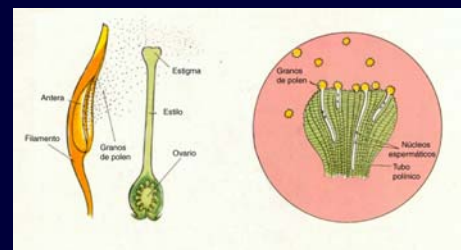
Melon

Watermelon

1.1. Introduction

c) Natural pollination mechanisms

Tomato:



1.1. Introduction

c) Natural pollination mechanisms

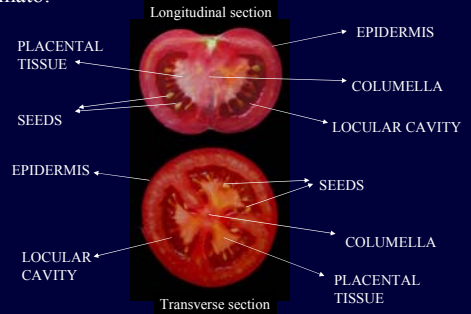
Pepper:



1.1. Introduction

d) The tomato and pepper fruits and seeds

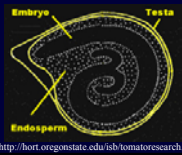
Tomato:



1.1. Introduction

d) The tomato and pepper fruits and seeds

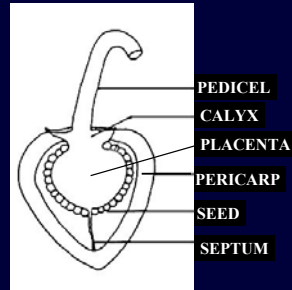
Tomato:



1.1. Introduction

d) The tomato and pepper seeds

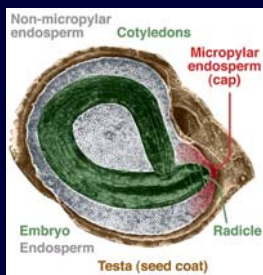
Pepper:



1.1. Introduction

d) The tomato and pepper seeds

Pepper:



Drawing showing a mature seed of *Capsicum annuum* (Color image by Katrin Hermann based on an EM image by Watkins and Cantliffe, Plant Physiol 72: 146-150, 1983). Color drawing published in Finch-Savage and Leubner-Metzger (2006).

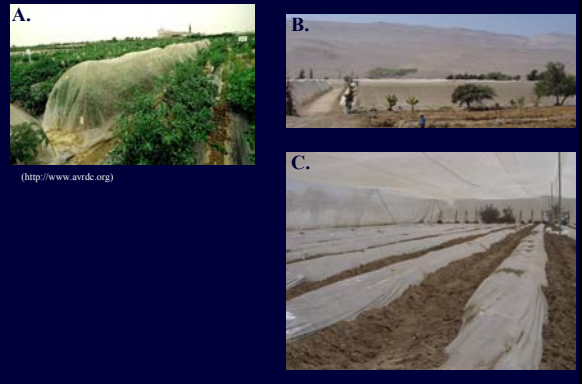
1.1. Introduction

e) Advantages of hybrid cultivars in tomato and pepper

1.2. Seed production in protected structures



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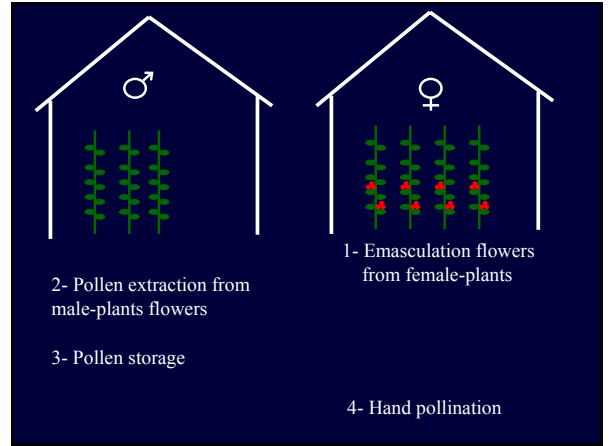
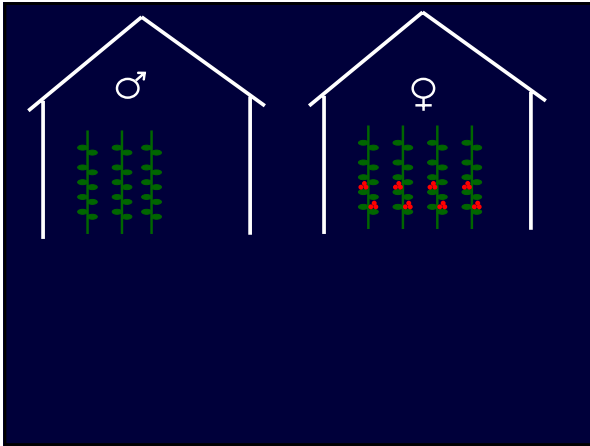
1.2. Seed production in protected structures



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a) Advantages and disadvantages

1.3. Hand pollination as hybridization process



1.3. Hand pollination as hybridization process

a) Emasculation

Importance of optimal moment:

before → damage to flower, low yield

after → contamination (self-pollination), low quality

1.3. Hand pollination as hybridization process

b) Pollen extraction

1.3. Hand pollination as hybridization process

c) Pollen storage

1.3. Hand pollination as hybridization process

e) Hand pollination

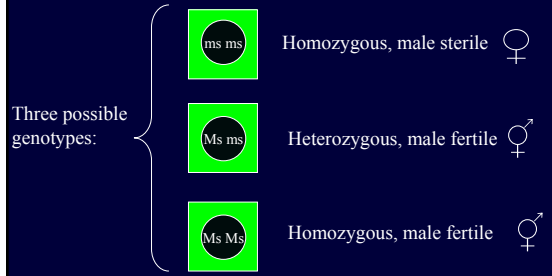
1.4. Genetic male sterility as alternative for hybridization

a) Problems associated with emasculation

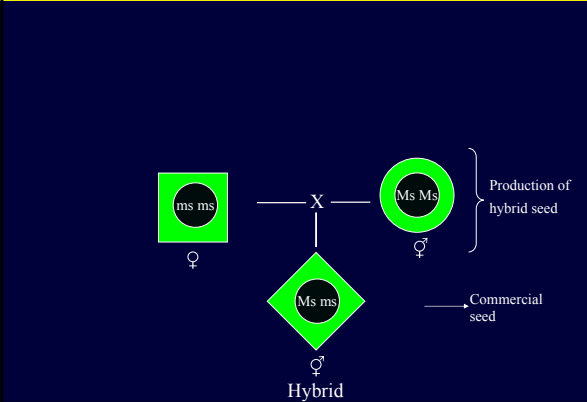


1.4. Genetic male sterility as alternative for hybridization

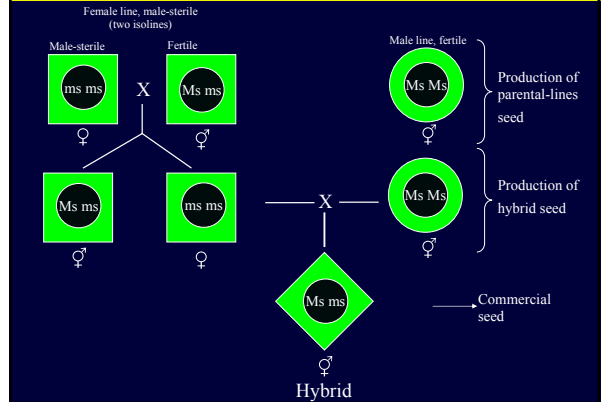
b) Use of genetic male sterility in pepper seed production



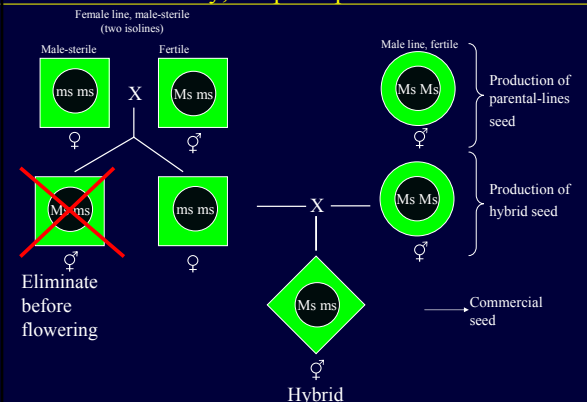
Genic male-sterility, the principle



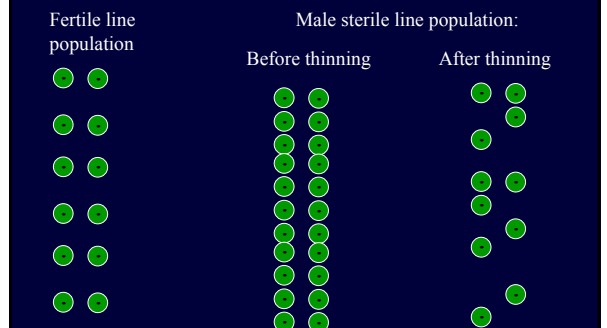
Genic male-sterility, the principle



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... ~50% of female plants should be eliminated.
practical consequences?



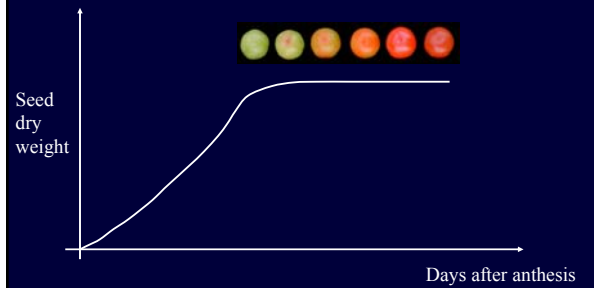
1.5. Harvest, seed extraction and drying

a) Optimal moment for harvest, example tomato



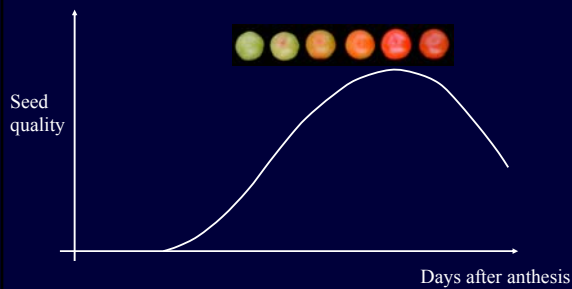
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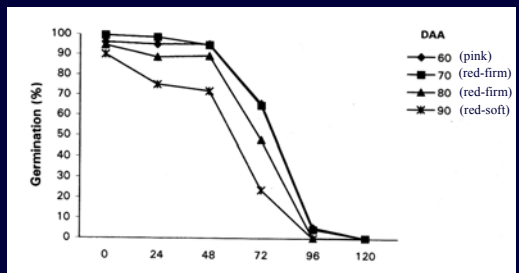
1.5. Harvest, seed extraction and drying

a) Optimal moment for harvest, example tomato



1.5. Harvest, seed extraction and drying

a) Optimal moment for harvest, example tomato



Survival curves (total germination plotted against storage period) for seed lots of tomato harvested 60, 70, 80 and 90 days after anthesis (DAA) and stored hermetically at 50°C with 15% moisture content. (Demir and Samit, 2001).

1.5. Harvest, seed extraction and drying

b) Harvest



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1.5. Harvest, seed extraction and drying

c) Seed extraction



1.5. Harvest, seed extraction and drying

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1.5. Harvest, seed extraction and drying

d) Separation of seeds from gelatinous covering



1.5. Harvest, seed extraction and drying

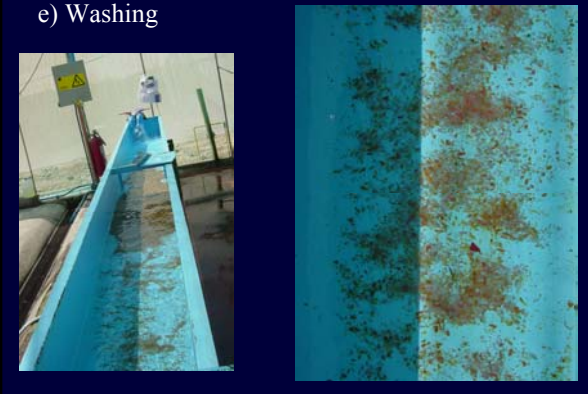
d) Separation of seeds from gelatinous covering



- Natural fermentation
- Sodium carbonate
- Hydrochloric acid

1.5. Harvest, seed extraction and drying

e) Washing



1.5. Harvest, seed extraction and drying

f) Drying



1.5. Harvest, seed extraction and drying

f) Drying

