

USE OF GRAFTED PLANTS AND I.P.M. METHODS FOR THE PRODUCTION OF TOMATOES IN THE MEDITERRANEAN REGION

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Rootstocks



- *Lycopersicum esculentum*
- *L.esculentum* x *L.hirsutum*
- *Solanum torvum*

Grafting methods

- Splice grafting (the most commonly used)
- Cleft grafting



Grafting methods



- After grafting maintain strict conditions of temperature and RH
- Grafting is carried in nurseries producing horticultural plants



Pathogens than graft can contro

- **Fusarium oxysporum lycopersici (FOL)**
- **Verticillium dahliae**
- **F.oxysporum radicis-lycopersici (FORL)**



Pathogens than graft can contro



- **Pyrenochaeta lycopersici (corky root)**



- **Meloidogyne incognita, M.javanica, M. arenaria**

Pathogens than graft can contro

- **Collapse (probably PepMV + Olpidium)**
- **Ralstonia solanacearum**



Use of grafted tomato in France



- **Graft is used to prevent**
 - **Corky-root in soil culture**
 - **FORL in soiless culture**
 - **Ralstonia (in tropical countries of french territory)**
- **2800 Ha with grafted plants (30% of the total)**

Use of grafted tomato in Italy

- Graft is used principally in soil culture, to prevent
 - Corky-root
 - *Meloidogyne incognita*
- 10-12 million plants grafted annually



Use of grafted tomato in Morocco



- Graft is used to prevent
 - FOL
 - FORL
 - Corky-root
 - Nematodes
- 20 million plants (2000 Ha, 50% of the total for export) are grafted annually

Use of grafted tomato in Spain

- Use of MB has never been widespread in tomato culture in Spain due to
 - Stability of resistance genes (FOL; Vd; Mi)
 - Sand covered soil
 - Use of disinfectants (MS, 3 D)
- At present 45 million plants are grafted annually, to prevent “collapse”, in soil or soiless culture.



Cost of grafted plants

- **Cost of plants**
- **With graft** 15000 pl/Ha x 0.54 E/pl = 8100 E/Ha
- **Without** 25000 pl/Ha x 0.18 E/pl = 4500 E/ha
- **Additional cost of the grafted plants**
 - 3600 E/ha
- **Cost of MB disinfection**
 - 6000 E/Ha

Conditions of using grafted plants and other techniques as an alternative to MB

- **In varieties without VFN resistance**
 - Grafted plants or
 - Soil disinfection (solarization + biofumigation; solarization + MS; dichloropropene)



Conditions of using others techniques alternatives to MB

- **In varieties with VFN resistance**
 - **Rotation with species not sensitive to Verticillium or nematodes**
 - **Soil disinfection (solarization + biofumigation or Dichloropropene), specially if soil temperature at planting date is high**

Conditions of using graft is the best alternative to MB

- In soil with *Pyrenochaeta*
- In substrate with *Fusarium oxysporum radicis-lycopersici*
- In soil or substrate, with “collapse”



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