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DEGLI STUDI DELLA  
**Tuscia**

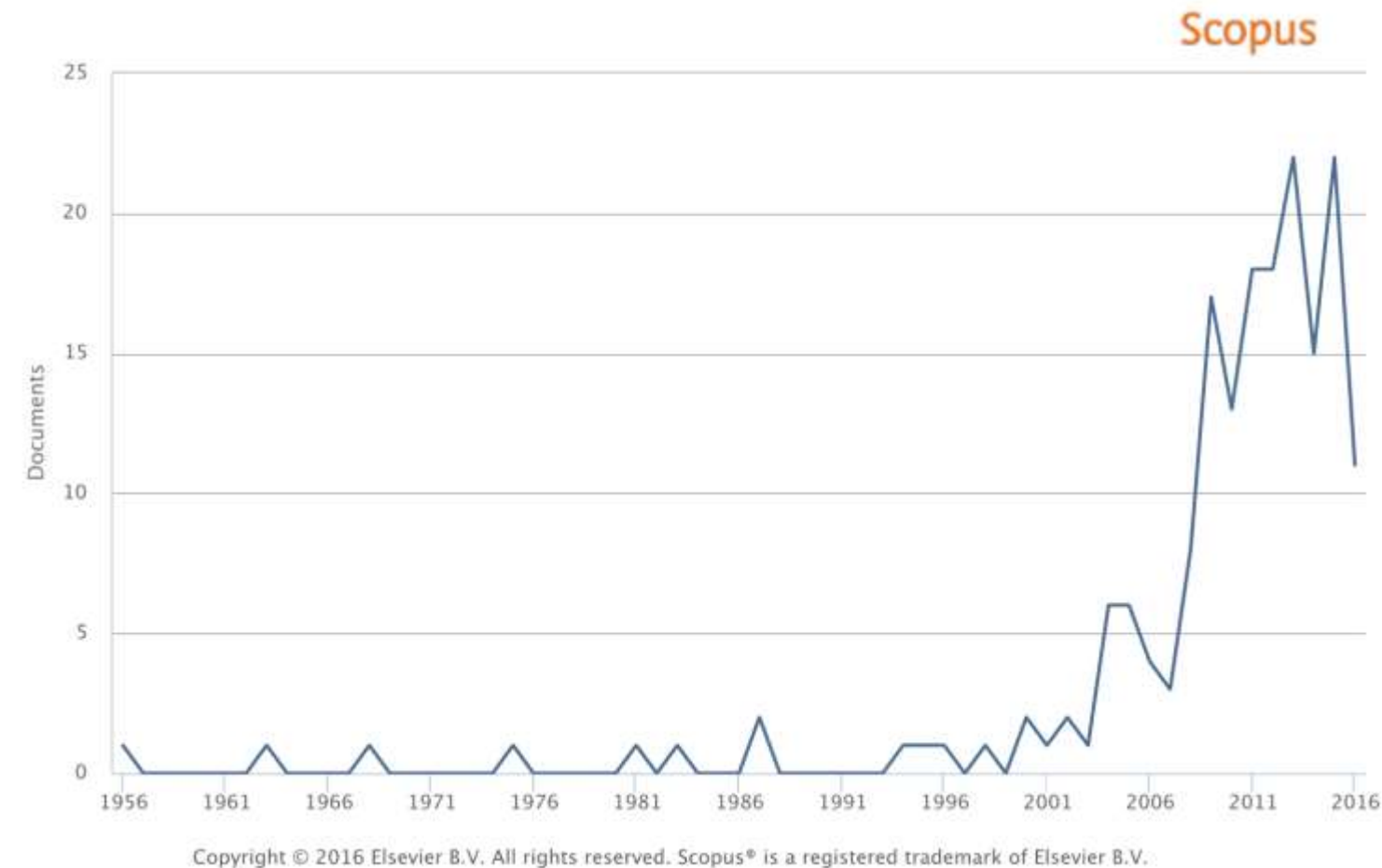


COST ACTION FA1204

# **COST Action FA1204 database: A simple and effective tool for vegetable growers and the scientific community**

T. Celli, Y. Roupael, G. Ntatsi, A. Fiorillo, G. Colla

# Publications vegetable grafting- a trend in tomato



Key words: «tomato» «grafting» «rootstock»

# Why do we need a database ?

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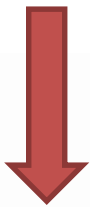
- **Scattered** information in technical and scientific journals, abstracts of proceedings
- Increased **interest** of key **stakeholders** (academic, farmers, farm advisors, seed companies, nurseries, policy makers) to scientific knowledge and technical information
- Make information **easily available** to different stakeholders

# Structure of the database-

## How was it made?

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Scopus



- Excel file
- Excel spreadsheet (each spreadsheet=crop)
- Source of information:
  - *www.scopus.com*
  - key words: «*Crop name*», *Grafting*, *Rootstock*
  - Years considered (1950-2016)
- Information: Title, Author(s), Journal citation, growing system, scion, rootstock, experimental treatments, effects of grafting combinations on agronomic response of crop and fruit quality.

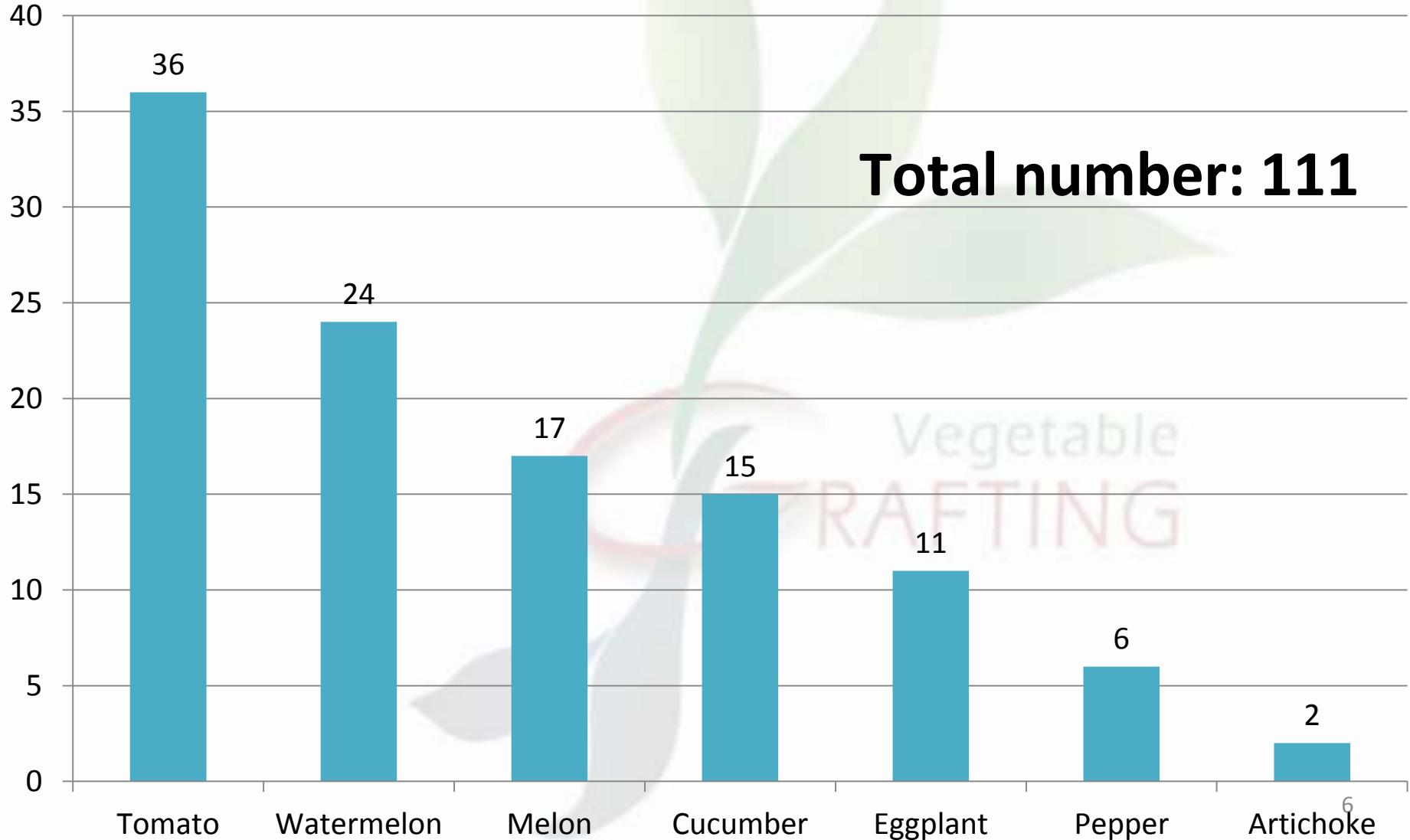
# Organization of database: **classification** of the works

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- Disease tolerance
- Abiotic stress tolerance
- Compatibility issues
- Sources of rootstocks  
(New genetic materials)
- Grafting technique
- Vigour effects on scion
- Yield effects
- Quality effects

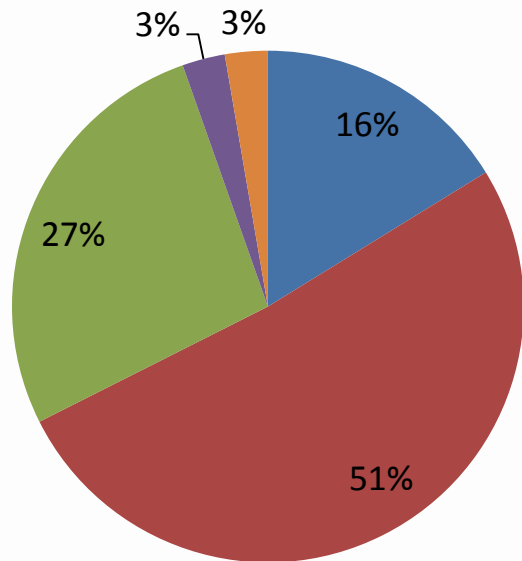


# Number of studies found in literature



# Tomato- *Solanum lycopersicum*

## Categories



36 studies

■ Disease resistance of rootstocks

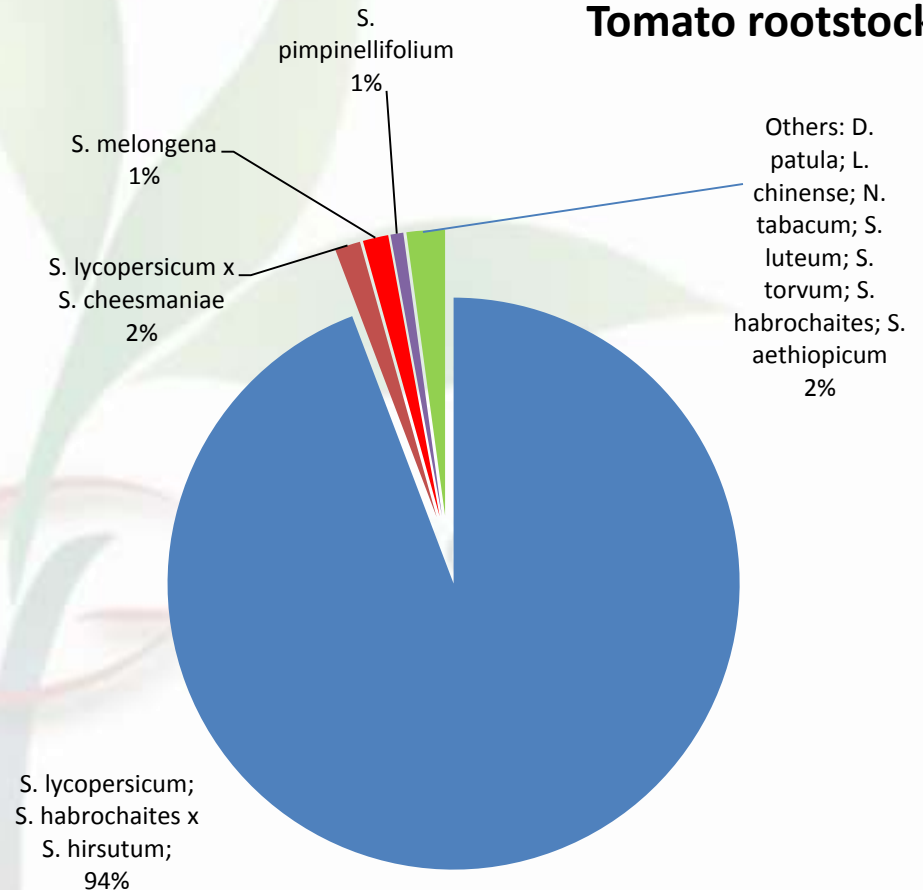
■ Abiotic stress tolerance of rootstocks

■ Agronomic behavior

■ Grafting techniques

■ New genetic materials

## Tomato rootstocks



417 rootstock- scion combinations

# Tomato- *Solanum lycopersicum*

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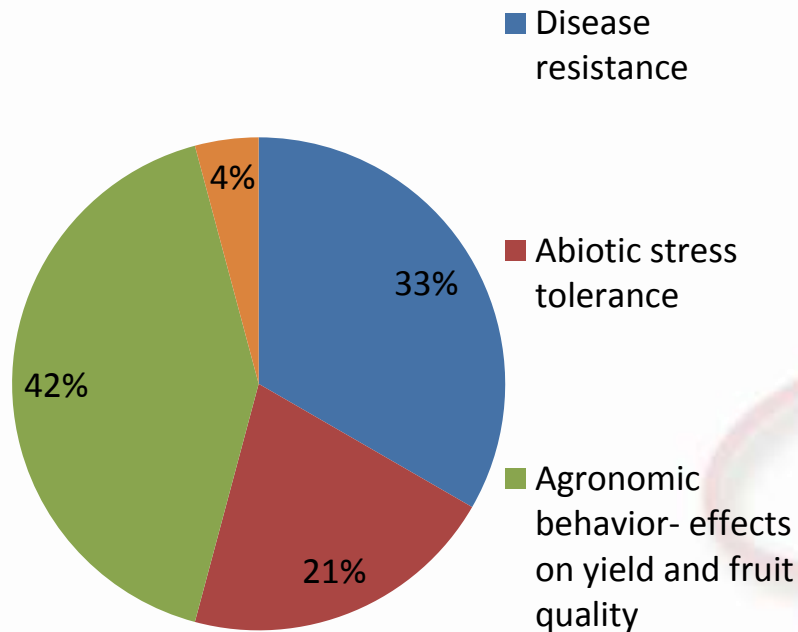
Stress Importance (number of publications)	Biotic stress	Abiotic stress
1	<i>Fusarium oxysporum</i>	Salinity
2	<i>Meloidogyne javanica</i>	Drought
3	<i>Colletotrichum coccodes</i>	Low temperature
4	<i>Ralstonia solanacearum</i>	Alkalinity
5	<i>Pyrenochaeta lycopersici</i>	Flooding
6	<i>Verticillium albo-atrum</i>	Nichel
7		Shade
8		Low K supply





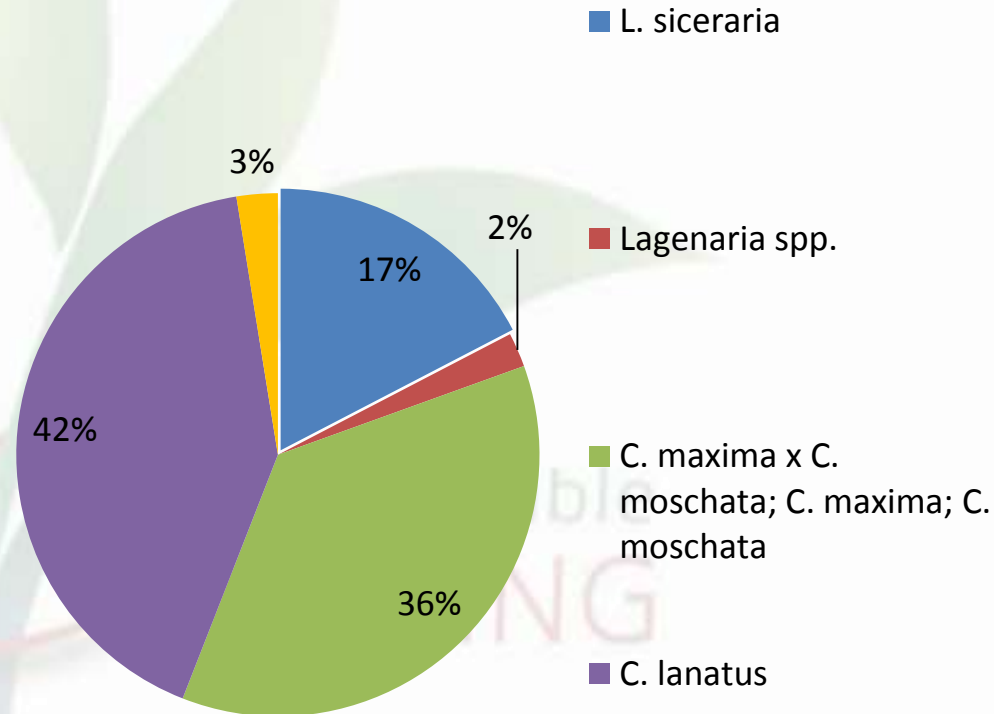
# Watermelon- *Citrullus lanatus*

Categories



24 studies

Watermelon rootstocks



236 rootstock-  
scion

Othes: *C. pepo; C. melo; B. hispida; C. sativus; C. pustulatus; L. cylindrica*

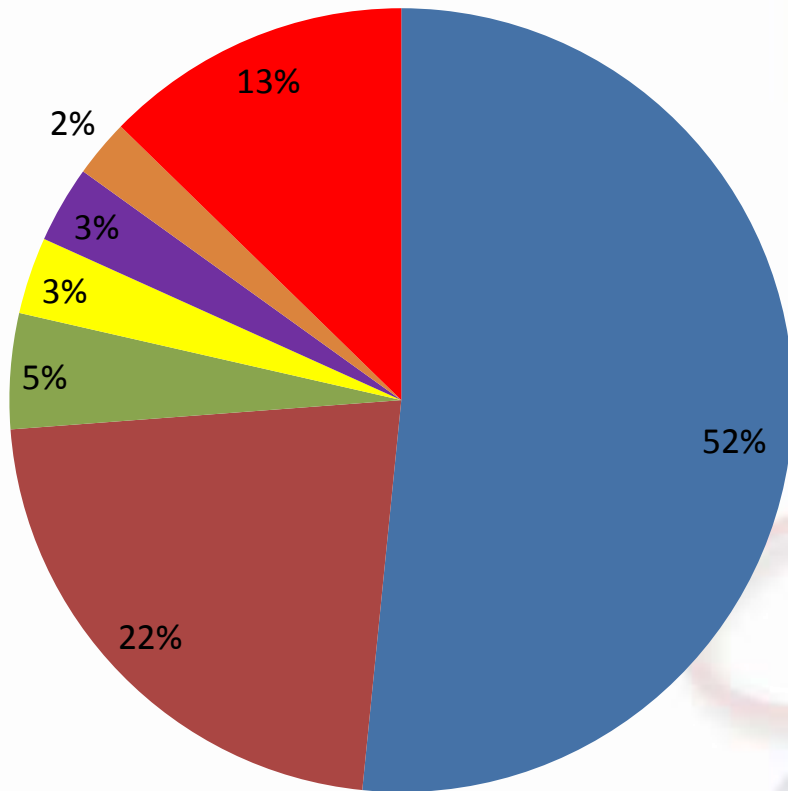
# Watermelon- *Citrullus lanatus*

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Stress Importance (number of publications)	Biotic stress	Abiotic stress
1	Fusarium ssp. (niveum, oxysporum)	Low N supply
2	Meloidogyne javanica	Low K supply
3	Phytopthora capsici	Low Mg supply
4		Alkalinity
5		Salinity

# Melon rootstocks- *Cucumis melo*



**126 rootstock- scion combinations**

■ *C. maxima* x *C. moschata*

■ *C. melo*

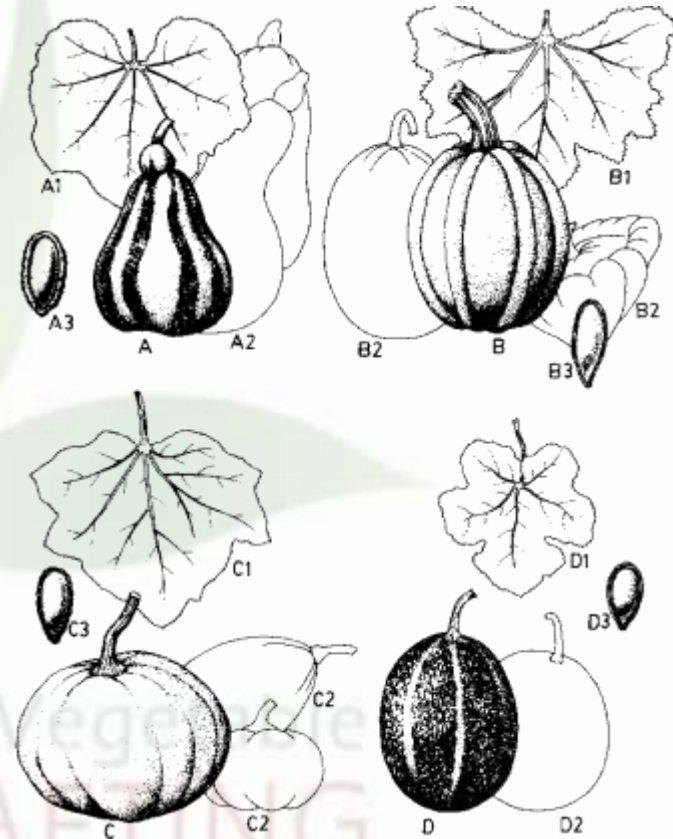
■ *C. metuliferus*

■ *C. sativus*

■ *C. zeyheri*

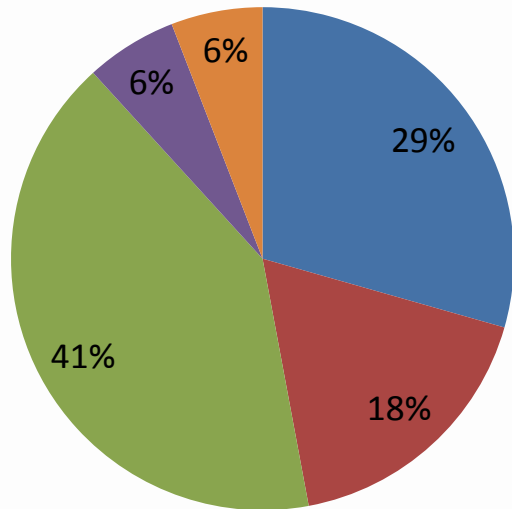
■ *B. hispida*

■ Others: *C. maxima*; *C. moschata*; *C. pustulatus*; *L. siceraria*; *C. ficifolium*; *C. figorei*; *C. lanatus*; *C. africanus*; *C. anguria*; *C. myriocarpus*; *C. dipsaceus*; *C. prophetarum*; *C. subsericeus*; *C. zambianus*



# Melon- *Cucumis melo*

## Categories



17 studies

- Disease resistance of rootstocks
- Abiotic stress tolerance of rootstocks
- Agronomic behavior
- Grafting techniques
- New genetic materials

Stress Importance (number of publications)	Stress	
	Biotic stress	Abiotic stress
1	Fusarium oxysporum	Salinity
2	Meloidogyne javanica	
3	Macrophomina phaseolina	
4	Monosporascus cannonballus	



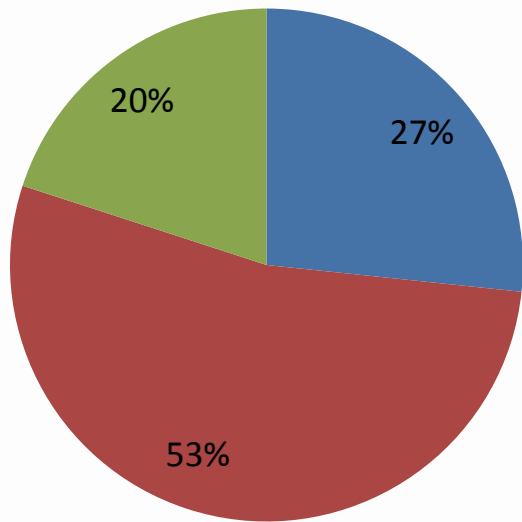
# Cucumber- *Cucumis sativus*

## Categories

■ Disease resistance of rootstocks

■ Abiotic stress tolerance of rootstocks

■ Agronomic behavior

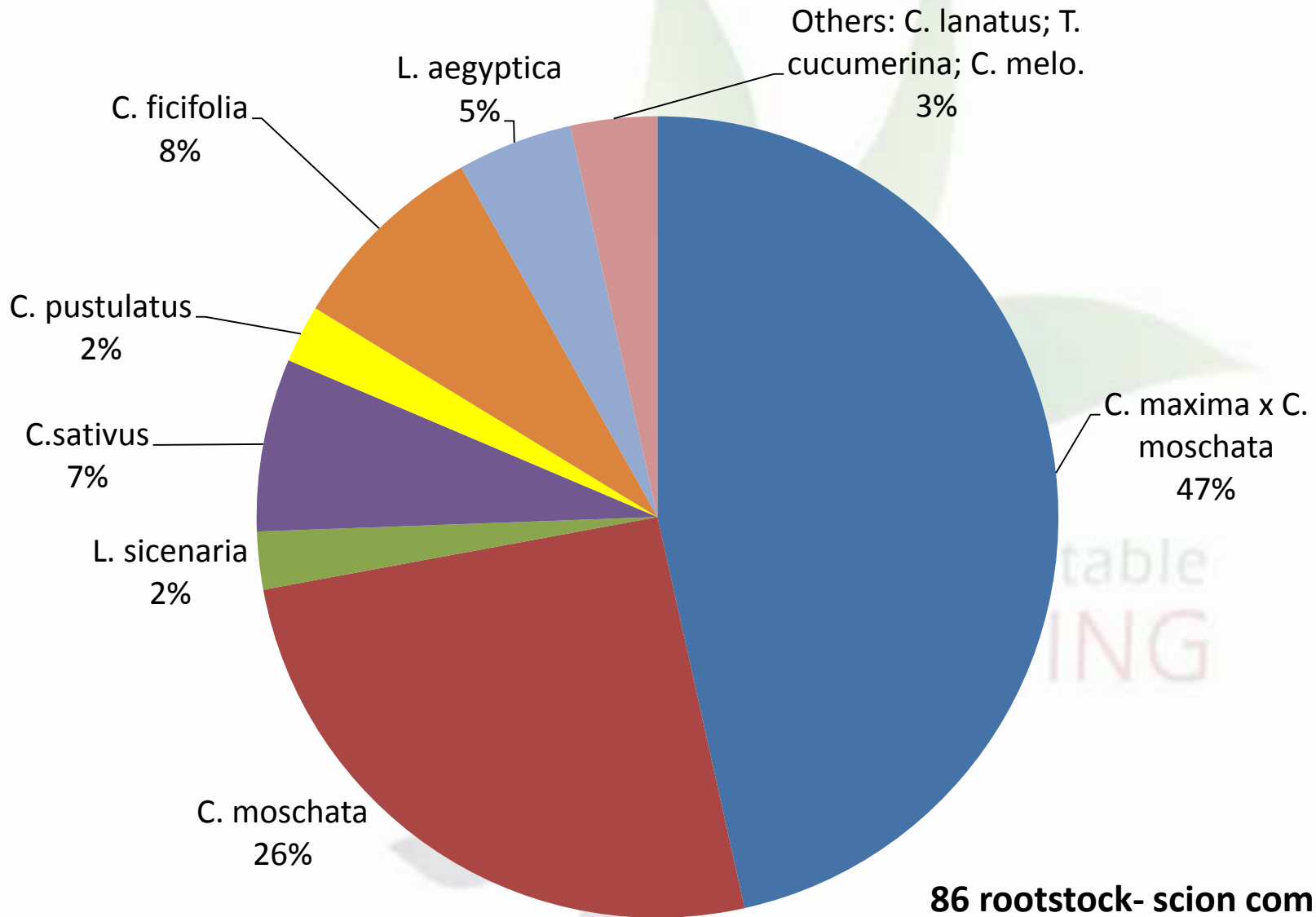


15 studies

Stress Importance (number of publication)	Biotic stress	Abiotic stress
1	<i>Podosphaera xanthii</i>	Salinity
2	<i>Meloidogyne javanica</i>	Low temperature
3	<i>Fusarium oxysporum</i>	High temperature
4	<i>Pythium aphanidermatum</i>	Heavy metals



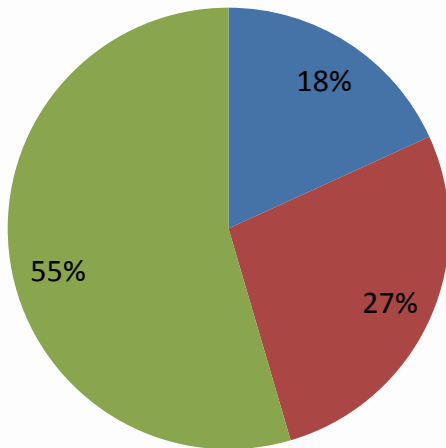
# Rootstock cucumber- *Cucumis sativus*



86 rootstock- scion combinations

# Eggplant- *Solanum melongena*

## Rootstock eggplant



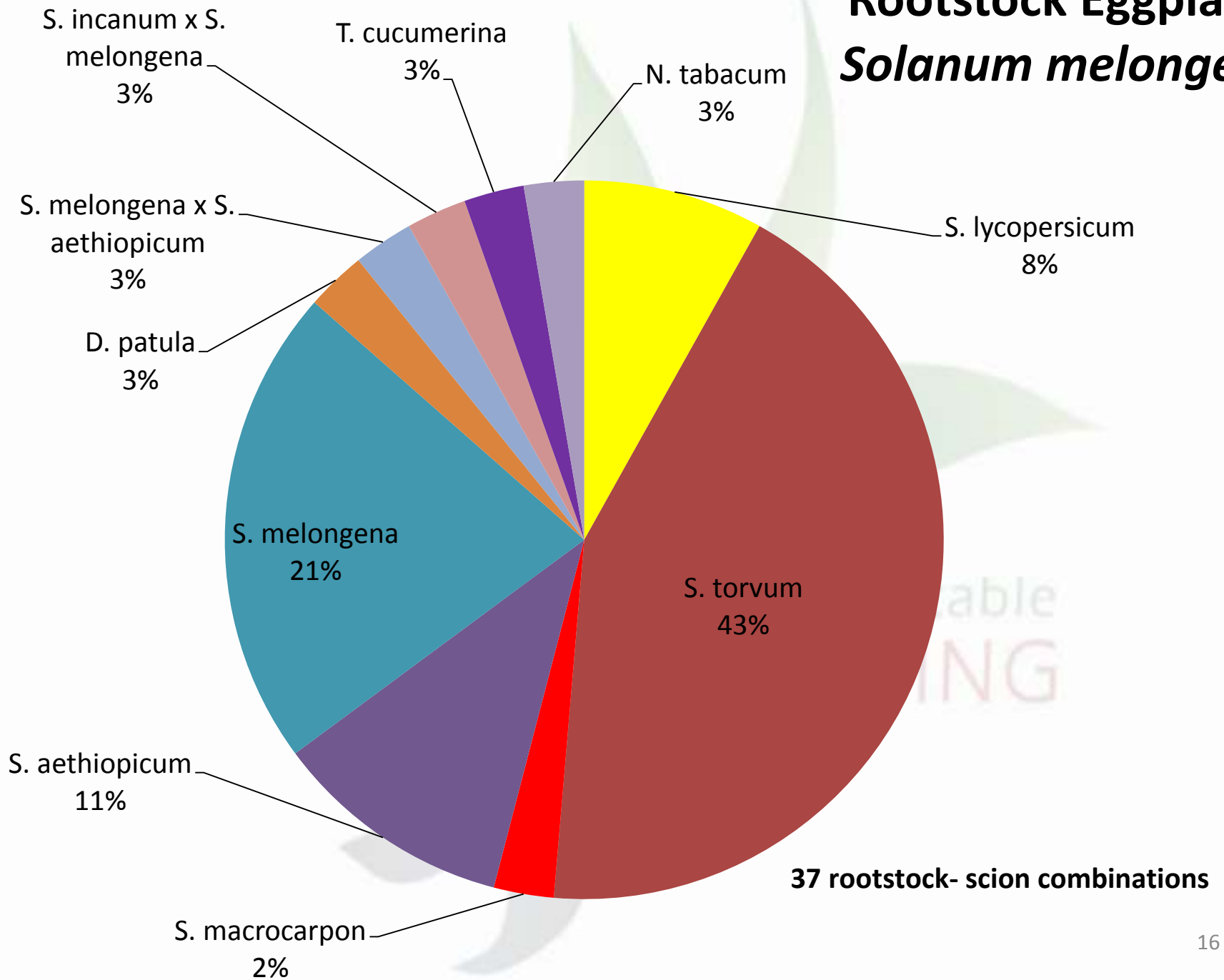
11 studies

- Disease resistance of rootstocks
- Abiotic stress tolerance of rootstocks
- Agronomic behavior

Stress Importance	Biotic stress	Abiotic stress
1	Meloidogyne incognita	Flooding stress
2	Verticillium dahliae	Alkalinity
3		Nichel content



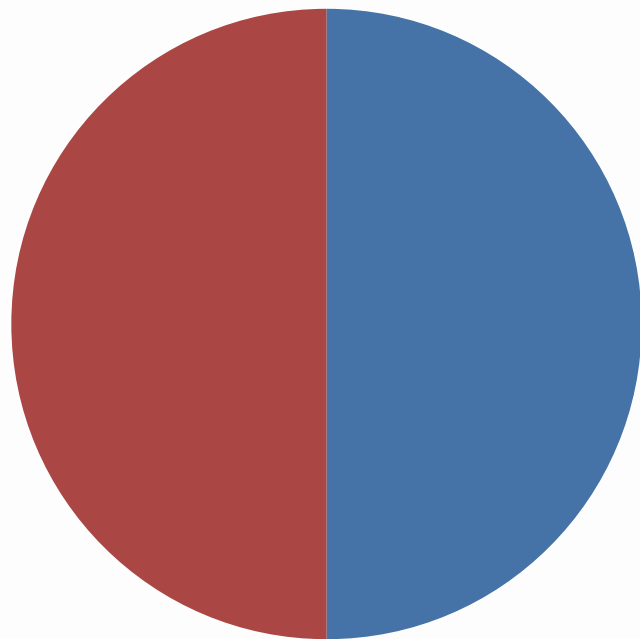
# Rootstock Eggplant- *Solanum melongena*





# Pepper- *Capsicum annuum*

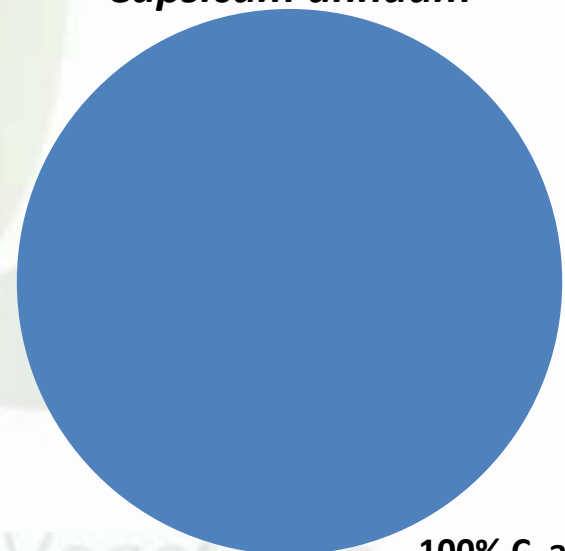
## Categories



6 studies

- Disease resistance of rootstocks
- Abiotic stress tolerance of rootstocks

## Rootstock pepper- *Capsicum annuum*



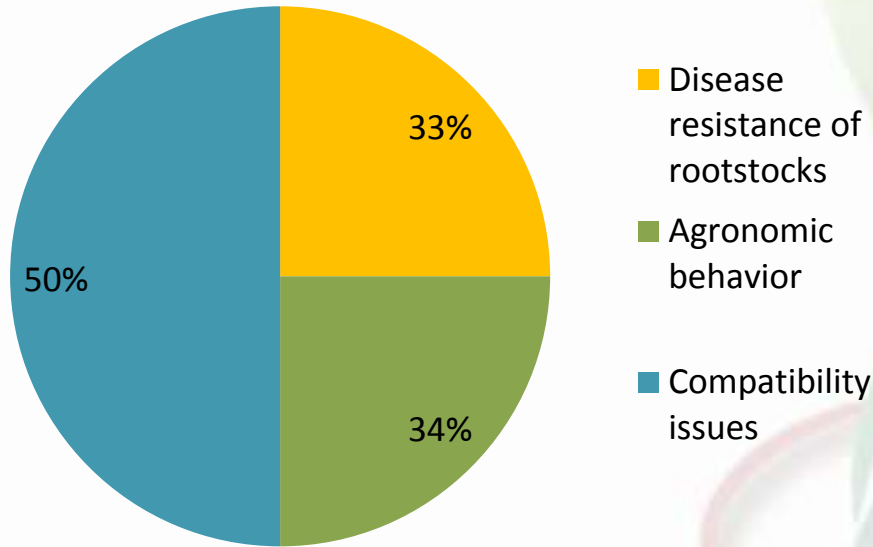
78 rootstock- scion

100% *C. annuum*

Stress Importance	Biotic stress	Abiotic stress
1	Phytopthora capsici	Salinity
2	Ralstonia solanacearum	Shade
3	Meloidogyne incognita	

# Artichoke- *Cynara cardunculus* var. *scolymus*

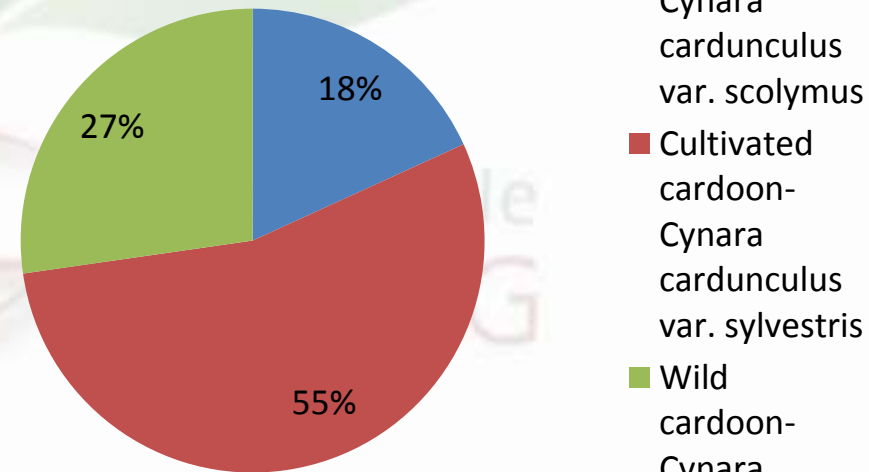
## C. cardunculus var. scolymus



2 studies

Stress Importance (number of publication)	Biotic stress		Abiotic stress
	Verticillium spp.		
1	Verticillium spp.		-

## Artichoke rootstocks- *Cynara cardunculus* var. *scolymus*



11 rootstock- scion combinations

# Conclusions

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- Simple and easy to use **tool** for **selection of grafting combinations** suitable for a specific growing environment.
- Allows a quick identification of **research needs** for different crops and categories.
- It is **far to be completed**: abstracts, proceeding papers, and other minor scientific journal have not be considered.
- Implementation of **Design** and upload in the **COST website** is needed.



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Tuscia



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# Thanks for your attention



Vegetable  
RAFTING

[tiziano.celli@gmail.com](mailto:tiziano.celli@gmail.com)

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