



University of Agronomic Sciences and Veterinary Medicine of Bucharest
Faculty of Horticulture

International Student Symposium "*Hortus Academicus*"

April 16, 2021, Bucharest, Romania

Incidence and impact of *Pentatomidae*
invasive pests
on some horticultural crops

Author name: Ciochină Emilia

Coordinator Professor: Șef lucr.dr. Minodora Gutue
Șef lucr.dr. Vasilica Luchian

Introduction

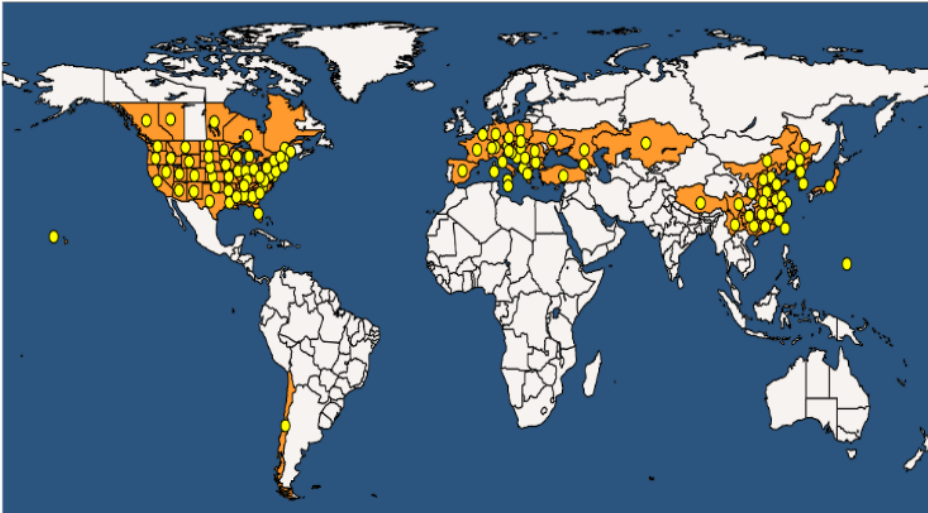
Halyomorpha halys and *Nezara viridula* are two invasive pests, highly polyphagous.

H. halys has been recorded from more than 300 plant hosts.

N. viridula has a list of approximately 150 hosts.



Introduction

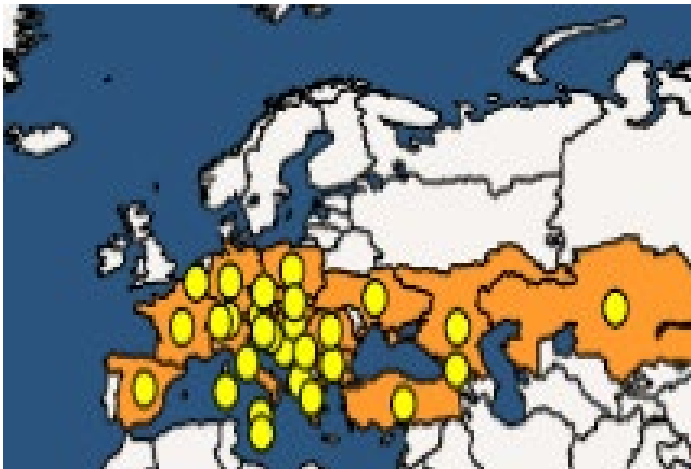


The global
distribution of
*Halyomorpha
halys*
and
Nezara viridula



Introduction

Species	Origin	Europe	Romania
<i>Halyomorpha halys</i>	Asia	2007 (Zürich, Switzerland)	2016 (Bucharest)
<i>Nezara viridula</i>	2 versions: Asia or Ethiopia	1998 (Italy)	2010 (Timiș)



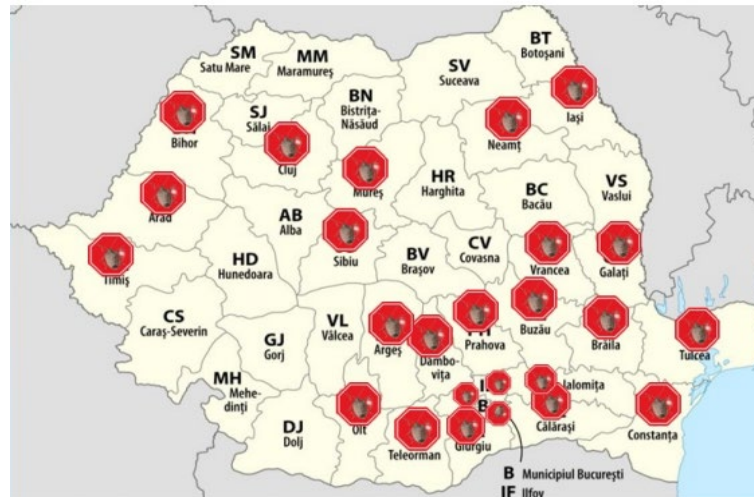
H. halys in Europe



N. viridula in Europe

Introduction

- ▶ *Nezara viridula* - first record in a tomatoes culture
- ▶ *Halyomorpha halys* - first record in a corn and goji culture
- ▶ exceptional spreading (one county in 2016, 23 counties in 2017)
- ▶ 1-2 annual generations
- ▶ cohabitation habit between these species



H. halys in Romania (2017)

Introduction

These two *Pentatomidae* insects cause damages in both nimphe and adult stages.



Introduction

SYMPTOMS

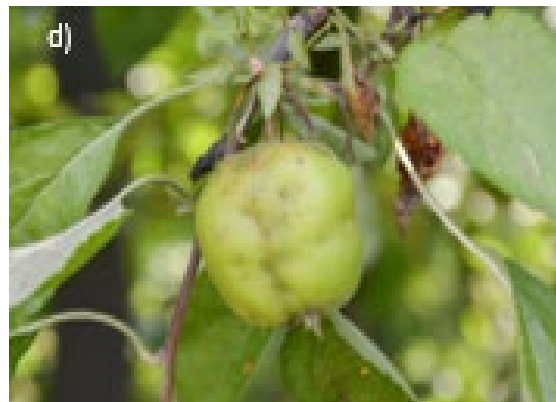
- ▶ puncture the plant tissues
- ▶ spots
- ▶ discolorations
- ▶ necrosis or chlorotic spots
- ▶ catfacing
- ▶ malformed fruits



Introduction

SYMPTOMS

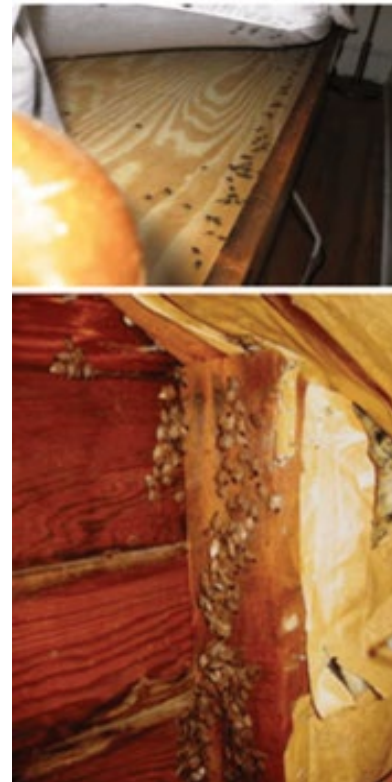
- ▶ retard the fruits growth
- ▶ failure of seeds
- ▶ premature drop
- ▶ bacterial and fungal infections
- ▶ the fruit are unmarketable



Introduction

HUMAN DAMAGES

- ▶ human-made structures invasion (as overwintering sites)
- ▶ allergic reactions
- ▶ chemical burns of the ocular surface
- ▶ one reported case of dermatitis



Introduction

PERCENTAGE OF CROP DAMAGE OF COMMERCIAL HOST SPECIES OF *Halyomorpha halys*

Country	Host-plant	Damage
China	pear	50-70% (Beijing)
	peach	50-80%
Japan	strawberry	80%
	cucumber	90%
	sweet corn	70%
Italy	pear	>50% (in North)
Georgia	hazelnut	>90%
USA	apple	65.4-95.8% (Pennsylvania)
	peach	>90% (Maryland)
	soy	>50%
	pepper, tomato, eggplant	about 20%
	corn	about 100%

Materials and Methods

LOCATION:

- ▶ monitoring of *Pentatomidae* species in a 1.000 sq. m. private solarium from Popești-Leordeni, near Bucharest, in 2020

CULTURE: (conventional system)

- ▶ bell pepper (Kaptur F1) - 300 sq. m.
- ▶ plum tomato (Caspar F1) - 500 sq. m.

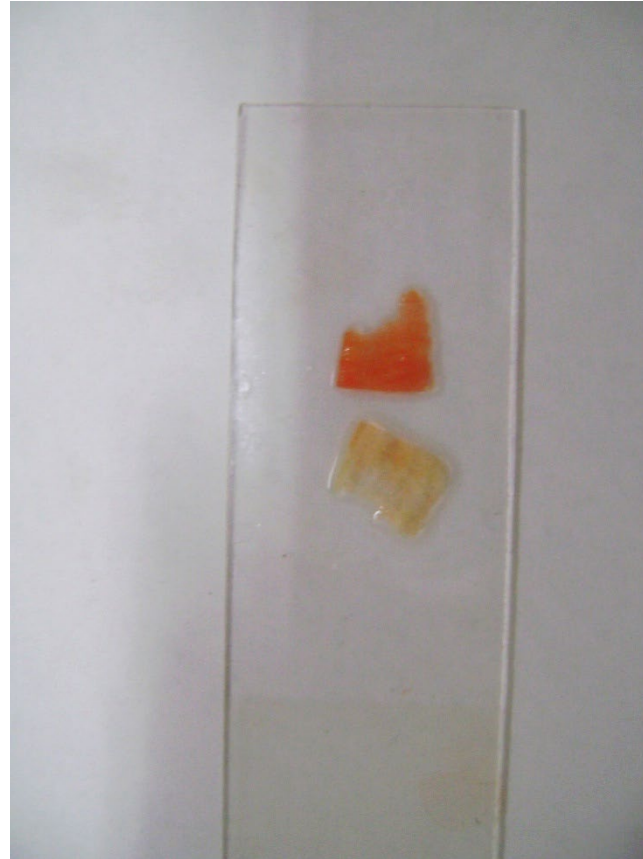
Materials and Methods

Biological material

- ▶ healthy pepper fruit
- ▶ damaged pepper
- ▶ damaged tomatoes
(transverse sections of
the pepper pericarp)

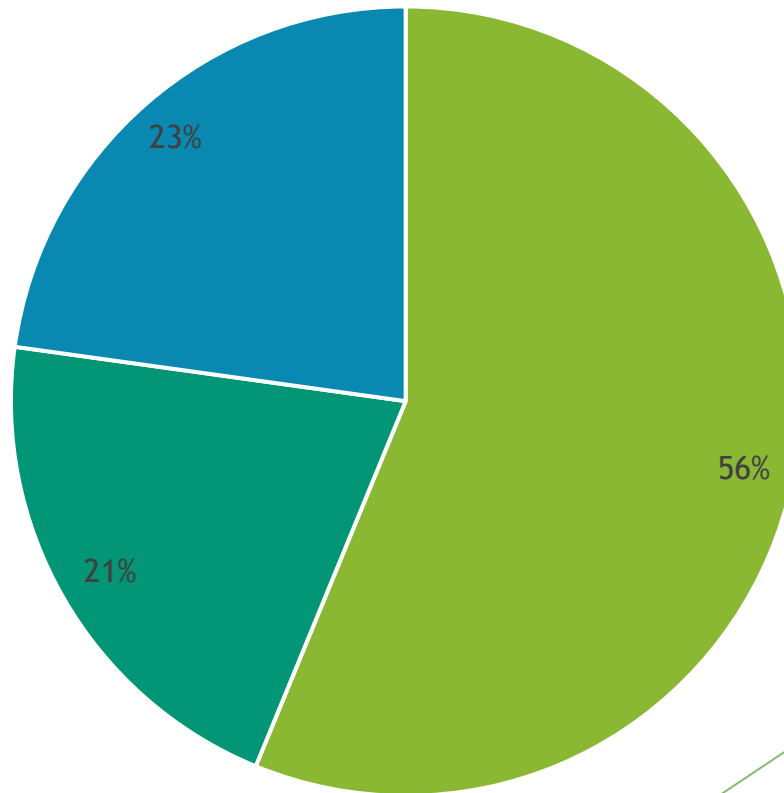
Equipment

- ▶ OPTIKA microscope



Results and discussions

STRUCTURE OF *PENTATOMIDAE* SPECIES IN 2020 (%)



- *Nezara viridula*
- *Halyomorpha halys*
- Other Pentatomidae

Results and discussions

ANATOMICAL AND MORPHOLOGICAL MODIFICATIONS

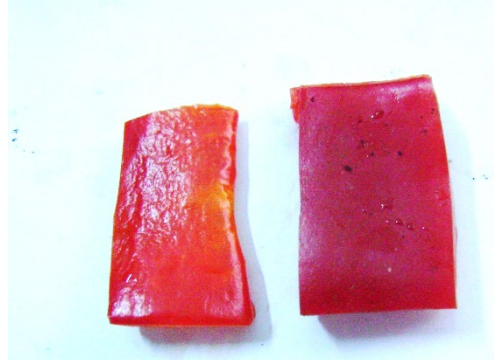
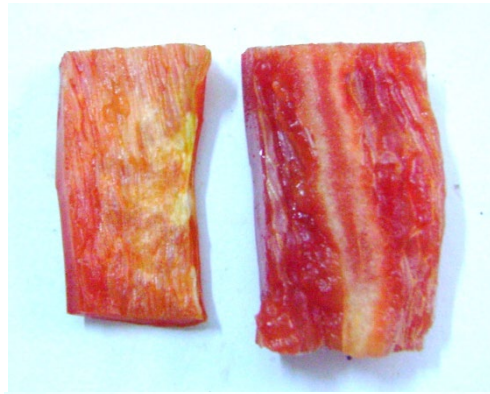
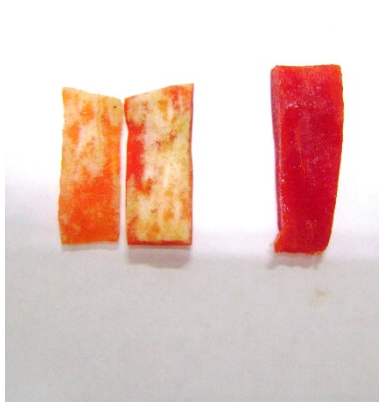
Organoleptic damage	Attacked fruit	Healthy fruit
External aspect	-deformations -discoloration -yellow spots	-smooth -pure red
Taste	-no flavour	-typical
Smell	-unpleasant	-normal



Results and discussions

ANATOMICAL AND MORPHOLOGICAL MODIFICATIONS

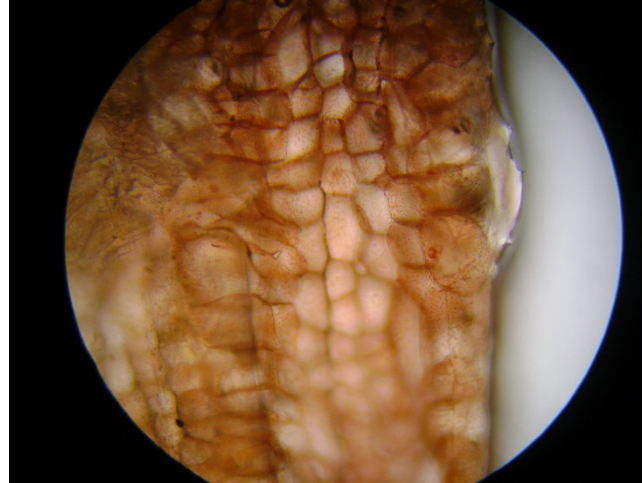
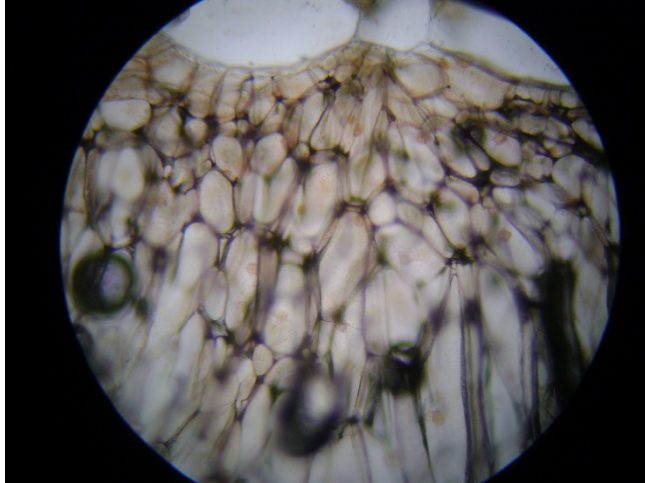
Internal damage	Attacked pepper	Healthy pepper
Consistency	porous	crunchy
Pericarp thickness	0.3 mm	0.5 - 0.7 mm



Results and discussions

ANATOMICAL AND MORPHOLOGICAL MODIFICATIONS

Internal damage	Attacked pepper	Healthy pepper
Mesocarp cells	atrophic	hydratated cells
Cell sap	low	present



Conclusions and recommendations

- ▶ *Halyomorpha halys* and *Nezara viridula* are two very significant pests in horticulture production.
- ▶ They are extremely polyphagous, with an high number of host-plants.
- ▶ They cause severe qualitative and quantitative losses.
- ▶ There is a lack regarding the predators and parasitoids of these *Pentatomidae* species.
- ▶ Even if the products damage is not too severe, their taste may be badly affected.

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Thank you for your attention!