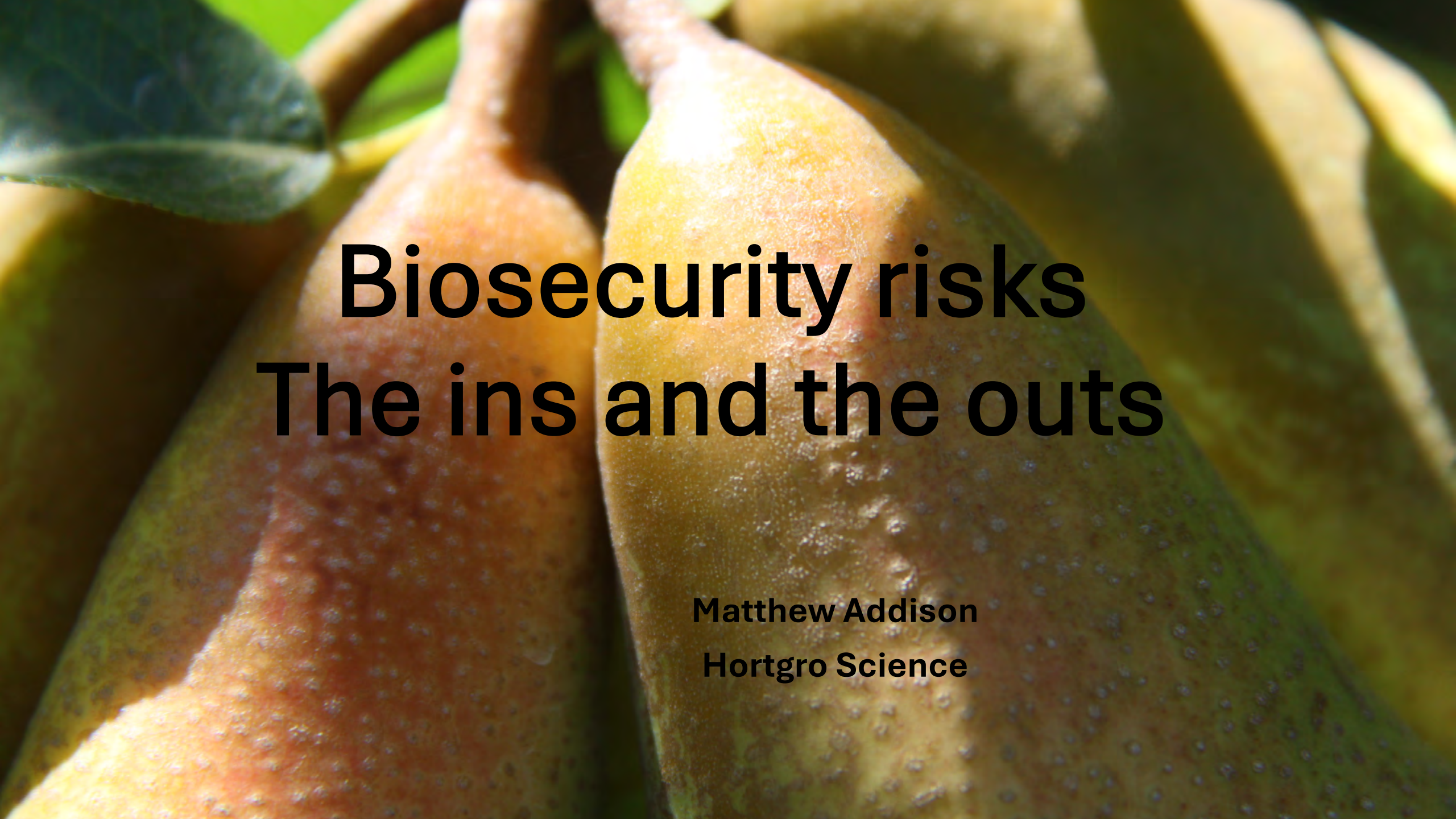


A close-up photograph of several pears. The pears have a yellowish-green base color with some reddish-orange blush. The skin is covered in numerous small, dark, raised spots, which are likely symptoms of a plant disease or pest infestation, illustrating the concept of biosecurity risks. The background is blurred, showing more pears and green leaves.

Biosecurity risks The ins and the outs

**Matthew Addison
Hortgro Science**

Introduction

Biosecurity – it works both ways

What makes certain pests and diseases invasive?

Pathways

Multiple hosts (polyphagous)

High reproduction

Short life spans

Tolerant / plastic (climate)

Mitigation

Prediction and prevention

Which species ?

Which pathways ?

Where ?

Pest risk assessments are critical

Surveillance and monitoring

Integrated system approaches

Disinfestation technologies

Digital twin technology (data collection and IA)



Neonectria ditissima

Apple canker

Features: Affects all stages of production, new apple cultivars are highly susceptible, causes shoot dieback and can express as fruit rot

Origin and distribution: Europe, Australia, New Zealand, North and South America (Cabi)

Pathways: Infested plant material.

Risk: High (fruit)



Erwinia amylovora

Fireblight

Features: Bacterial disease of ornamentals, plum pear and apple. Spreads during growing season, forms cankers in winter. Causes dieback and can kill trees.

Origin and distribution: North America (origin) Europe, New Zealand, Australia (eradicated), Asia and South America (Cabi)

Pathways: Infested plant material.

Risk: High in warmer climates



Monilinia fructigena

Brown rot / Blossom blight

Features: Ascomycetes causing rot and blossom blight on apples, pears and stone fruit.

Origin and distribution: Europe, Australia, North Africa, and Asia (Cabi)

Pathways: Infected plant material and fruit.

Risk: High (fruit)



***Alternaria mali* (Asian variety)**

Leaf spot

Features: On apple, lesions on leaves and can also affect fruit.

Origin and distribution: Europe, Australia, North America, and Asia (Cabi)

Pathways: Infected plant material and fruit plant material.

Risk: High (fruit)



Plum pox virus (PPV)

Sharka

Features: Destructive disease of stone fruits. *Prunus* spp. As hosts. Symptoms difficult to diagnose.

Origin and distribution: Eastern Europe and Europe, North and South America. (Cabi)

Pathways: Infected plant material and aphids.

Risk: Moderate but impact high



Xylella fastidiosa

Leaf scald / Xylella / Pierce's disease

Features: Insect vectored bacterial disease on a wide host range. Affected crops include peach, plum, almonds, grapevines, coffee, and olives. Classification is confused.

Origin and distribution: Europe (limited), North and South America. Possible origin is America (Cabi)

Pathways: Infected plant material.

Risk: High. EPPO A1 quarantine pest. Prefers warm multi-host agricultural environments. Vectored by insects.



Epiphyas postvittana

Light brown apple moth

Features: Small tortricid moth, larvae feed on a very wide host range (250 plant species) including *Arctotheca*, *Plantago* spp., apple, *Pinus* spp. and many more.

Origin and distribution: Eastern Australia, United States, New Zealand, Hawaii, parts of Europe and the United Kingdom

Pathways: Plant material and fruit.

Note wide host range.

Risk: Medium/ Low



Halyomorpha halys

Brown marmorated stink bug

Features: Typical stink bug, feeds on a wide variety of plants (+300 plant species). Adults and nymphs are cryptic. Enters structures in winter. Will cause fruit damage.

Origin and distribution: China / Korea / Japan, United States (1995), Europe (2007), South America, North Africa and Asia.

Pathways: Hitchhiking: adults aggregate in and on structures. Plant material.

Risk: Medium / High



Bactrocera zonata

Peach fruit fly

Features: Large fruit fly, mobile and relatively wide host range. Strong flier and active all year. Quarantine pest. Attacks citrus, apple, mango, figs, avocado, plum and peach.

Origin and distribution: Southeast Asia, North and central Africa, Mauritius and Réunion

Pathways: Plant material and fruit. Local distribution (flight).

Risk: High. EPPO A1 quarantine pest.



Spodoptera frugiperda

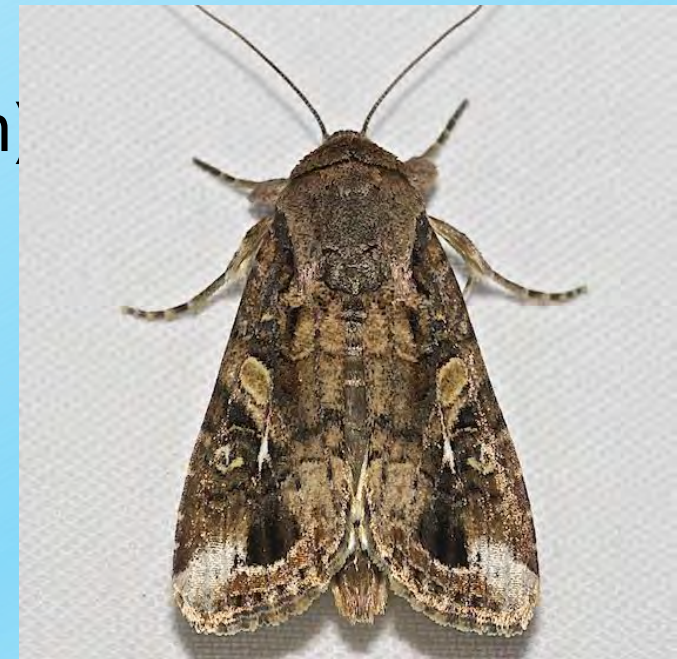
Fall army worm

Features: Moth that feeds on a wide range (350 spp.) of plants. Causes extensive damage to maize, wheat and other vegetable crops. Can migrate into fruit producing regions (late summer).

Origin and distribution: America, India (2018), Southeast Asia, Australia, New Zealand and Africa (2016)

Pathways: Strong fliers, Mississippi to Canada in 30h, multigenerational migration. Fresh plant material.

Risk: High. EPPO A1 quarantine pest.



Summary

Cooperation between all role players

PRA's and applied research

Systems approach and strong IPM programme (area wide)

Internal monitoring and detection

Ability to react comprehensively

Early detection and reaction

Thank you

