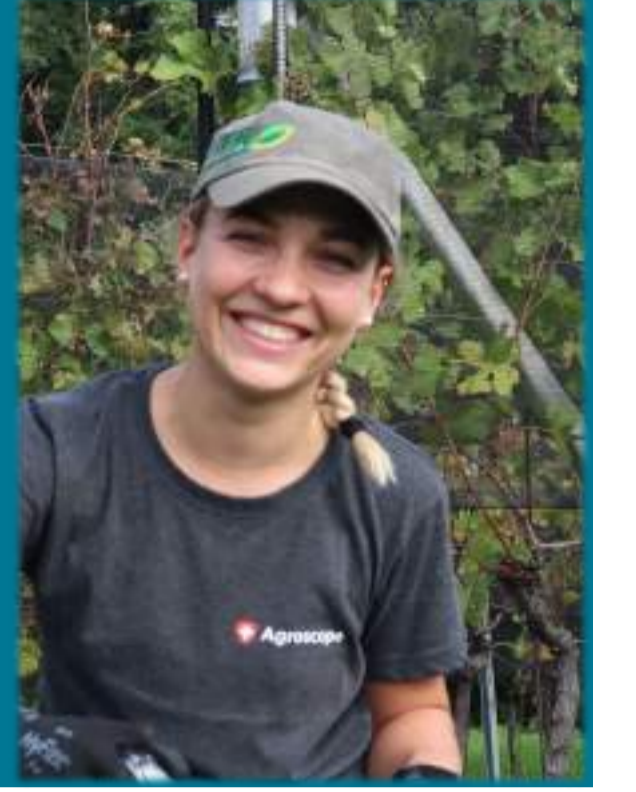


# Attract-and-infest strategy to biologically control Japanese beetles

Magdalena Wey<sup>1,2</sup>, Prof. Dr. Monika Maurhofer<sup>1</sup>, Dr. Giselher Grabenweger<sup>2</sup>  
<sup>1</sup>Plant Pathology, D-USYS, ETH Zurich; <sup>2</sup>Extension Arable Crops, Agroscope Zürich



## 1 Introduction and Concept

### Japanese beetle (*Popillia japonica*)

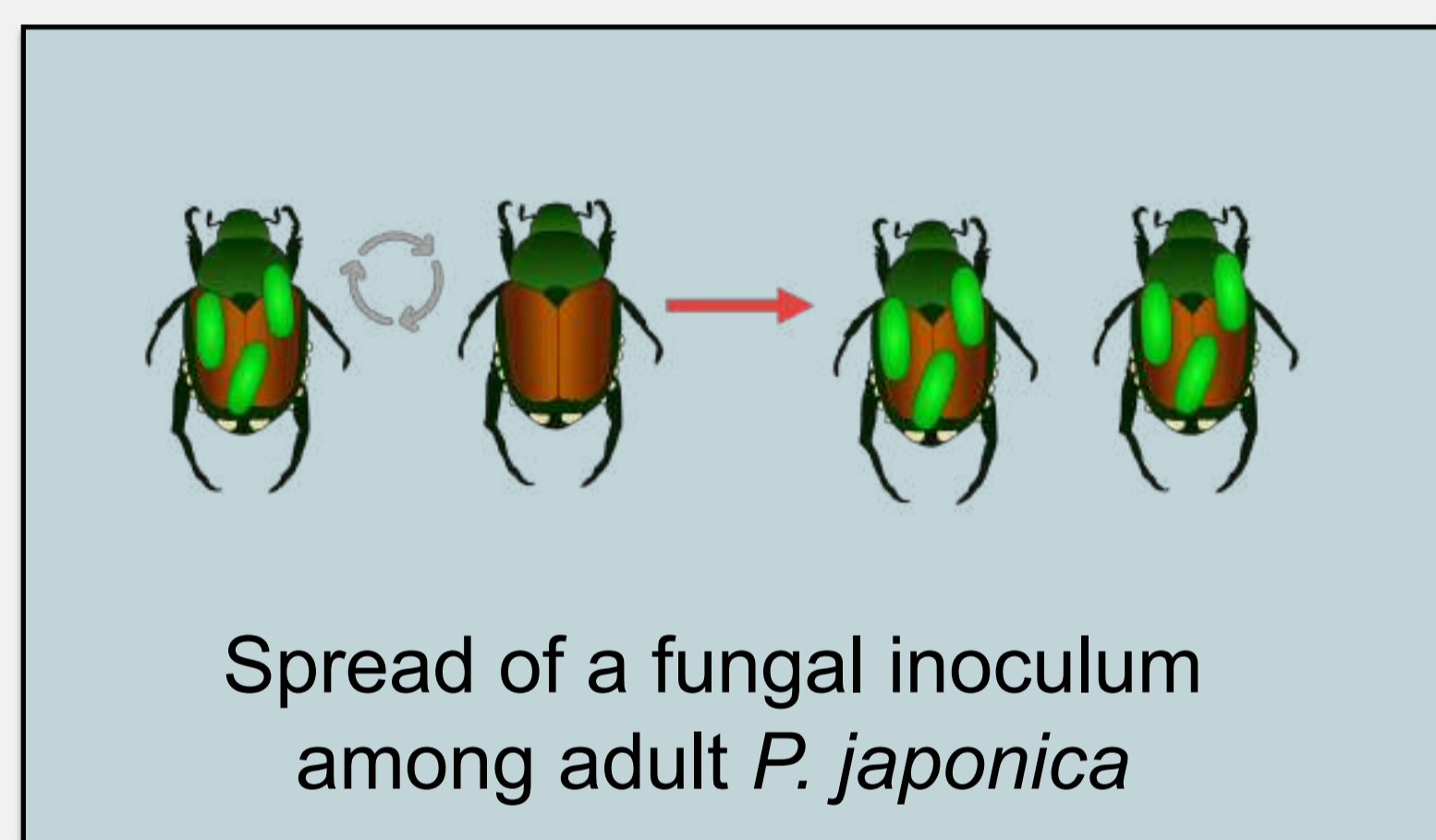


- Invasive threat to European agriculture
- Introduced to Switzerland in 2017
- Extremely damaging with >400 host plants

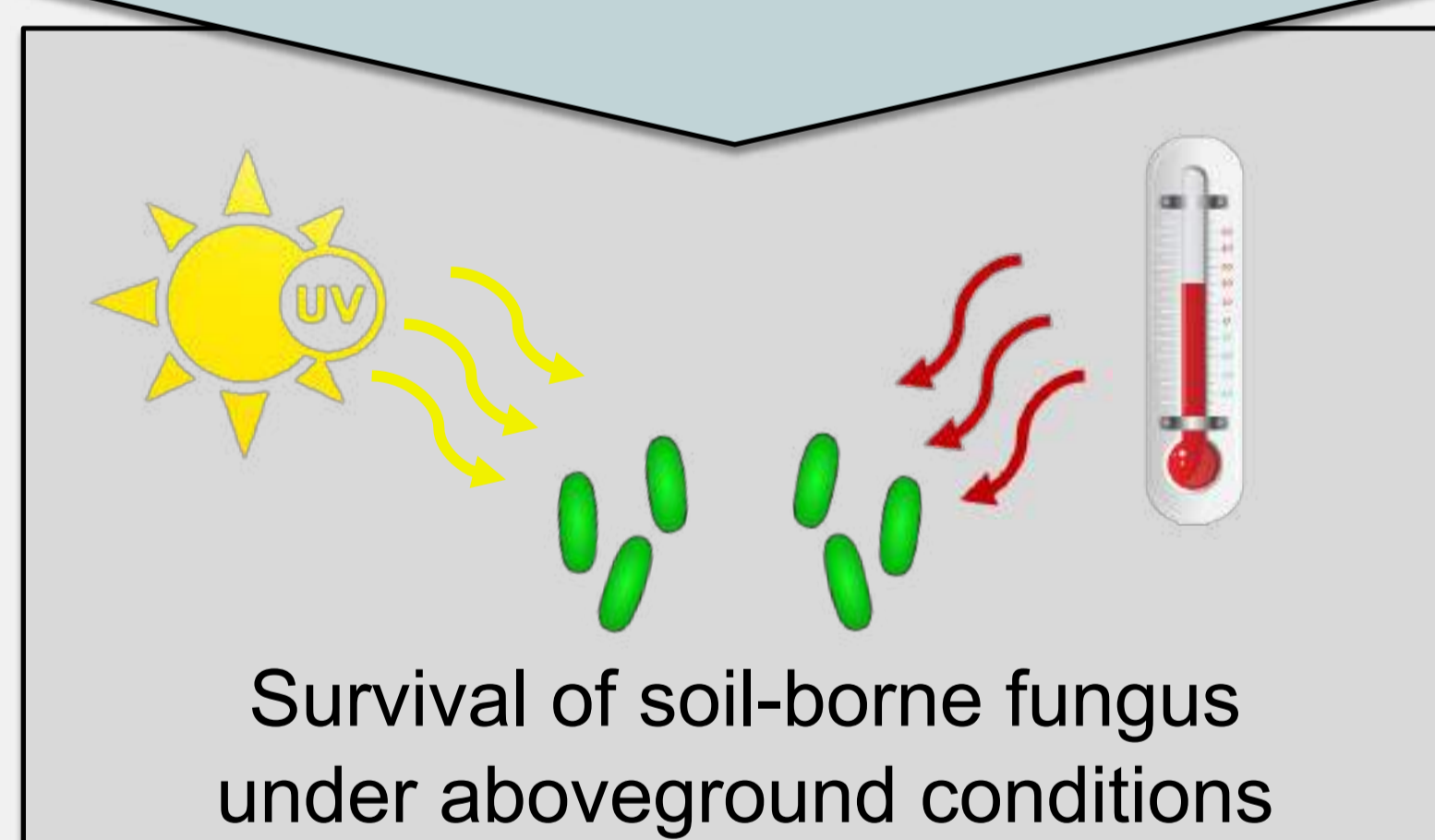
### *Metarhizium brunneum* ART 212



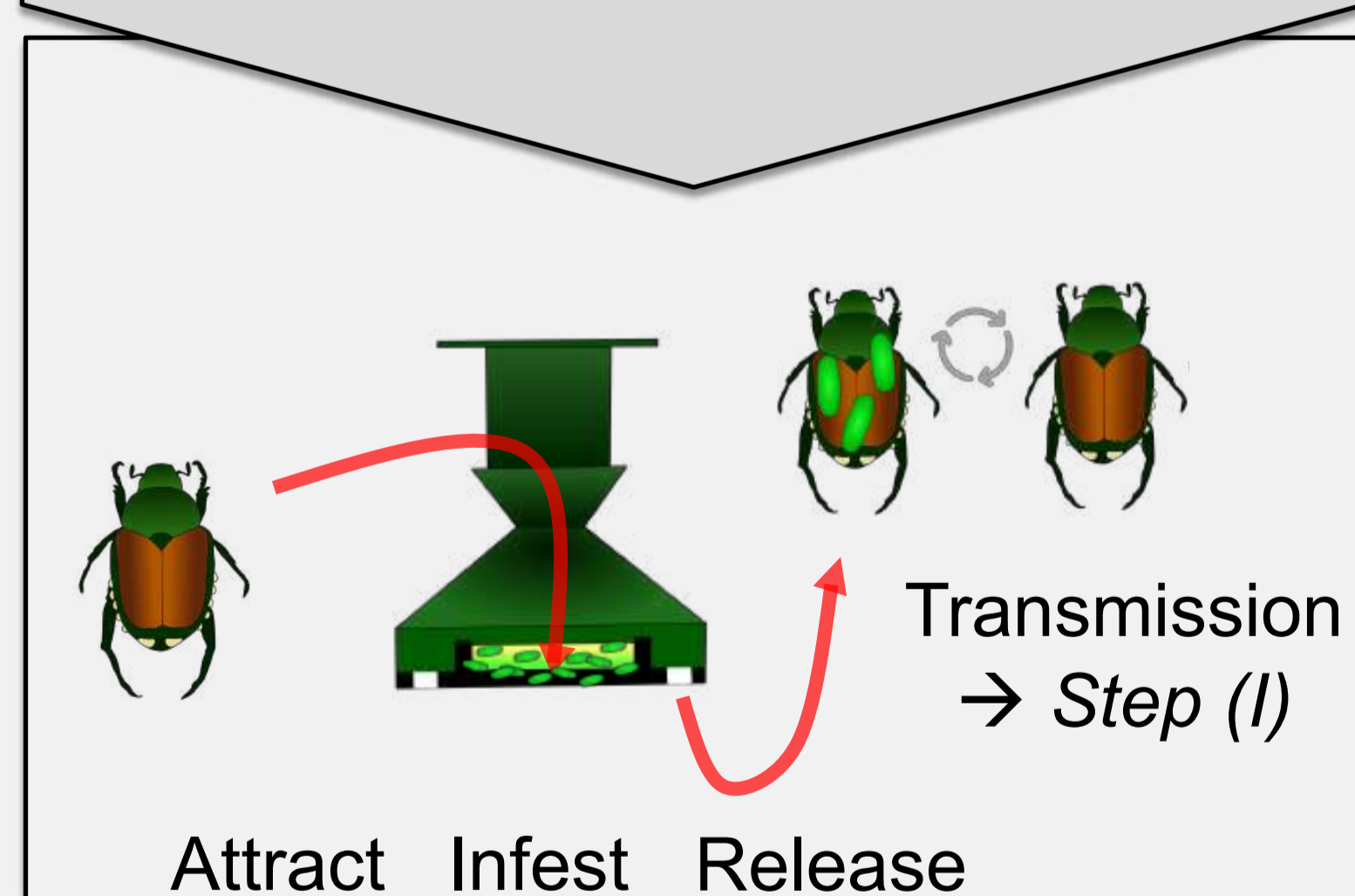
- Soil-borne, Swiss native fungal strain
- Biocontrol agent
- Deadly to adult *Popillia japonica*



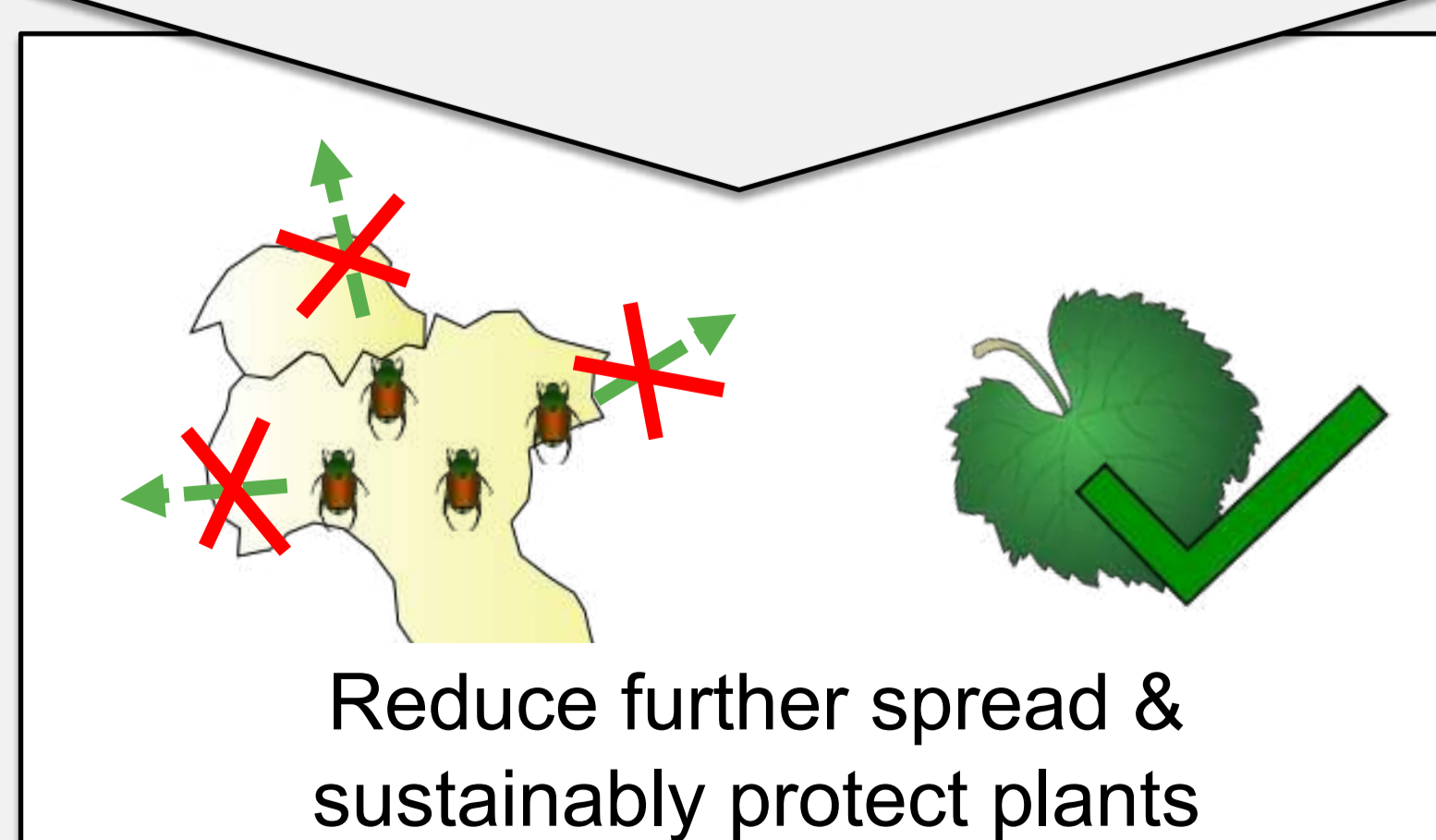
**Step (I)**  
 Lab and Field trials  
**Horizontal Transmission**



**Step (II)**  
 Lab and Field Trials  
**Survival of fungus**



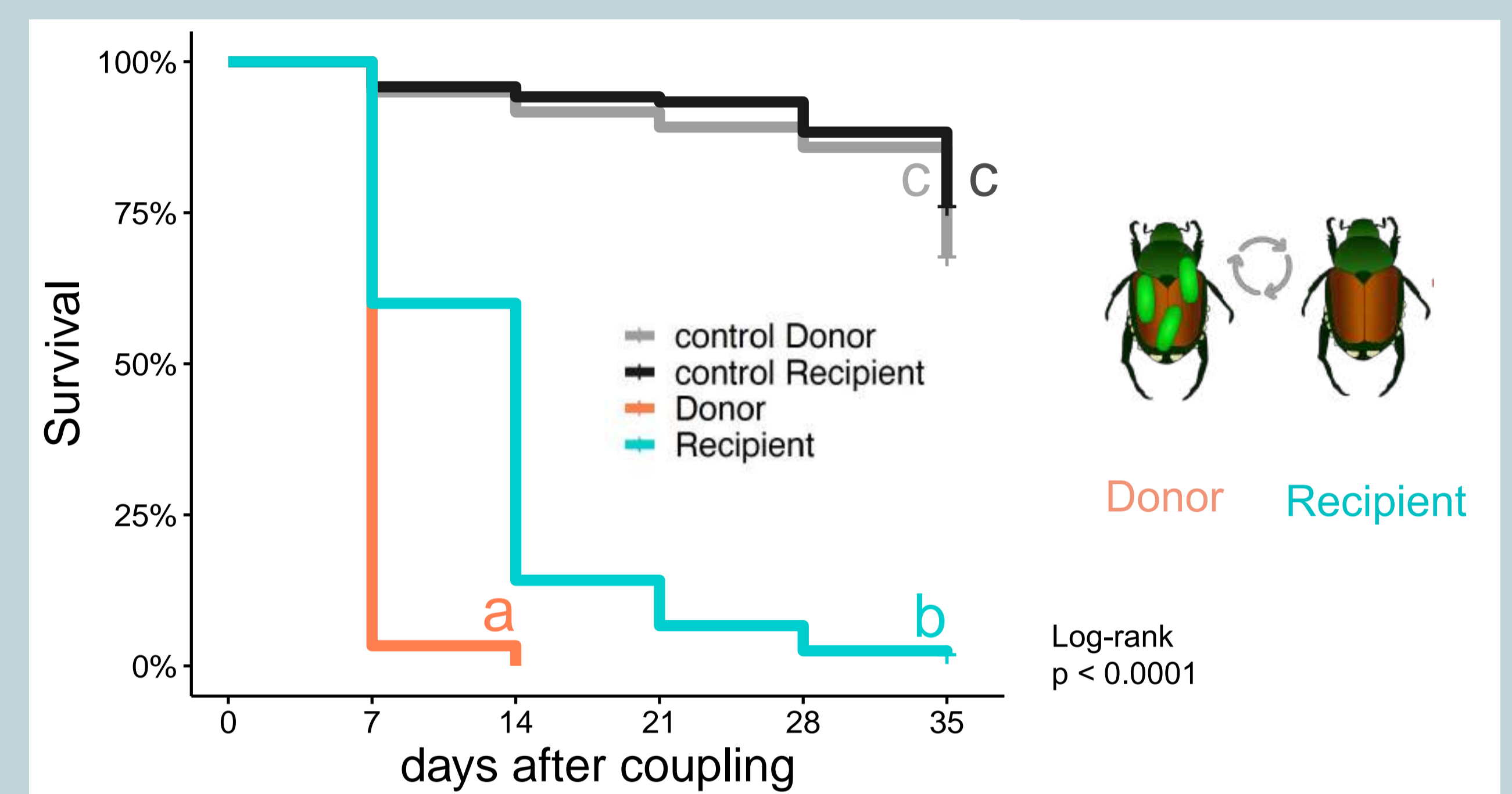
**Step (III)**  
 Application  
 Use the acquired knowledge to build an **attract-and-infest trap**



**Project goal**  
 Sustainably protect agricultural production from this invasive pest (SDG goal 2)

## 2 Result

### Step (I) Lab Trial Horizontal Transmission



When fungus-inoculated **Donors** are coupled with previously healthy **Recipient** beetles...

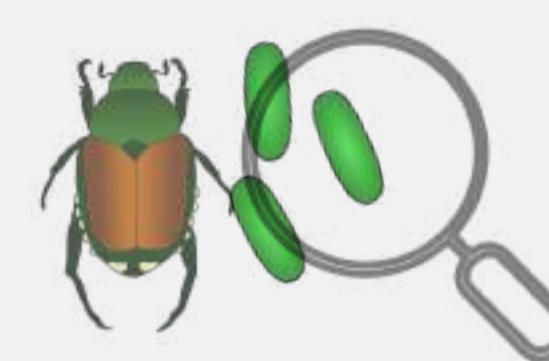
- **Donors** and **Recipients** die faster than the control
- **Donors** die within 7 days after inoculation (LT50)
- **Recipients** die within 14 days after coupling (LT50)

Horizontal transmission can increase the **total control effect** of this fungal biocontrol strategy

## 3 Conclusion

We generally need...

...more investment into research on biocontrol organisms & innovative application strategies



To provide...

...sustainable plant protection against current & future pests

