

**Introduction of a non-indigenous  
*H.bacteriophora* strain:  
Effect on endemic *S.feltiae* populations and  
results on *H.b.* persistence**



**Alper SUSURLUK and Ralf-Udo EHLERS**

*Christian-Albrechts-University Kiel*

*Institute for Phytopathology, Department for  
Biotechnology and Biological Control*

*Klausdorfer Str. 28-36  
24223 Raisdorf-Germany*

# ***H.bacteriophora* an exotic species in Germany?**

- **Isolated twice by T. Jackson near Darmstadt**
- **Isolated by H. Bathon near Darmstadt**
- **Isolated once by Ehlers near Cologne on a golf course**
- **Isolated once by Ehlers from an Elaterid wireworm from a corn field in the control of a field trial**

## **Establishment and persistence**

- ***Heterorhabdits bacteriophora* applied in different crops in agriculture sited**
- **Dose of Application: 0.5 million Collection of soil samples: Soil borer of 2 cm diameter x 10 cm depth. 50 soil samples/field. Each sample contains nearly 40 g from an area of 3 cm<sup>2</sup>**
- **EPNs were trapped from soil samples with 2 *G. mellonella* larvae at 25 °C for 3 days. Procedure was repeated twice**

# Potatoes and Lupine

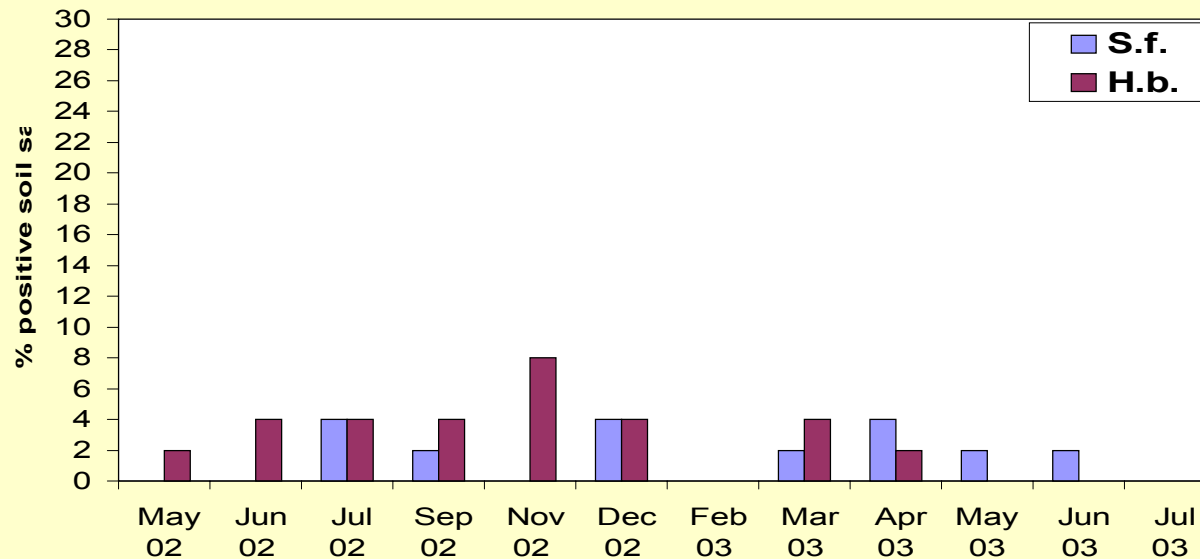
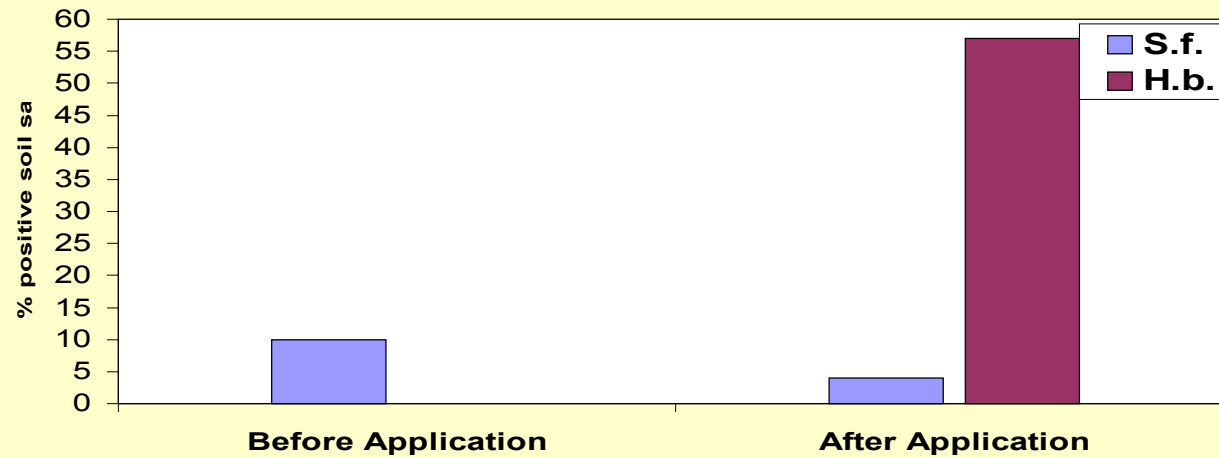


# Oil-Seed Rape, Pasture + Winter Wheat

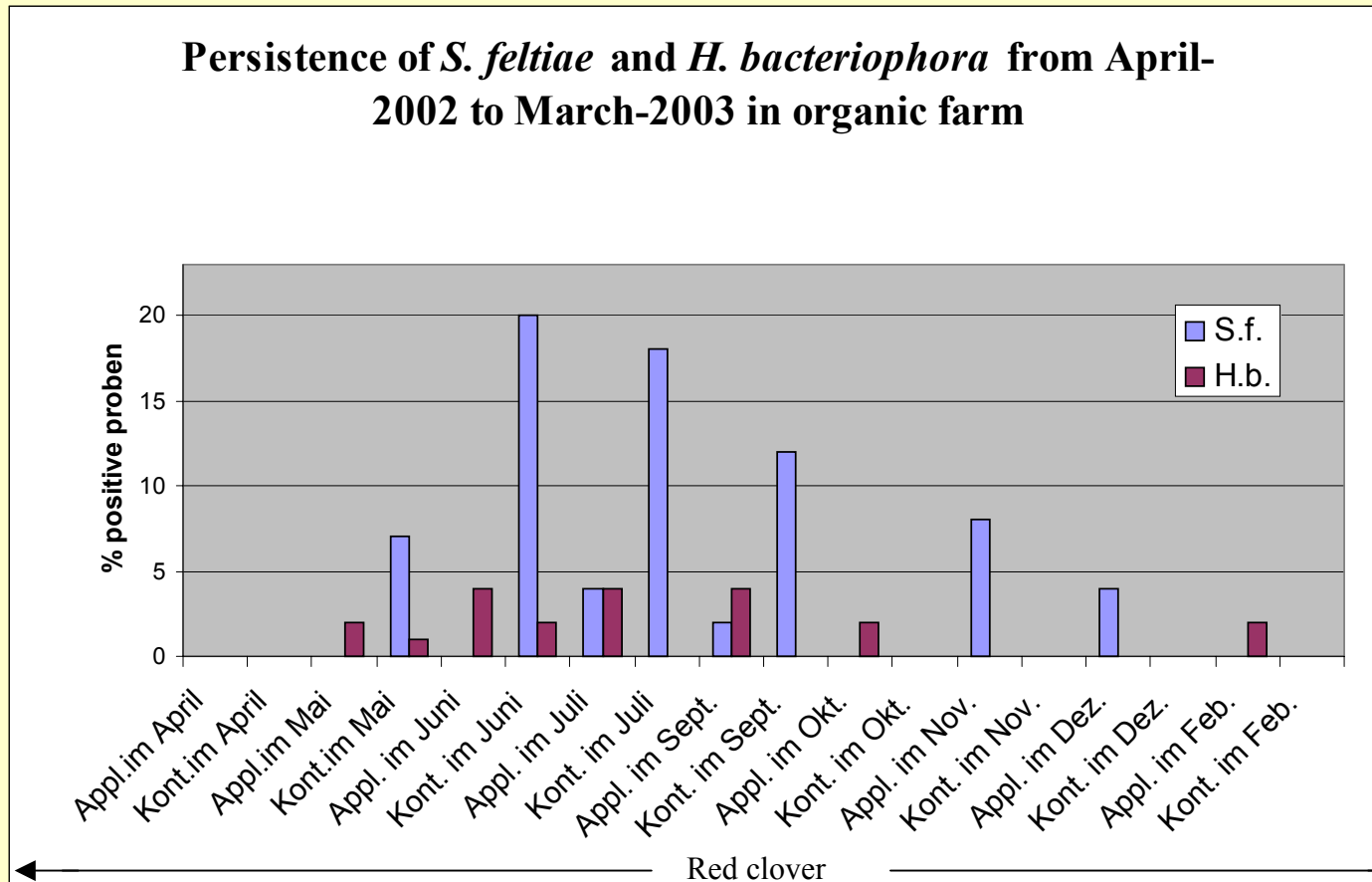


## *H. bacteriophora* in clover in October 2001

*H. bacteriophora* did not displace indigenous *S. feltiae* population

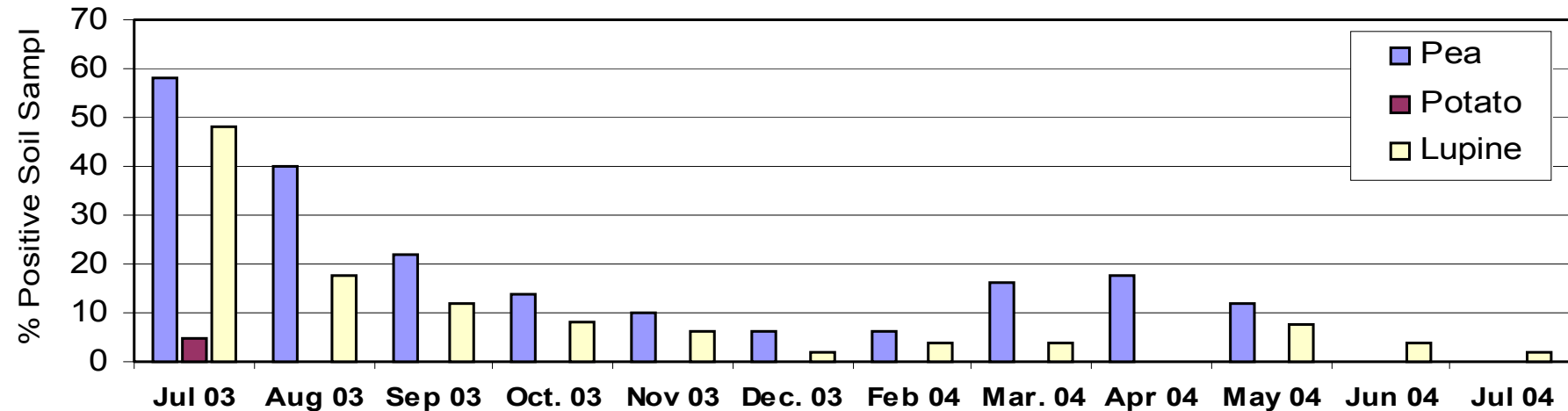


# *H. bacteriophora* did not displace endemic population of *S. feltiae*



# Persistence in Organic Farming

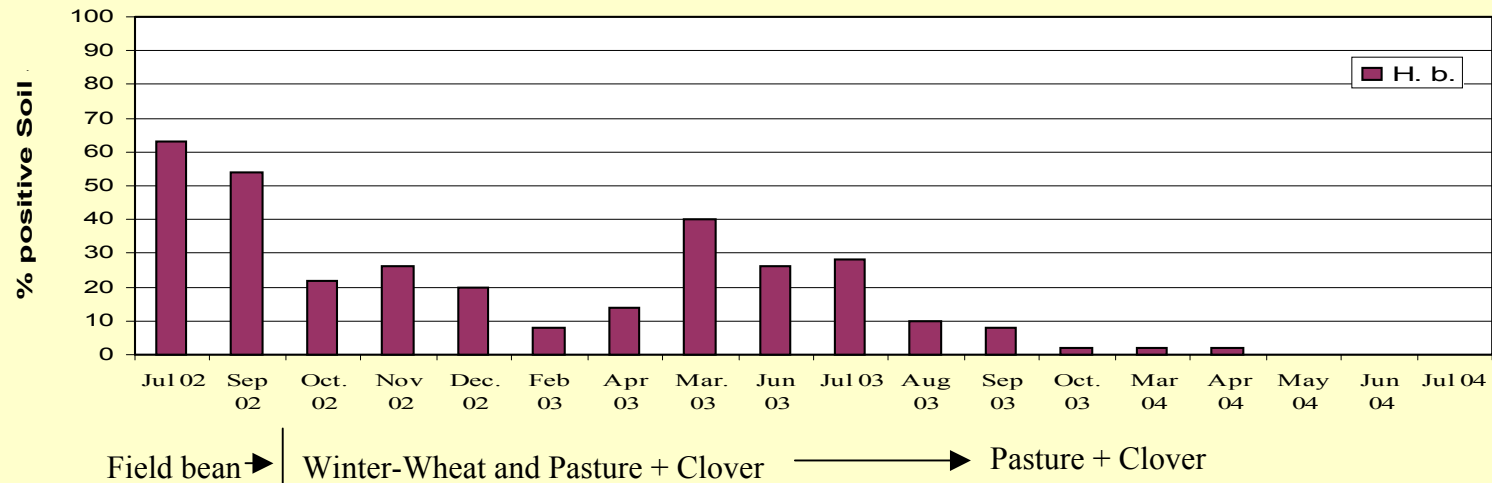
Persistence of *H. bacteriophora* on different cultivations in organic farm (in 2003-2004)



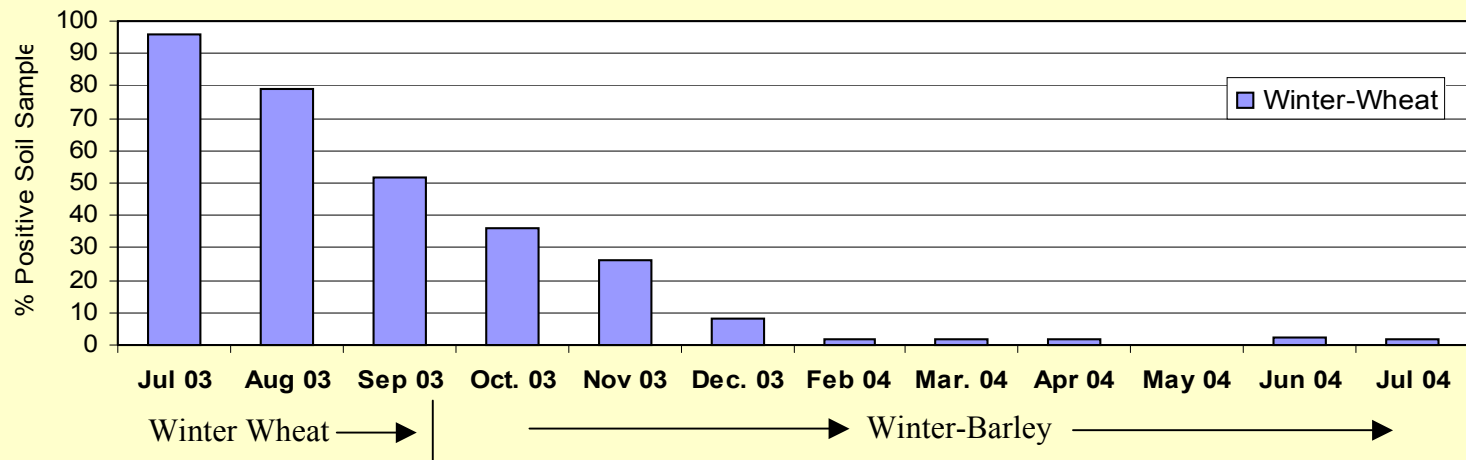
- *Crop rotations in these fields:*
- Peas----->Potato (since May 04)
- Potato--->Peas (since Apr. 04)
- Lupine-->Summer Wheat (since Mar. 04)
- Indigenous EPNs not detected in these fields (N=1.800)

# Persistence of *H. bacteriophora* in Winter Wheat with and without undercropping of clover

**Organic agriculture June-2002 to August-2004**



**Conventional agriculture June 2003-August 2004**



# Conclusions

- **When host insect disappear (due to culture of crop which cannot support host insect) introduced exotic species are extincted.**
- **H.b. persistence for > 15 months was a matter of the presence of *Sitona* in legumes. When clover disappeared, H.b. disappeared**
- **Similar observations with S.f. with CRF in oil-seed rape: after 9 months up to 80% positive *S.f.* samples**
- **After 10 months EPN not detected in pasture, whereas on golf turf we detect *H.b.* even 6 years after application**
- **Establishment of *H. bacteriophora* had no negative effect on indigenous population of *S. feltiae***