



Understanding and improving growers' risk management of soilborne pathogens

Annemarie Breukers, Rosemarie Slobbe,
Pieter de Wolf, and Leendert Molendijk

Background

- ▶ Future position of Dutch agricultural sectors depends on availability of healthy soils
- ▶ Increasing threat of soilborne pathogens
↓
- ▶ Sustainable phytosanitary soil management is a must!



Research questions

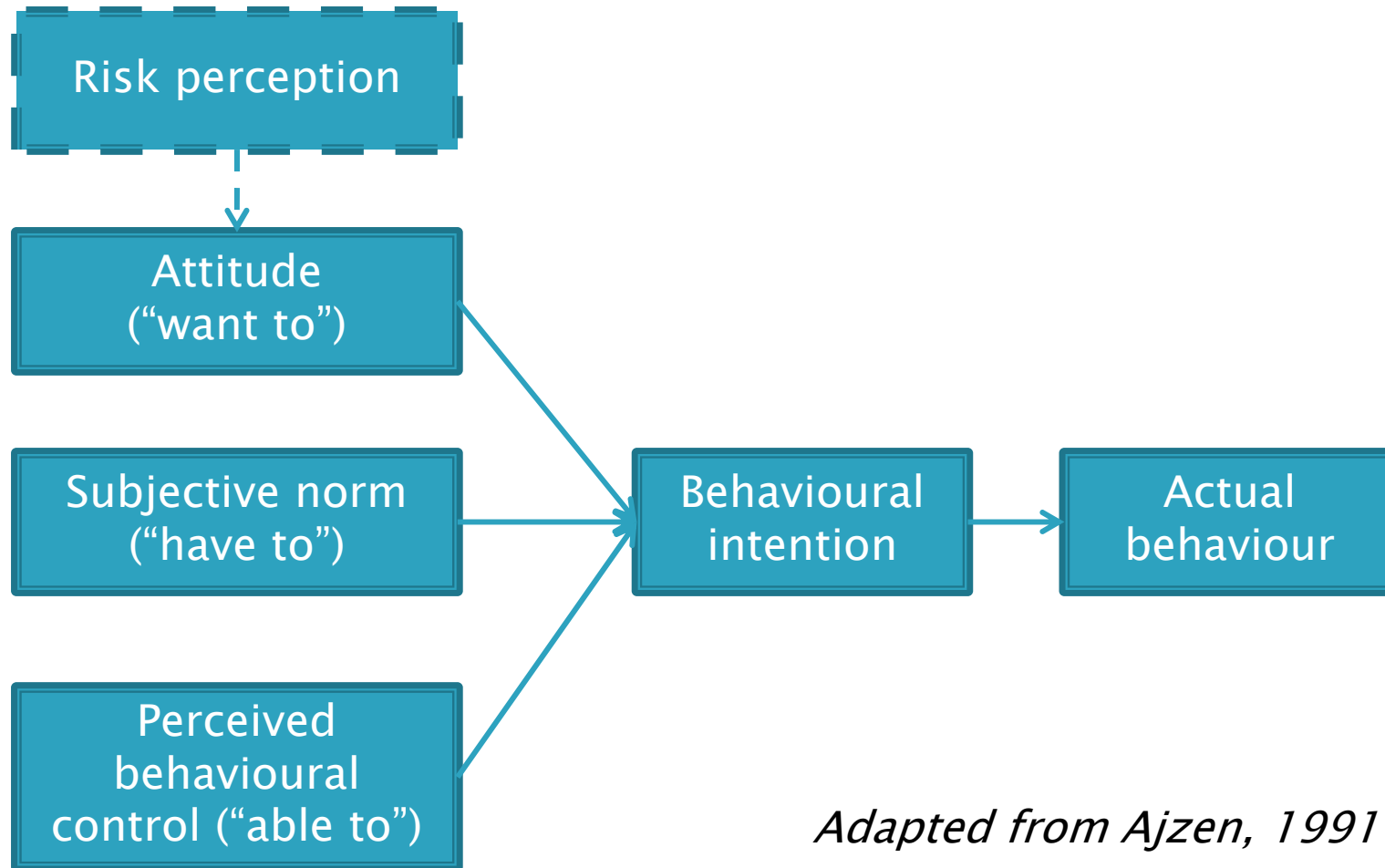
- ▶ Do Dutch growers realize the urgency of sustainable phytosanitary soil management?
- ▶ Do they manage their soil accordingly?

- ▶ How can phytosanitary soil management of growers be stimulated to become more sustainable?

Methodology

- ▶ Theoretical framework:
 - Theory of Planned Behaviour
 - Intervention literature
- ▶ Empirical data:
 - Face-to-face interviews with growers
 - Telephone interviews with other stakeholders
 - Reflection meeting with stakeholders
 - Expert judgments

Theory of Planned Behaviour



Adapted from Ajzen, 1991

Observed behaviour

Observed effort

	High	Low
Required effort	High	Inadequate ----- Risky
	Low	(Adequate)

Behaviour explained

	Growers' category:		
	Adequate	Inadequate	Risky
Behaviour	High	Medium	Low effort
Risk perception	High	Moderate	Low
Attitude	Positive	Positive	Negative
Subjective norm	Positive	Positive	Moderate
Perceived behavioural control	Moderate	Negative	Negative

Understanding adequate growers

- ▶ Awareness of phytosanitary risks and potential impacts
- ▶ Strong feeling of responsibility towards production chain and colleagues
- ▶ Barriers are perceived, but not considered as (too) restrictive

Understanding inadequate growers

- ▶ Awareness of phytosanitary risks, but underestimation of particular dispersal pathways
- ▶ Illusion of control: “I apply sufficient measures to effectively manage soilborne pathogens”
- ▶ Perceived barriers such as available time and doubts about effectiveness are restrictive

Understanding risky growers

- ▶ Awareness of phytosanitary risks, but no sense of urgency
- ▶ Fatalism: “My neighbour did everything he could and still incurred an infestation, so why should I even try?”
- ▶ Perceived barriers such as available time, doubts about effectiveness, and operational knowledge are restrictive

Intervention

- ▶ Aimed at inadequate and risky growers
- ▶ Different techniques, e.g.
 - Education
 - Persuasion
 - Stimulation / Coercion
 - Restriction
 - Etc.
- ▶ Selection of effective technique depends on causal factors of not performing the behaviour

Changing inadequate growers' behaviour

- ▶ Education about cost-effectiveness of measures: they do have an added value on top of measures already applied!
- ▶ Enablement: facilitate implementation through innovative tools (ICT, GIS, etc.)
- ▶ Environmental restructuring: 'use' adequate growers as example to demonstrate feasibility

Changing risky growers' behaviour

- ▶ Persuasion of the need for measures, e.g. through fear arousal, anticipated regret, personal interest (“what’s in for me?”)
- ▶ Incentivation / coercion: formulate and monitor personal or collective goals
- ▶ Enablement and training: offer innovative as well as existing tools and on-farm support to facilitate implementation of measures

Facilitating interventions

- ▶ Restriction: avoid free-rider behaviour to encourage willing growers
- ▶ Incentivation: create (financial) stimuli in cases where these are naturally absent
- ▶ Environmental restructuring: generate understanding and support within the growers' network

IPM principles: lessons learned (1)

Common practice in (phytosanitary) soil management is insufficient to safeguard continued existence of important field crops in the long run...

...but many growers do not realize this!

Misconceptions of risks and perceived barriers are the main reasons for not applying measures

IPM principles: lessons learned (2)

In order to be (potentially) effective, intervention should aim at the causal factor for not showing the desired behaviour



Theory-based intervention!

E.g. education about the rationale of applying measures makes no sense as long as a grower does not think rational

IPM principles: lessons learned (3)

In realizing any desired behaviour change (including IPM practices), the scope and scale aimed at should be in line with potential group dynamics and interactions

E.g. consider:

- regional interactions (shared land use)
- chain integration (market pressure)
- collective interests (sector initiatives)

Dinner time!

Contact:
Annemarie.breukers@wur.nl
www.lei.wur.nl



'Quick wins' in soil management

Selected measures	Inadequate	Risky
Put extra quality demands on planting material	X	X
Performing extra checks on planting material	X	
Voluntary sampling of rented land		X
Accessing fields in order of phytosanitary situation	X	X
Attached soil / tare back to field of origin	X	X
Separated incoming and outgoing logistics	X	
Responsible crop rotation (also regarding cover crops)		X