TRACEABILITY IN AGRICULTURAL MARKETS

Exploring the benefits of introducing ICTs to traceability systems

LIRNEasia

Learning Initiatives on Reforms for Network Economies

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Traceability: Seed to burger

- The ability to trace and follow a food or feed through all stages of production, processing and distribution (UNESCAP, 2004)

- The ability to follow and document the origin and history of a food or feed product (Jahncke, 2007).

Studying traceability

- Objective

- To examine how ICTs can improve traceability systems

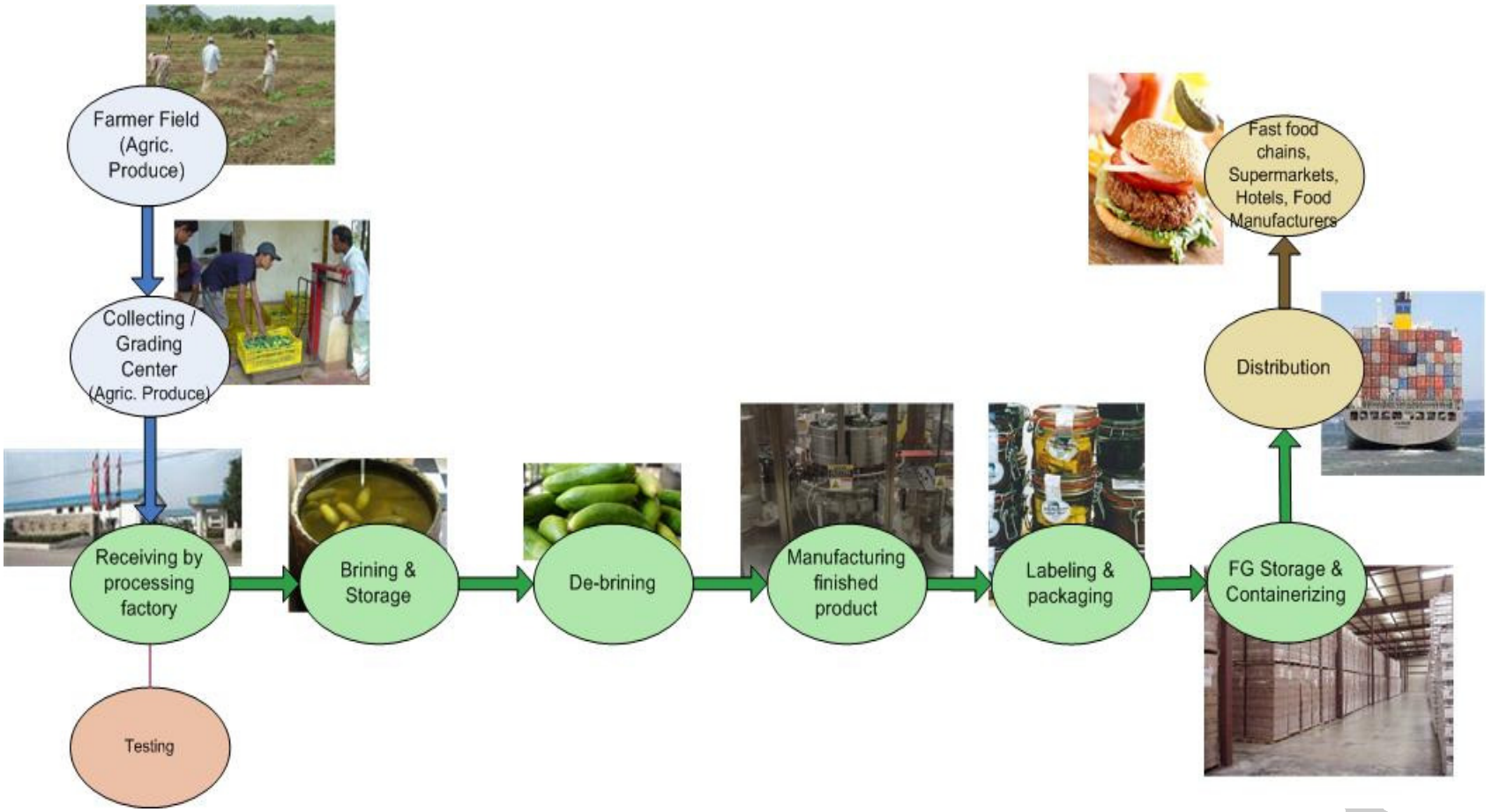
- Methodology

- Identify an existing traceability system

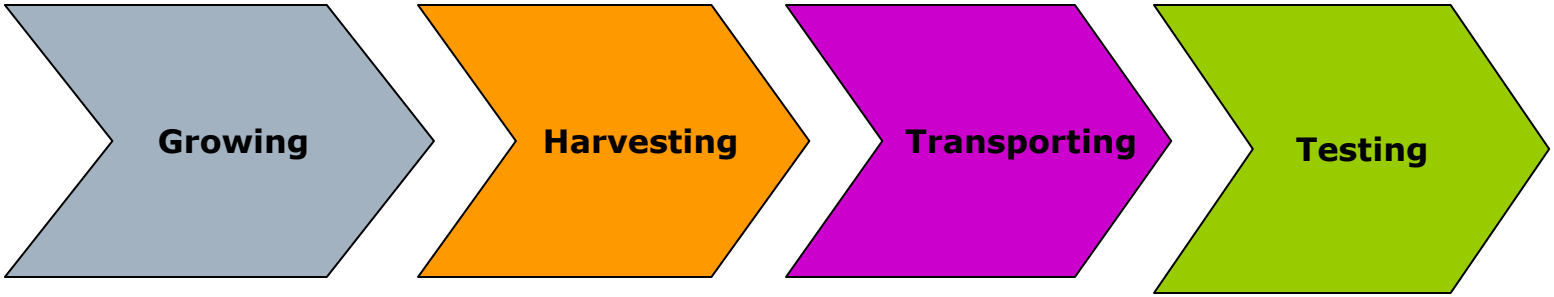
- Introduce ICTs throughout the supply chain

- Investigate whether/ how ICTs made a difference

Seed to burger



The Gherkin chain



- 4 weeks
- Forward contract basis
- Raw materials on credit

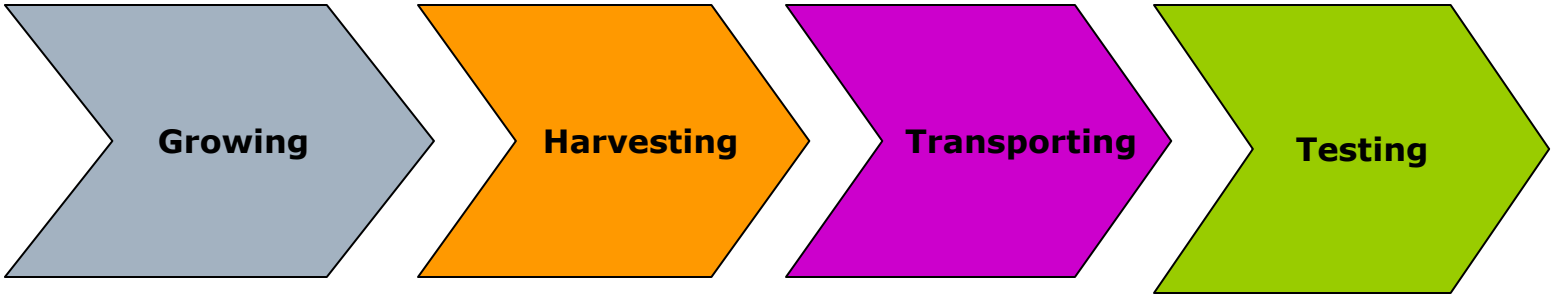
- 6 weeks
- Sorting at collection centers
- Paid at the end of the week

- 6 weeks
- Packed into crates by grade
- Sent by lorry to factory

- 6 weeks
- Random testing
- Accepted crates are sent for brining

Growing Gherkins

The Gherkin chain



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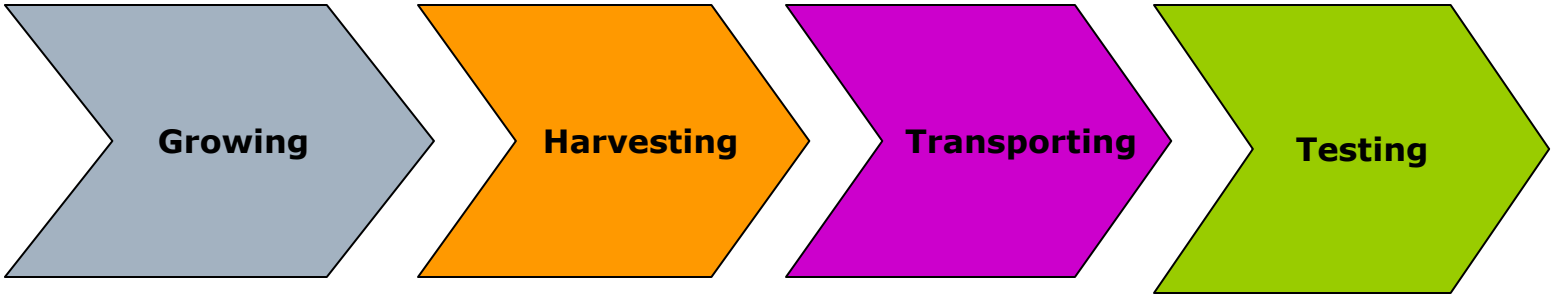
Harvesting Gherkins

Sorting Gherkins

The Gherkin chain



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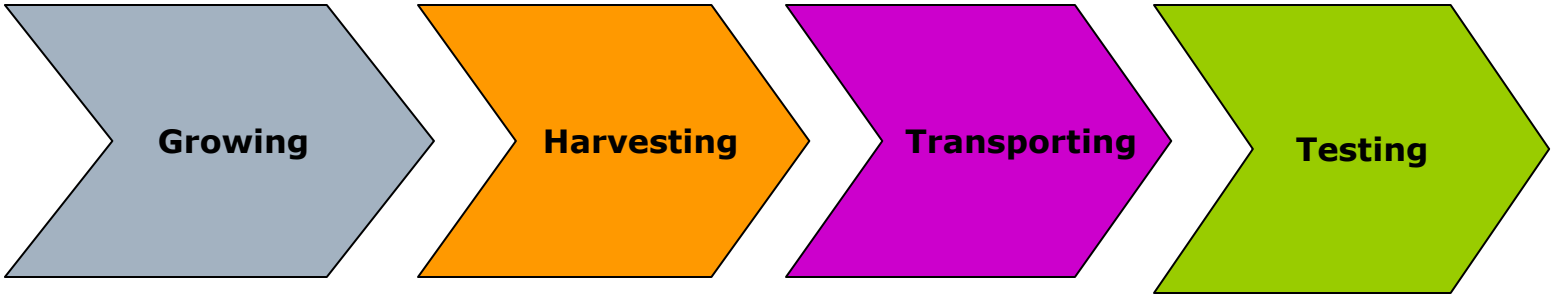
Crated Gherkins

The Gherkin chain



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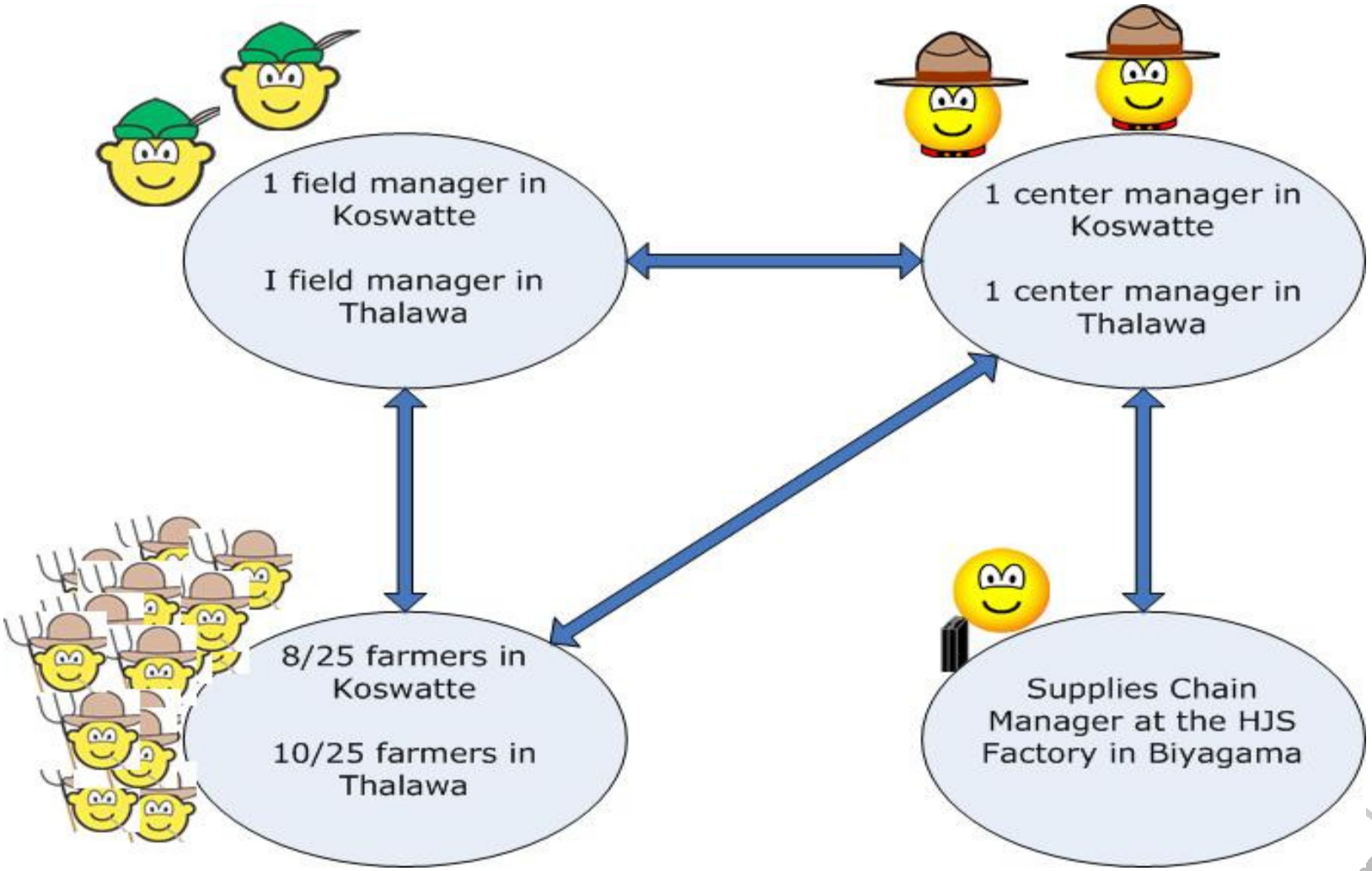
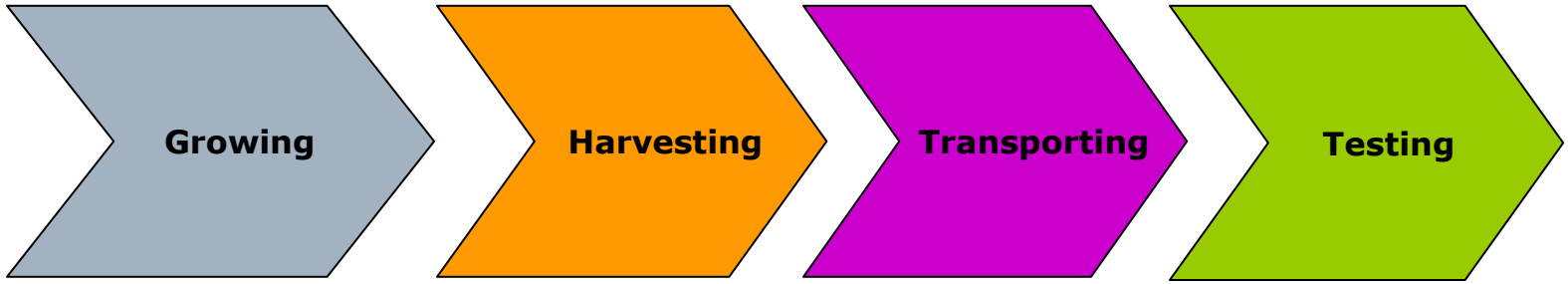
People along the supply chain



Manual traceability: Gherkins



- Farmer Records
  - -farmer details
  - -seed variety and qty.
  - -fertilizer variety and qty.
  - -pesticide variety and qty.

- Collecting Center Records
  - -farmer details
  - -accepted by grade
  - -price
  - -rejected qty.
  - -defects
  - -dispatch info

- Receiving Records
  - -center details
  - -delivered by grade
  - -dispatch info

- Testing Records
  - -crate details
  - -rejected qty.
  - -defects

Manual traceability: problems

- Paper based system
  - Mock recovery takes a long time
- Traceability only up to the collection center
- Bi-directional flow of information minimal

The Intervention

Increasing the bi-directional flow of information

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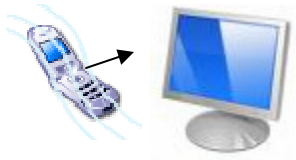
Where to intervene?

Growing → **Harvesting** → **Transporting** → **Testing**

Growing	Harvesting	Transporting	Testing
•Farmer Records -farmer details -seed variety and qty. -fertilizer variety and qty. -pesticide variety and qty.	•Collecting Center Records -farmer details -revenue -rejected qty. -defects -dispatch info	•Receiving Records -farmer details -crate info -delivered by grade -dispatch info	•Testing Records -crate details -rejected qty. -defects

Introducing ICTs: mobile phones

- Data collection:

- GPRS
- Local language
- Number oriented
- Menu driven
- No costs

Mobile application

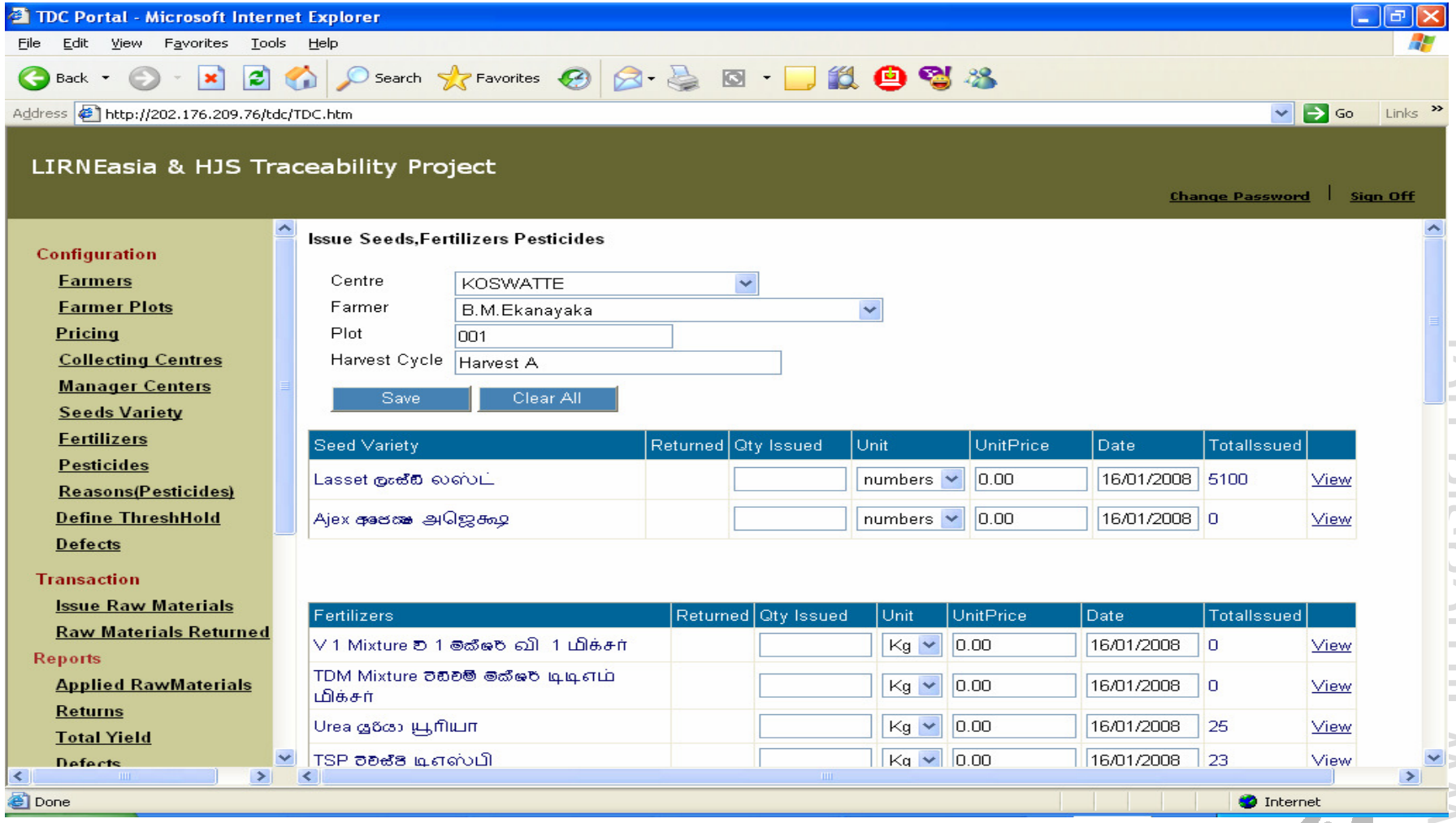
Entering data

Introducing ICTs: computers

- Data collection:

- Web based application
- English, Sinhala, Tamil
- Menu driven
- Mainly number oriented
- Generates reports

Web application



Entering data

Facts and Figures

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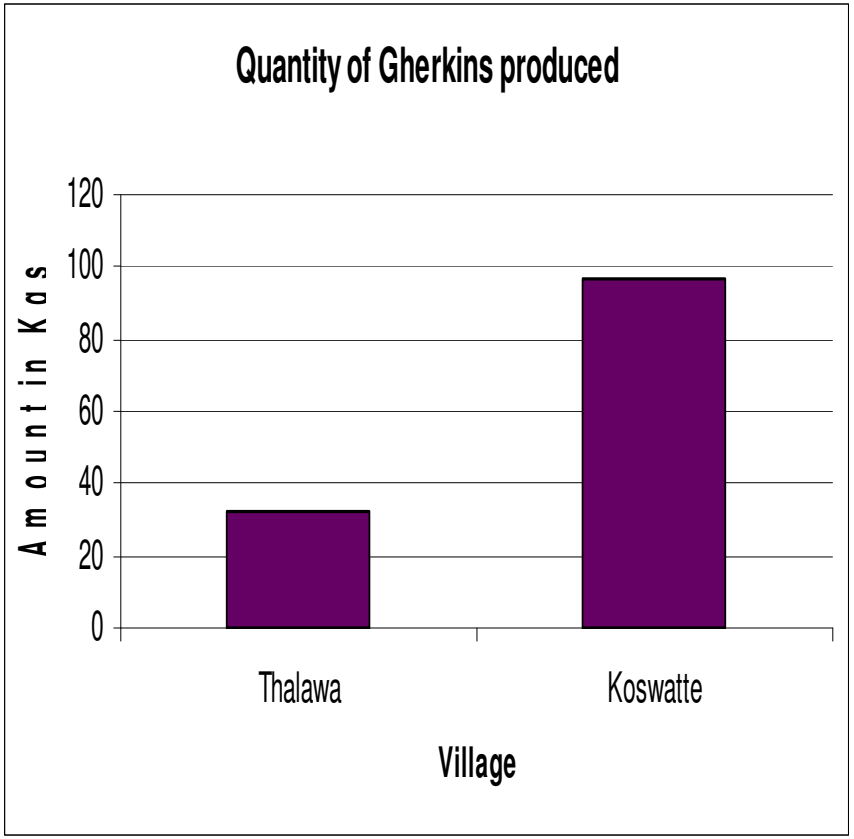
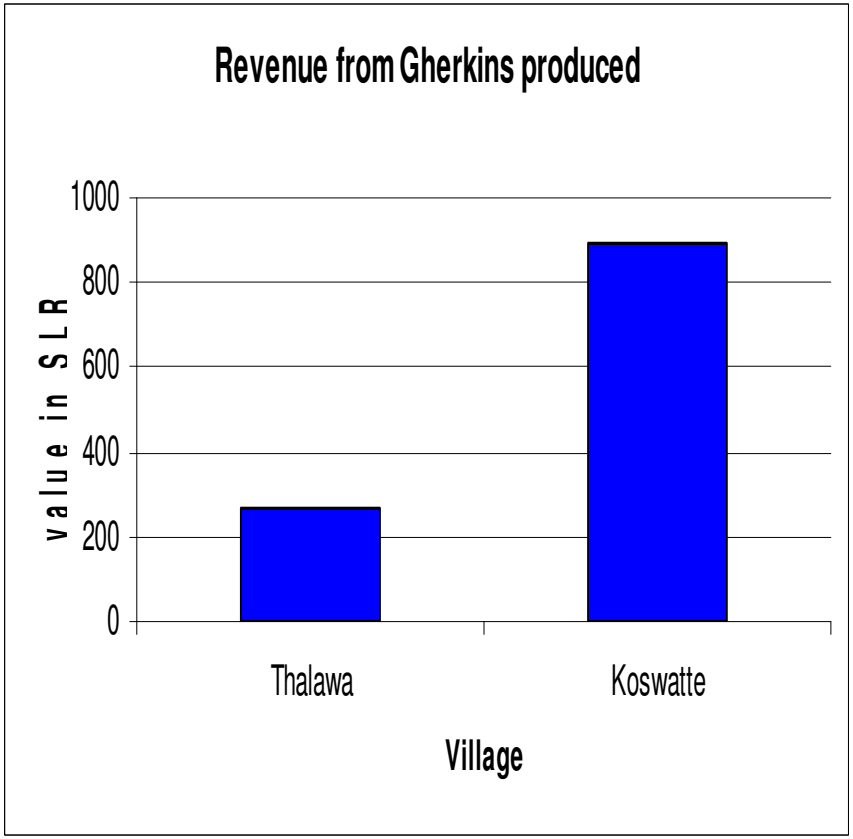
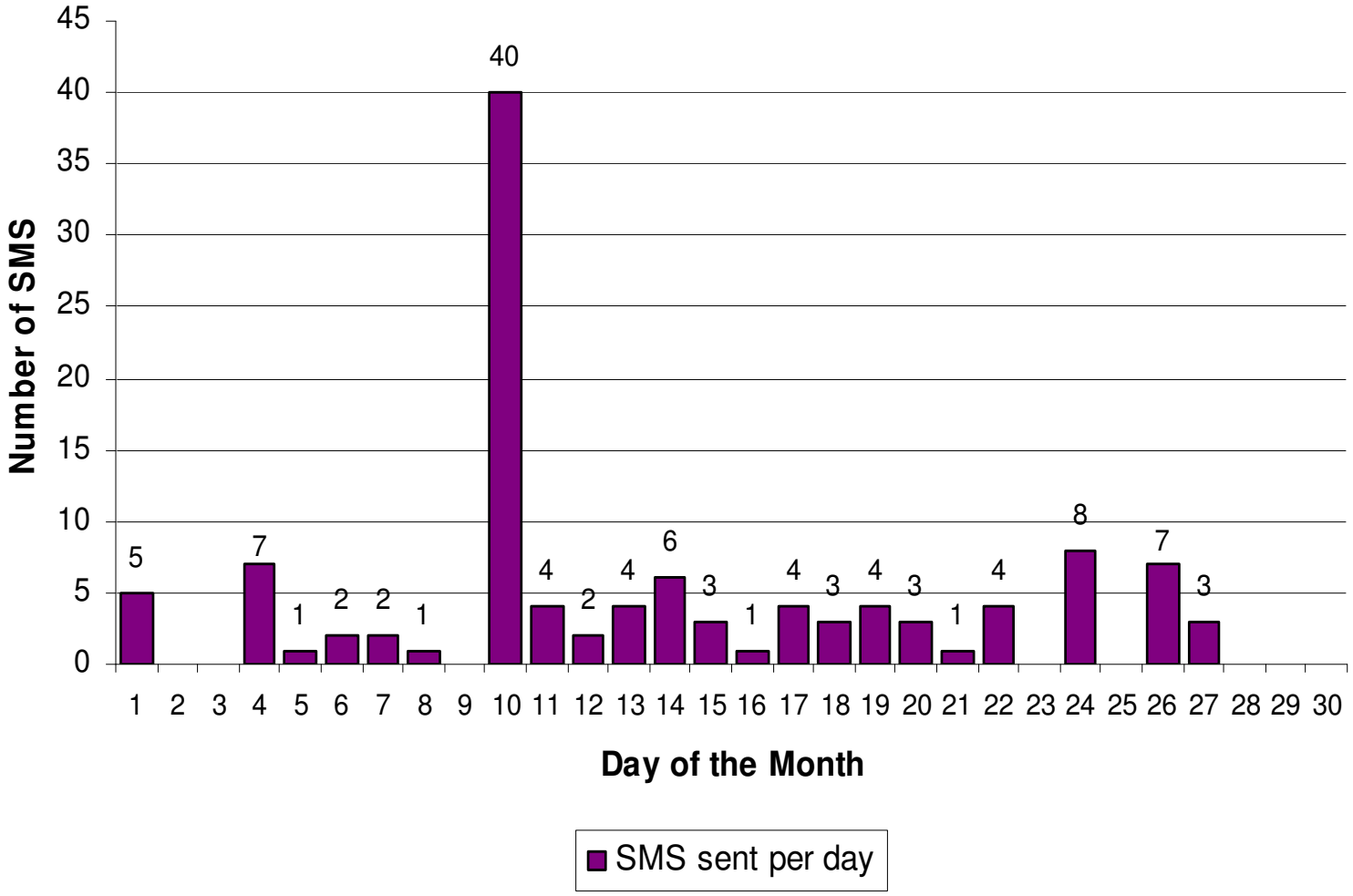
Gherkins during the season





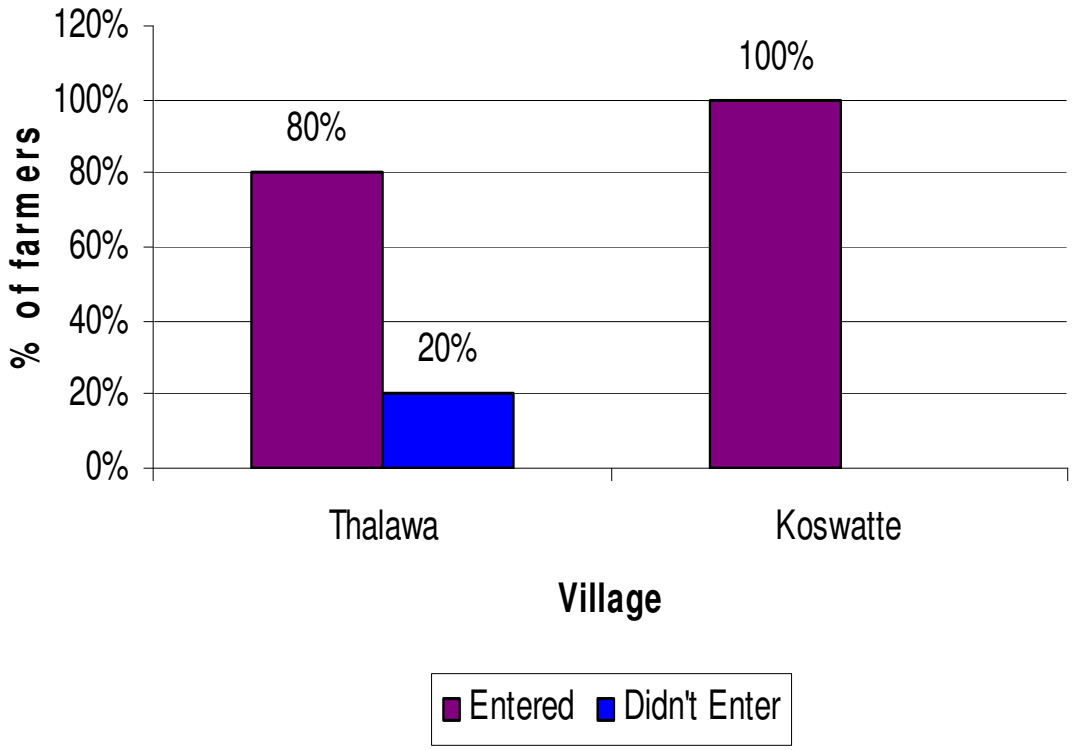
Crop failures in Thalawa lead to many farmers earning almost nothing

SMS sent in September



Data entry problems

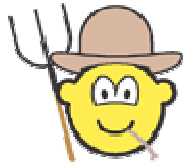
- Younger farmers were more likely and willing to use phones than older farmers
- Data was entered with the help of field officers and other farmers



Focus group discussions

The value of bi-directional information

"Sometimes we were worried we won't get paid"



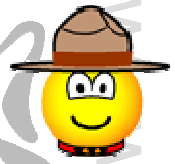
"When we got the sms about the rejection, the reason was not given. So we assumed it was due to the lack of water from past experience and acted on it"

"It was useful because the farmers with phones had the opportunity to immediately do something to improve the quality"

"The phone became a business tool for us"

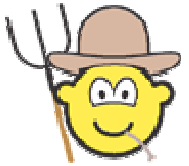
"Information about rejects go directly to the farmers so that makes life simpler for me. I don't have to tell them"

"Even for me it is useful because I get details about what they do daily. If the fruits are spoilt we can talk about it and see what we can do"

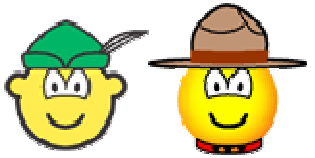


Everyone can benefit…

- Farmers can:
  - Create sms networks
  - Keep track of payments



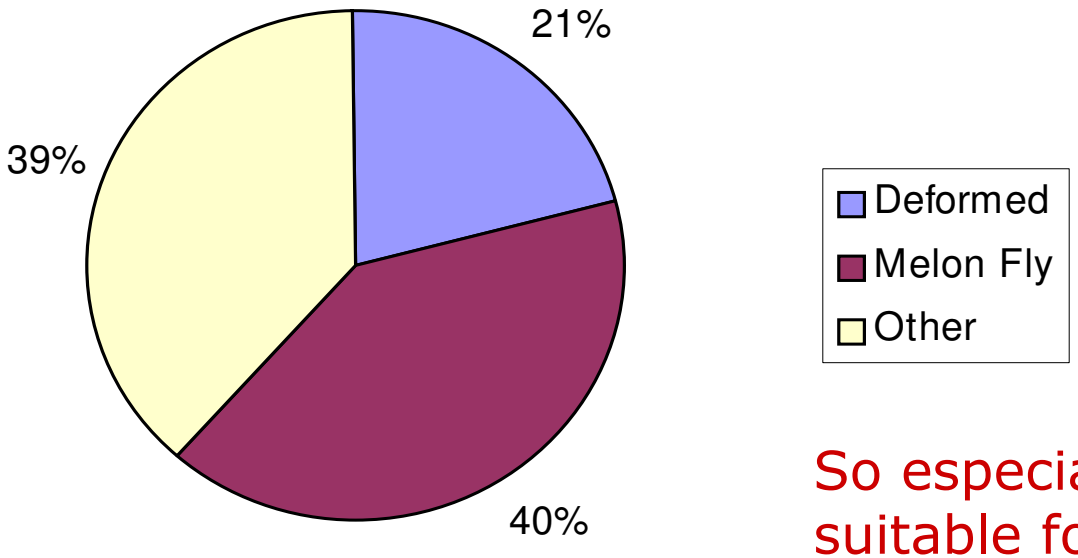
- Field/ Center Managers can:
  - Track raw materials
  - Save time
  - Reduce unnecessary costs
  - Take preventive measures for possible defects
  - Improve relationships



- Overall can:
  - Improve quality

Quick feedback can reduce defects

- Most common defects: can improve in 2/3 days
- Melon fly infected – apply pesticides
- Deformed/ crooked – more water, better sorting



So especially suitable for quick cycle crops!!!

Needs to be fine tuned…

- Technical issues
  - Reason for defects not included in SMS to Thalawa
  - SMS from HJS did not reach farmers in Koswatte

- Capacity issues
  - Farmers need more training
  - Older farmers were technologically illiterate

- Institutional issues
  - SMS must be sent promptly on the day of delivery by farmers
  - No incentive scheme for farmers

Incentives are important!

- Currently farmers paid for total gherkins delivered.. What about the middlemen?
- Need reward for improvement in quality
- HJS has agreed to this in principle but not yet implemented it

But…

- Should there be a penalty for poorer quality?
- How do we measure what the improvement was due to?

What else can ICTs do?

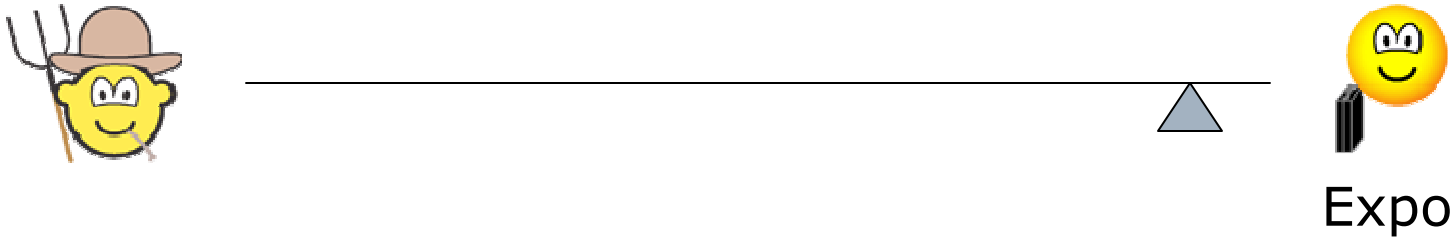
- Phones can act as banks and assist in managing finances
- Phones can act as “money wallets”
- Phones can be used for communication, but mainly for sms because it is cheaper

Yes! ICTs can make a difference

- Increase the bi-directional flow of information
- Improve quality of produce
- Help in other everyday activities such as communication and money management

Conclusions

- Where we were



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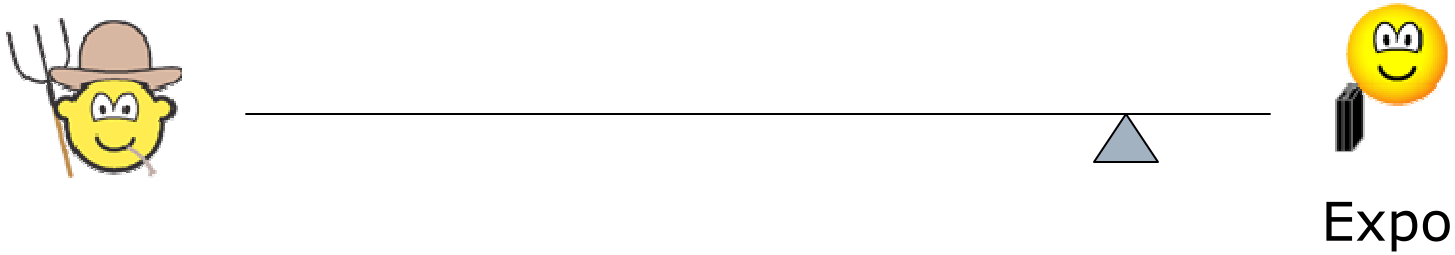

- Where we can be