Training Workshop on Plant Health

21st October 2011

Import Controls in the European Union in FRUITS & VEGETABLES

HESSEN

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This project is funded by the European Union

Objectives of inspection (ISPM 23)

- Inspection of consignments moving in trade is an essential tool for pest risk management.
- The objective of inspection of consignments is to confirm compliance with import or export requirements relating to quarantine pests or regulated non-quarantine pests.
- It often serves to verify the effectiveness of other phytosanitary measures taken at a previous stage in time.

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Objectives of import inspection

- Detecting regulated pests to ensure compliance with EU-requirements.
- We have an European-Union single market since 1993!
- As a consequence thereof goods can circulate free within the EU member states.
- That's why inspections at the EU-borders are particularly important.

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Sampling

- The collection of samples for **laboratory testing** or the **verification of pest identity** may be combined with the inspection procedure.

- Sampling of consignments makes inspections possible.

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Minimum conditions for EU-inspection posts

COMMISSION DIRECTIVE 98/22/EC

Laying down the minimum conditions **for carrying out plant health checks** in the Community, at inspection posts other than those at the place of destination, **of plants, plant products or other objects coming from third countries.**

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Minimum conditions for inspection posts

- Member States shall ensure that the plant health checks of plants, plant products or other objects
- listed in **Annex V, part B of Council Directive 2000/29/EC** and
- coming from third countries, and carried out at inspection posts satisfy at least the minimum conditions laid down in the Annex to Directive 98/22/EC.

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Minimum conditions for inspection posts

The responsible official bodies shall:

- have **authority** to carry out their duties,
- have **technical competence**, especially in the detection and diagnosis of harmful organisms
- have **expertise in identification** of harmful organisms, or access to such expertise,
- have **access to** appropriate administrative**, inspection and testing facilities, tools and equipment.**
- have **access to facilities for proper storage and quarantine of consignments** and, when necessary,

  for **destruction** (or other suitable treatment), of all or part of the intercepted consignment, …

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Minimum conditions

Relevant parts of the Annex IV of Council Directive 2000/29/EC	*Plants, plant products and other objects*	*Special requirements*
32.2	*Cut flowers of Dendranthema (DC) Des. Moul., Dianthus L., Gypsophila L. and Solidago L.,* *and leafy vegetables of Apium graveolens L. and Ocimum L.*	*Official statement that the cut flowers and the leafy vegetables:* *— originate in a country free from Liriomyza sativae (Blanchard) and Amauromyza maculosa (Malloch), Or* *Immediately prior to their export, have been officially* *inspected and found free from Liriomyza sativae* *(Blanchard) and Amauromyza maculosa (Malloch).*
36.2.	Cut flowers of Orchidaceae and fruits of *Momordica* L. and *Solanum melongena* L., originating in third Countries	Official statement that the cut flowers and the fruits: — originate in a country free from *Thrips palmi* Karny, Or — immediately prior to their export, have been officially inspected and found free from *Thrips palmi* Karny.
45.2	Cut flowers of *Aster* spp., *Eryngium* L., *Gypsophila* L., *Hypericum* L., *Lisianthus* L., *Rosa* L., *Solidago* L., *Trachelium* L., and leafy vegetables of *Ocimum* L., originating in non- European countries	Official statement that the cut flowers and leafy vegetables: — originate in a country free from *Bemisia tabaci* Genn. (non-European populations), or — immediately prior to their export, have been officially inspected and found free from *Bemisia tabaci* Genn. (non-European populations).

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Selection of a representative sample of fruits and vegetables - objectives

- **to evaluate the infestation** of an consignment.
- **to collect information** for other purposes (Monitoring of a pathway).
- **to verify compliance** with phytosanitary requirements.
  - **Tolerance Level**
  - **Confidence level**
  - **Efficacy Level**

?

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Selection of a representative sample of fruits and vegetables

- **Sampling methods in detail are laid down in IPPC Standard ISPM 31, e.g.**

- **Binominal based sampling**
- **Hypergeometric-based sampling**
- **Beta-binominal-based sampling**

$$P(X = i) = \frac{\binom{X}{i}\binom{N-X}{n-i}}{\binom{N}{n}}$$

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Sampling a consignment

- The principle is: **For smaller shipments**, the sample size is larger and choose smaller for larger shipments (hypergeometric based sample).

hypergeometric based sampling

example for the finding of a **10 % pest occurrence** in a consignment with a **confidence of 95 %**

consignment of	
10 units :	to examine are **10 units**
100 units :	to examine are **25 units**
1000 units :	to examine are **28 units**
10000 units :	to examine are **29 units**
100000 units :	to examine are **30 units**

- The size of the sample is generally defined by the examining inspector.

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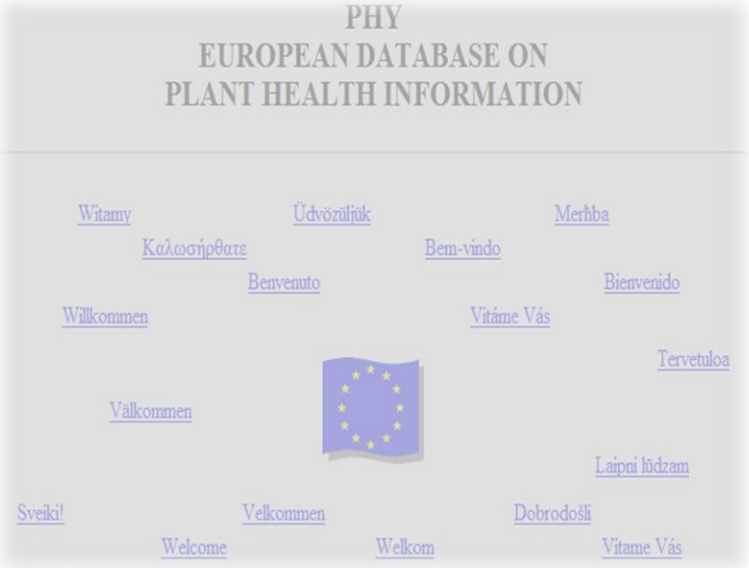
Selection of a representative sample of fruits and vegetables

- In cases of specific incidents, such as the increased occurrence of harmful organisms from a particular origin, the size can be standardized or increased by the competent authority.

- At the airport in Frankfurt, we evaluate the EUROPHYT messages regularly and systematically.



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Selection of a representative sample of fruits and vegetables

- In particular, we have a look at the current reports of the other major airports, such as Paris or London and draw our conclusions accordingly.

- Furthermore we get information thereof as well as from our federal authority (JKI), which also evaluates the EUROPHYT System.

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Sampling a consignment

The **sample size**, among others, is depending on

- the type of goods, the quality and maturity of the goods,
- the treatment at origin, when applicable,
- the country or region of origin of the goods,
- whether the quarantine pests, are common in this country,
- whether the pests are sedentary or mobile,
- the risk of spread, which originates from any potential quarantine pests

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Sampling a consignment

The **sample size**, among others, is depending on

- the packaging of the goods,
- the size of the consignment,
- the number of different harmful organisms in one consignment, existing side by side,
- the level of confidence to be achieved,
- the available staff at the point of entry of course**!**

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Level of confidence

- Problematically are **inhomogeneous consignments**, which are composed of lots of many different growers. This is found for consignments containing fruits, vegetables and also for cut flowers.

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Level of confidence

- This security level (level of confidence=**probability to find a pest**) should be determined first.
- **In general, these are in fruits, vegetables and cut flowers between 80 and 95%.**
- The inspection must ensure the finding of a pest fewer than …**%** (see sampling tables from ISPM31)
- The bigger the item, the higher should be the level of confidence.

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COMPARISON OF HYPERGEOMETRIC AND FIXED PROPORTION SAMPLING RESULTS[6]

Table 5: Confidence in the results of different sampling schemes for a 10% level of detection

	Hypergeometric-based sampling (random sampling)		Fixed proportion sampling (2%)	
Lot size	sample size	confidence level	sample size	confidence level
10	10	1	1	0.100
50	22	0.954	1	0.100
100	25	0.952	2	0.191
200	27	0.953	4	0.346
300	28	0.955	6	0.472
400	28	0.953	8	0.573
500	28	0.952	10	0.655
1 000	28	0.950	20	0.881
1 500	29	0.954	30	0.959
3 000	29	0.954	60	0.998

100%

Table 6: Minimum levels that can be detected with 95% confidence using different sampling schemes

	Hypergeometric-based sampling (random sampling)		Fixed proportion sampling (2%)	
Lot size	sample size	minimum level of detection	sample size	minimum level of detection
10	10	0.10	1	1.00
50	22	0.10	1	0.96
100	25	0.10	2	0.78
200	27	0.10	4	0.53
300	28	0.10	6	0.39
400	28	0.10	8	0.31
500	28	0.10	10	0.26
1 000	28	0.10	20	0.14
1 500	29	0.10	30	0.09
3 000	29	0.10	60	0.05

Level of Confidence ISPM No. 31

Level of detection= minimum **level of infestation** that the sampling will detect**!**

Sample size

- Hyper-geometric based sampling
- Lot size 117 carton in total
- Sample size according ISPM31: 26 carton

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Level of Infestation

- The infestation levels usually ranges between 0.1% and 10%.
- In case of Fruits, vegetables and cut flowers we can calculate on **infestation levels** between 5% and 10%.
- In the case of plants intended for planting, the calculated infestation is less than 1%.
- If lower infestation levels (0.1-5%) should be detected at probabilities of 80,90,95 or 99%, you can use the sampling tables from ISPM No. 31

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narrowly mixed, courtesy of
Pflanzenschutzamt Berlin

Berlin

sample size for visual observation – homogeneous distribution

units in the consign.	80 % probability of finding a pest level of infestation					90 % probability of finding a pest level of infestation					95 % probability of finding a pest level of infestation					99 % probability of finding a pest level of infestation				
	5%	2%	1%	0.5%	0.1%	5%	2%	1%	0.5%	0.1%	5%	2%	1%	0.5%	0.1%	5%	2%	1%	0.5%	0.1%
25	-	-	-	-	-	-	-	-	-	-	23	25	25	25	25	25	25	25	25	25
50	-	-	-	-	-	-	-	-	-	-	35	48	50	50	50	42	50	50	50	50
100	27	56	80	-	-	37	69	90	-	-	45	78	95	100	100	59	90	99	100	100
200	30	66	111	-	-	41	87	137	-	-	51	105	155	190	200	73	136	180	198	200
300	30	68	125	-	-	42	95	161	-	-	54	117	189	-	300	78	160	235	-	300
400	31	73	133	-	-	43	100	175	-	-	55	124	211	-	400	81	174	273	-	400
500	31	74	138	-	-	43	102	184	-	-	56	129	225	349	500	83	183	300	421	500
600	31	75	141	-	-	44	104	191	-	-	56	132	235	-	600	84	190	321	-	600
700	31	76	144	-	-	44	106	196	-	-	57	134	243	-	700	85	195	336	-	700
																				-
																				-
																				990
																				1800
																				2353
																				2735
																				3009
																				3214
																				3373
																				3500
																				3604
1																				3689
2																				4112
3																				4268
4																				4348
5																				4398
6																				4431
7																				4455
8																				4473
90000	32	80	160	321	1595	45	114	229	459	2273	59	149	298	596	2945	90	228	458	915	4488
100000	32	80	160	321	1596	45	114	229	459	2276	59	149	298	596	2950	90	228	458	915	4499
200000	32	80	160	321	1603	45	114	229	459	2289	59	149	298	597	2972	90	228	458	917	4551

fruits and vegetables

probability of finding a pest
(Level of confidence)

80 %

inspection must ensure the finding of pest fewer than ... %
(Infestation level in the consignment)

5 %

Level of Infestation

- It is important to note that at an **aggregated infestation** (infestation not evenly distributed across all of the consignments), the probability of finding the organisms is less than for uniform distribution.
- **needs larger samples** and/or a
- **sample plan** to compensate the aggregation

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Level of Infestation

- The sample volumes in the tables may be decreased if there is reliable information to the inspector, if he can assume that there is lower risk present than usual.
- E.g. if similar consignments of the same importer were regularly without findings and no general suspicion of latent infestation exists.

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schedule to find sampling objectives

Berlin

importer (origin of consignment)

- **unknown** *(first time import)*
  - **bad** experiences
  - **appropriate complete sampling**
  - **statistical** method
- **known**
  - **good** experiences
  - **appropriate reduced sampling**
  - **fixed** proportion/ **overview**
    - **small c.** → **more** % of samples
    - **big c.** → **less** % of samples

consignment/ **type of commodity**

Level of **Confidence (P%)** and **Infestation**/ Detection Level (%)

- **small c.** → **rel. high** % of samples
- **big c.** → **rel. less** % of samples

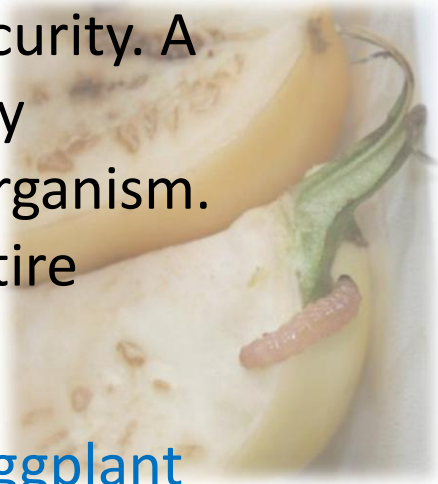
expected **type of pest**

- **homogeneous distribution** → binomial/ **hypergeometric-based** sampling
- **aggregated distribution** → betabinominal-**cluster**-sampling

Courtesy of PPD Berlin - narrowly mixed

Level of Infestation

- However, sampling can never give a 100% security. A residual risk always remains, as it is practically impossible for some insects to find the last organism. In general, it is impossible to examine the entire consignment.



- E.g. flower thrips can hide very well or the eggplant borer, from the outside it is not visible. But you can not cut all the eggplant of a shipment. Of course it is easier to detect externally visible symptoms, which are caused for example by leafminers.

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Import Controls in the European Union

- Problems have recently appeared with consignments destined for the Asian restaurants in Europe. This ready arranged boxes, often contain many different vegetables or fruits. Mostly because our inspectors are unable to read the labels on the boxes. So they could not find the boxes containing e.g basil or mexican coriander.

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Import Controls in the European Union

- For consignments which arrive after the first of October 2011 in Frankfurt, we therefore demand for such inhomogeneous shipments, additional information. The botanical name and the declaration in the English language.

Karton Nr.	Tse F5				
74	Name/English	Name/Botanisch	Name/Landessprache	Packeinheit	kg/Stuck
	Eryngo	Eryngium foetidum	**ngo gai**	100g	**4**
	Guichai flower	Allium tuberosum	**hẹ bông**	200g	**1**
	Celery	Apium graveolens	**can tay**	100g	**1**
	Piper lolot	Piper saigonensis	**la lot**	100g	**1.5**
Total					**7.5**

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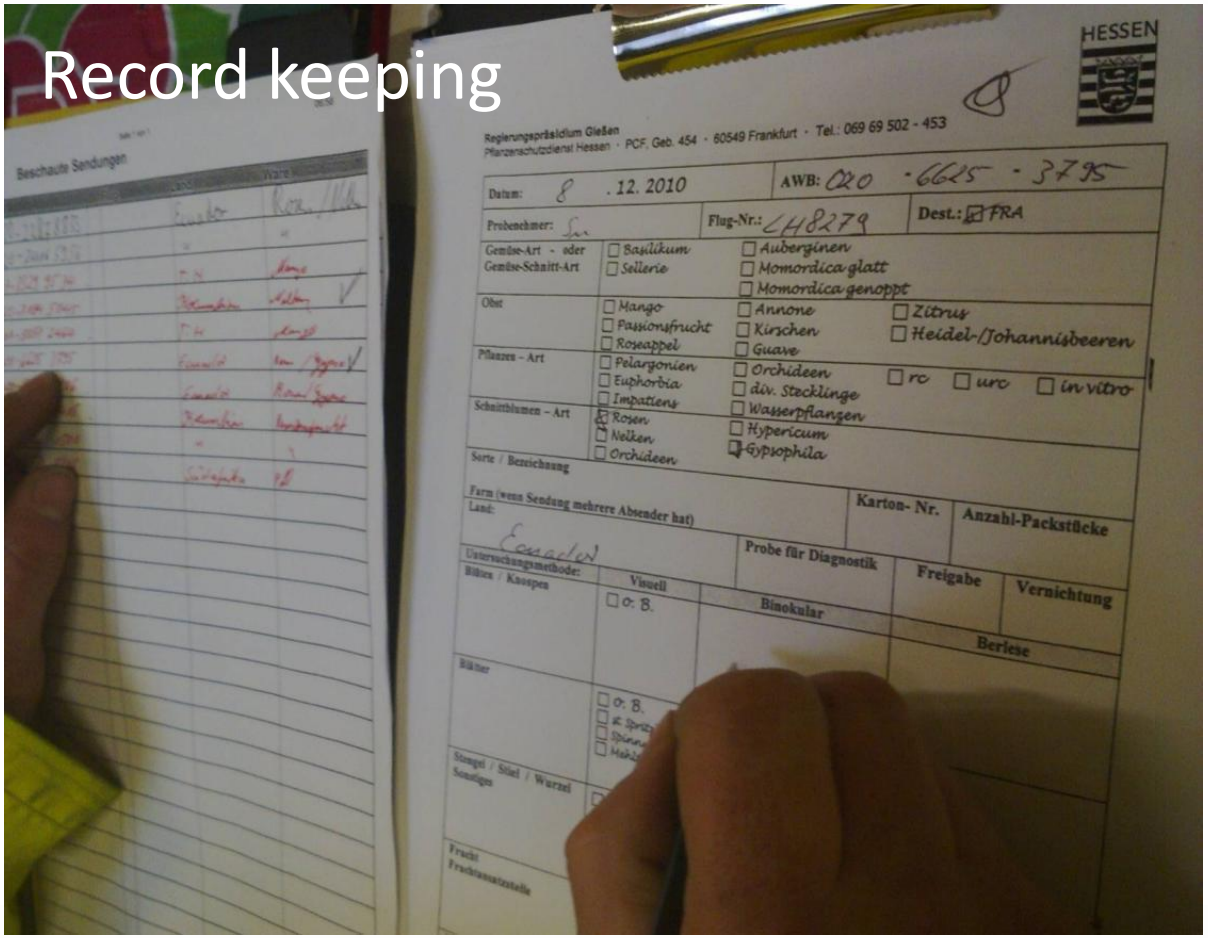
Record keeping



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Collecting for laboratory testing

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Thank you for your kind attention

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