

Quality and Quality Assurance – The Need for Longterm Markets and Safe Application on Soils



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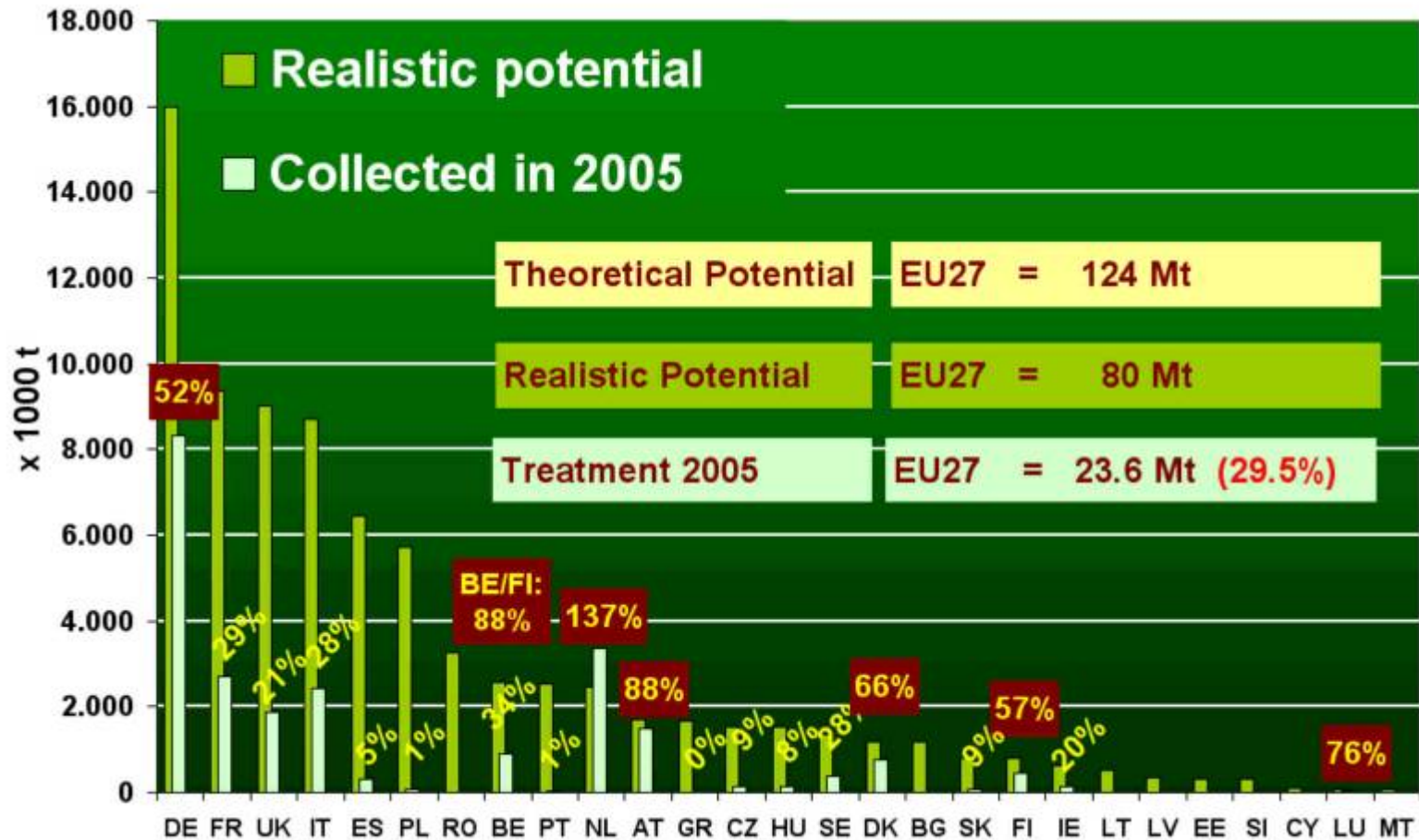


Overview

Quality and Quality Assurance - The Need of Longterm Market and Safe Application on Soils

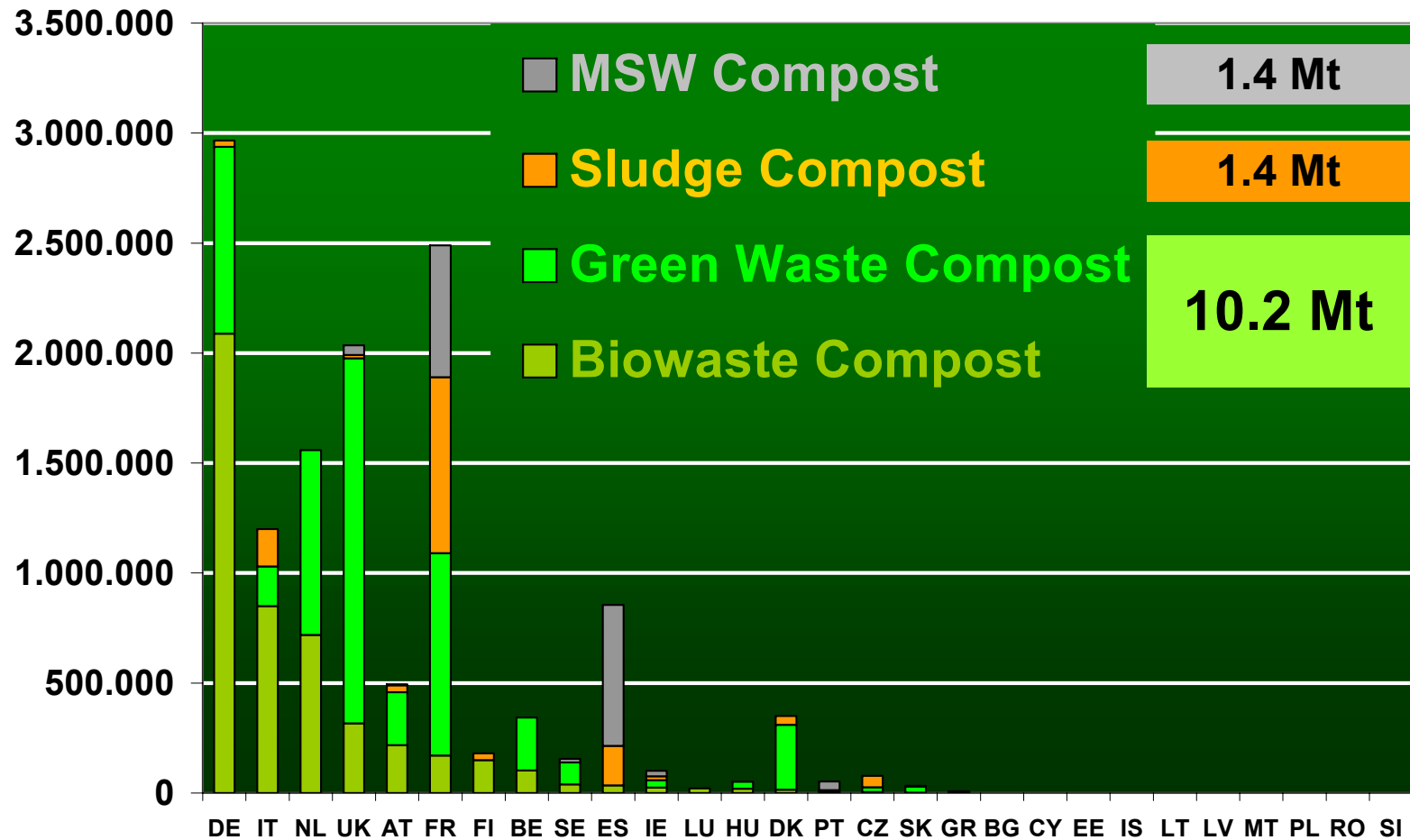
- Potential of biodegradable waste in Europe
- Markets of compost
- Quality assurance of compost
- Perspective - What do we need?

Potential of Biodegradable Waste in EU



Source: Barth et al. 2008

Compost Production in Europe



Source: Barth et al. 2008



Recycling of biodegradable waste by composting in Europe (2005)

Composting of separately collected
organic wastes of households, gardens,
parks and commerce



Ca. 1800 sites of which 40 % treat only green waste

- Annual capacity ca. 19 Mio. t
- Additionally around 800 small agricultural co-composting plants mainly in Germany and Austria
- Large potential for agriculture in accession countries and Austria, Scandinavia, Ireland, Spain and Portugal

Target: Manufacturing of a PRODUCT for fertilisation, soil improvement and humus management.



Compost Markets

Main areas of compost utilisation and market prices (2005/6) in EU27

Range [n=12 MS]	Market range	Prices Euro/t
Agriculture ¹⁾	45 - 78%	0 - (28) €
Horticulture	3 - 15%	1 - (29) €
Landscaping	6 - 20%	5 - 30 €
Blends/soil mix	10 - 15%	5 - 15 €
Land reclamation	2 - 10%	1 - 2 €
Hobby gardening	12 - 20%	5 - (320) € ²⁾
Export	6 - 7%	-

1) Incl some special cultures like vinyards 2) in small bags.

Source: Barth et al. 2008



Why is Quality and Quality Assurance so important?

Expectations of the Consumers on Compost

94 % of the professional compost users want to have:

A standardised and independently supervised high product quality accompanied by exact specifications for use.



Requirements

- Clean source material
- Standardised high quality product
- Independently controlled
- Traceability

→ Quality assurance of compost



Result of Quality Assurance

Common view of European compost producers:



+



=



Separate
collection of
organic waste

Quality Assurance

Compost Product

Clean source

Control

Fit for the market



Quality Assurance Schemes

Targets of Quality Assurance

- Specification of products with a guaranteed homogenous quality
- Enhancement of product quality and operation quality
- Guarantee for a successful use of the products
- Deregulation and recognition of certified products by legal authorities, in agricultural systems and by food processing industry
- Promotion of the re-use of waste "from waste to product"



Why is clean source material important?

Mixed municipal waste

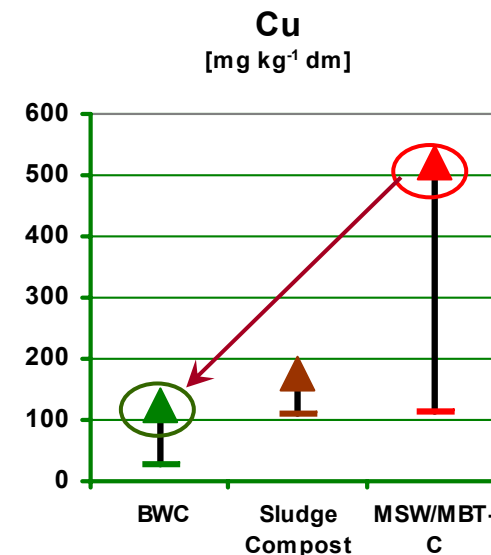
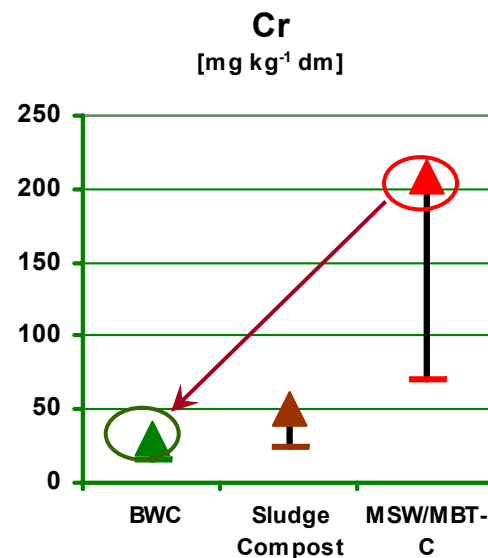
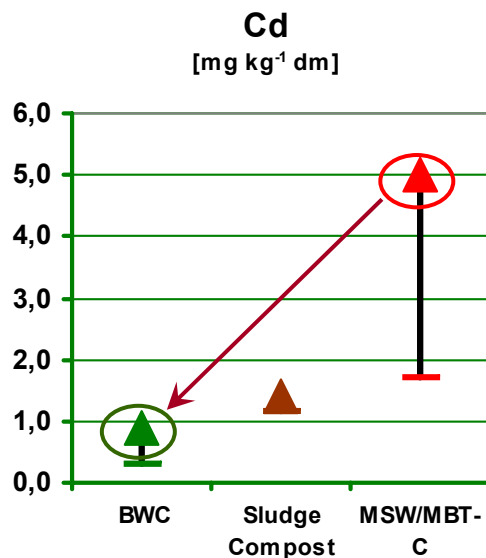


Source separated organics

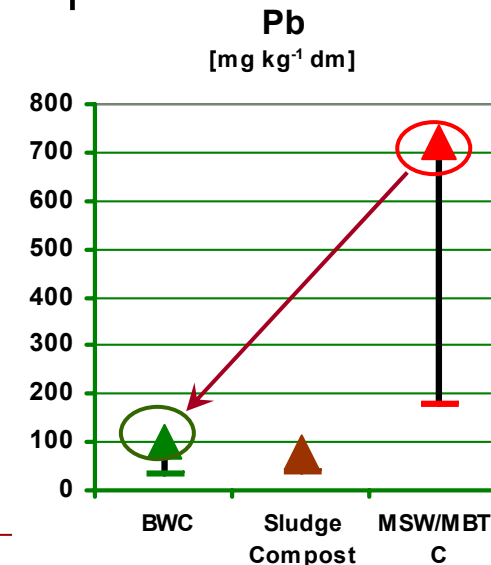
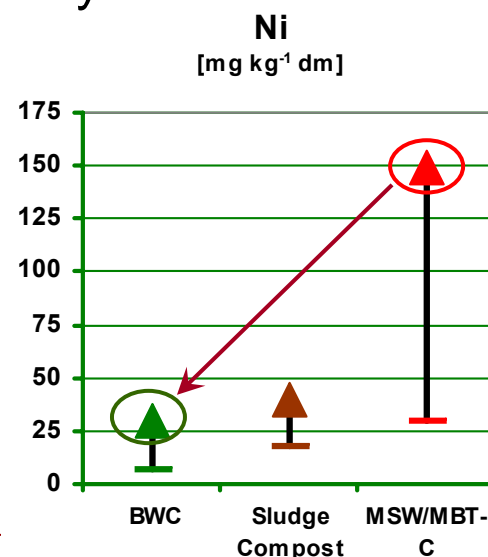
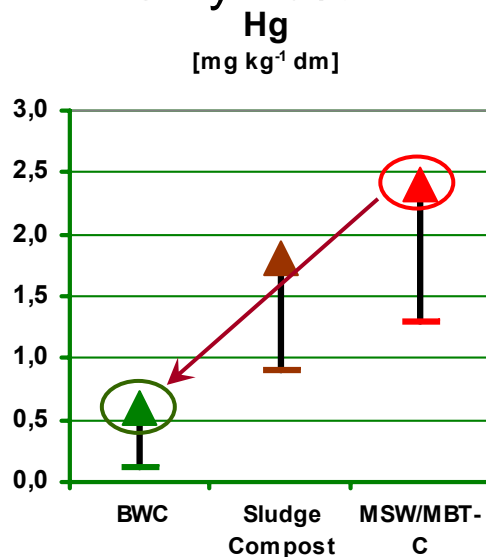


Quality as a Result of Source Separation - a Clear Picture

BWC = Biowaste Compost, MW = Mixed waste compost (Amlinger et al. 2004)



Only 20% of the heavy metal content after separate collection



Organic Pollutants

Increasing concerns on organic pollutants

PCDD/PCDF ng I-TEQ/kg d.m.	BIOWASTE compost	GREEN compost	MSW compost	Sewage SLUDGE	Orientation values
range	0.3 – 31.6	0.3 – 31.4	38 - 103	14,5 - 20	<u>17 – 50</u>
mean	<u>6.6</u>	<u>3.6</u>			

Clear difference

PCBs mg/kg d.m.	BIOWASTE compost	GREEN compost	MSW compost	Sewage SLUDGE	Orientation values
range	0 – 0.58	0 – 0,12	0,7 – 1,6	0.01 – 0.05	<u>0,1 – 0,2</u>
mean	<u>0,04</u>	<u>0,024</u>			

Source: Amlinger et al. 2004

**No general limit values for
SOURCE SEPARATED BIO AND GREEN WASTE COMPOST**



How to set quality standards?

Concepts for safe application:

- **ALTERNATIVE 1:** We trust in our ability to calculate impacts and risks and proceed until harmful effects are observed
 - ✓ **US Risk assessment based on No Observable Adverse Effect Levels (US-EPA Riskassessment)**

- **ALTERNATIVE 2:** We choose the path of precaution.
 - ✓ **“No Net Accumulation of Contaminants in Soils” (Precautionary Principle)**

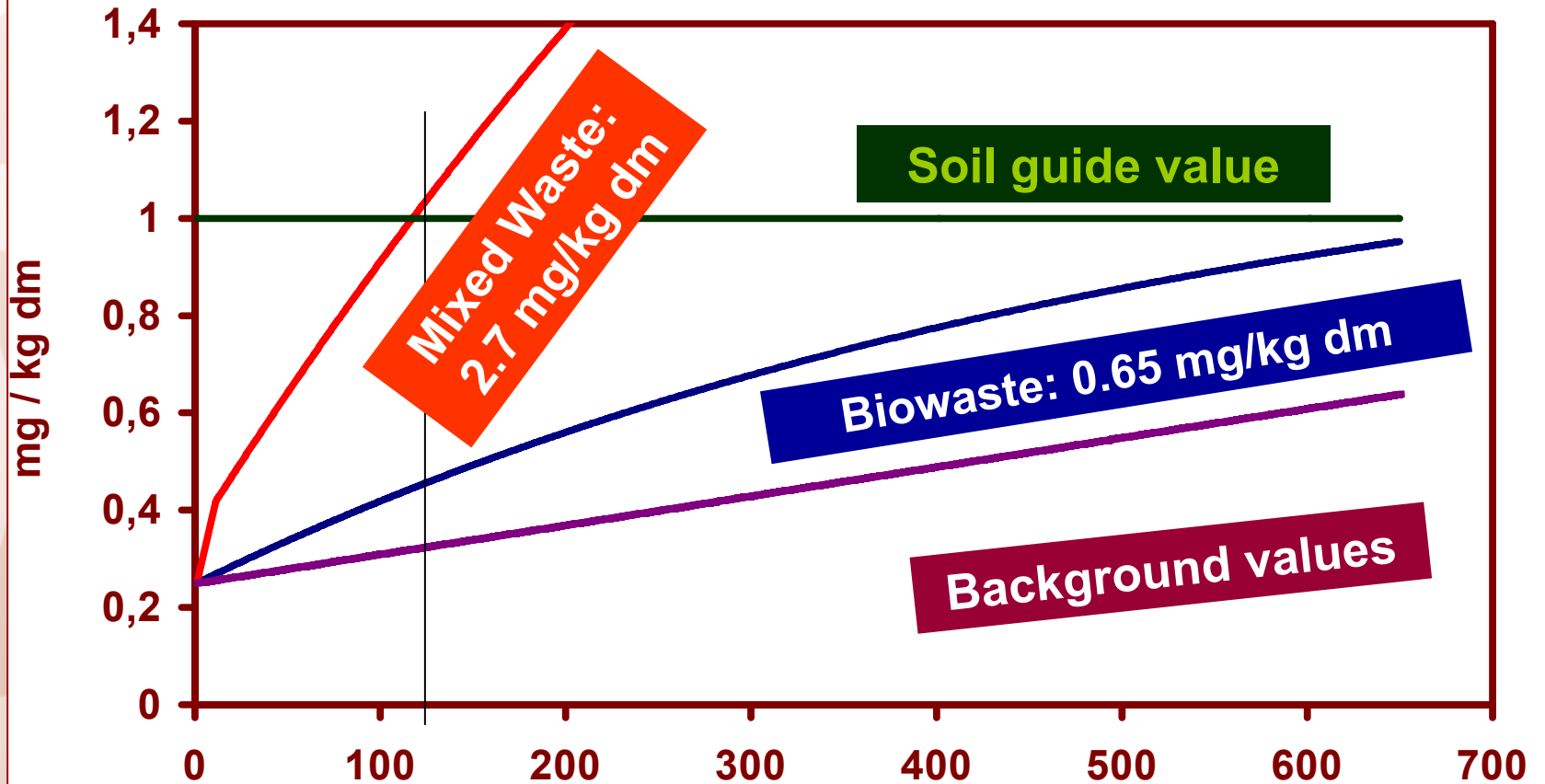


Concept of long-term safe application ►

EU Soil Strategy

CADMIUM: Accumulation in the SOIL

(BWC: 8 t dm/ha*a; MSWC: 20 t dm/ha*3a)



Long term safe applicaton = Reduction of heavy metal contents in compost e.g by **source separation NOW** as far as possible and utilisation of the period until the soil thresholds are reached for further measures for effective minimisation at source and background levels

European Standards for Heavy Metals

Where are we now with separate collection?

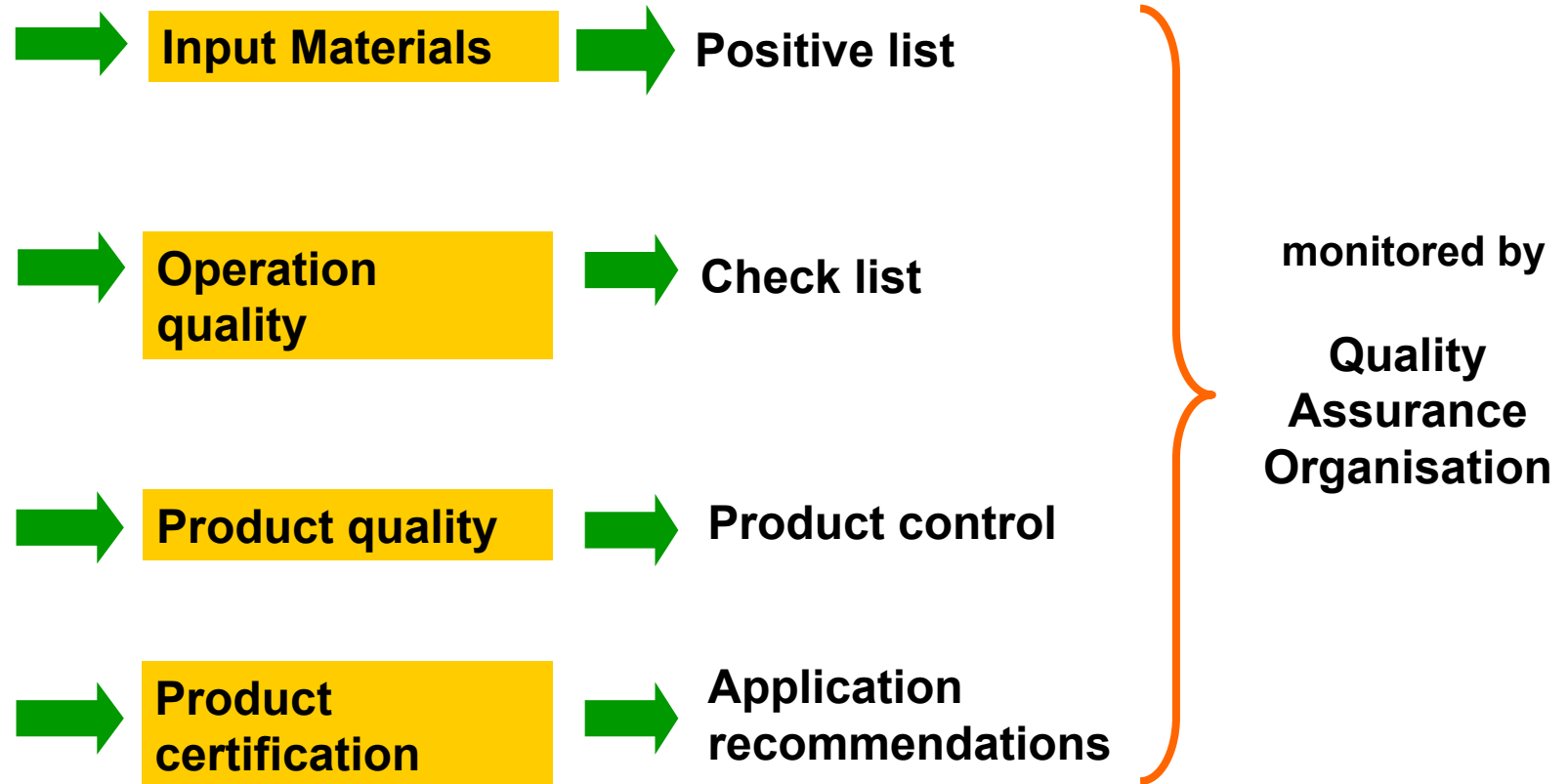
	Standard mg/kg DM]	Cd	Cr	Cu	Hg	Ni	Pb	Zn
Austria	Compost Ord. Class A	1	70	150	0,7	60	120	500
Belgium	Agricultural Ministry	1,5	70	90	1	20	120	300
UK	TCA Certificate	1,5	100	200	1	50	150	400
Germany	Biowaste Ord. Type II	1,5	100	100	1	50	150	400
Ireland	Draft	1,5	100	100	1	50	150	350
Netherl.	Class "Compost"	1	50	60	0,3	20	100	200
EU 2004¹	Proposal	1,3	60	110	0,45	40	130	400

RESULT: Definition of one basic high compost quality suitable for all application areas

¹ EU Study „Heavy Metals & Organic Compounds from Wastes Used as Organic Fertilisers“



Elements of Quality Assurance





Quality criteria

Product quality

Valuable criteria

- Decomposition degree (compost)
- Bulk density
- pH-value, salt content
- Plant nutrients
- Carbonats
- Organic matter content
- Plant response

Precautionary environmental criteria

- Hygienic aspects (salmonellae)
- Viable weeds and plant parts
- Impurities
- Potential toxic substances
(heavy metals)



ECN - Quality Assurance Scheme

For harmonisation across Europe, ECN has developed a European Quality Assurance Scheme for Compost

The ECN-QAS Manual contains:

- Requirements for national QAS
- List of input materials
- Operation Quality requirements
- Product quality parameter
- Certification procedure



If the compost plant and product fulfil the requirements of the national and European QAS the ECN-QAS label can be awarded.



EU Biowaste legislation:

1. Setting binding biowaste recycling **targets**
2. Requiring **quality assured processing** of separately collected biowaste feedstocks according to a set of standards
3. Including **end of waste** criteria

→ To support sustainable marketing of quality products



European Compost Network

Thank you!

www.compostnetwork.info

Info of the EU Commission

- **Biowaste**

<http://ec.europa.eu/environment/waste/compost/index.htm>

- **End-of-waste**

<http://susproc.jrc.ec.europa.eu/documents/Endofwastecriteriafinal.pdf>