

Compost Management in Austria

Composting in AUSTRIA

...the decentralised Solution

Compost - Consulting & Development
 Dipl. Ing. Florian Amlinger

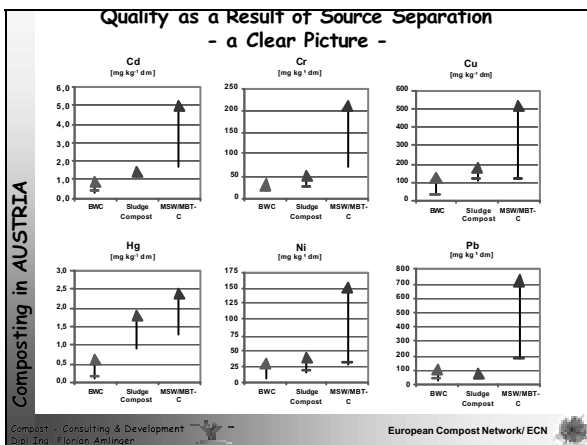
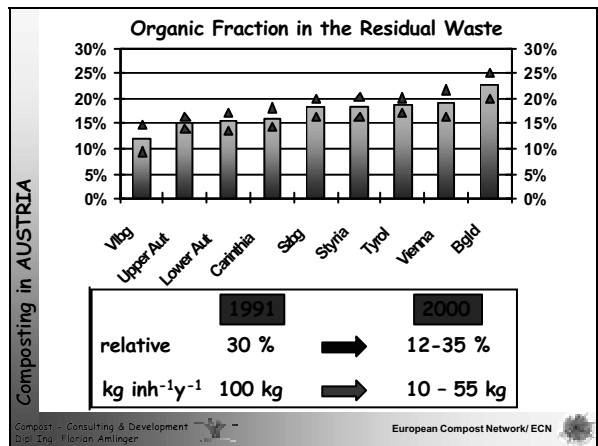
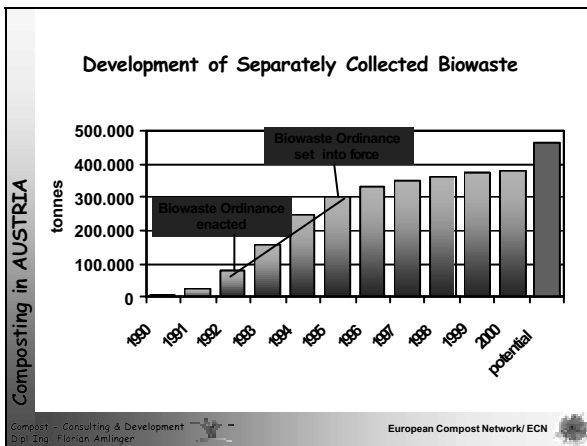
European Compost Network/ ECN

Mixed Waste Composting ???

Composting in AUSTRIA

Compost - Consulting & Development
 Dipl. Ing. Florian Amlinger

European Compost Network/ ECN



- ### Four Key Elements of the Waste Management Act
- Ordinance on the Separate Collection of Organic Waste 1992 → 1995
 - Compost Ordinance ... The 1st END of WASTE Regulation ! Sept 2001
 - Mixing of not listed and approved materials is prohibited !
- Composting in AUSTRIA
- Compost - Consulting & Development
 Dipl. Ing. Florian Amlinger
- European Compost Network/ ECN

ECN/ORBIT e.V. - Separate Collection Workshop Barcelona 2003
Pres. No. 05: Separate Collection in Austria - Mr. F. Amlinger

The Austrian Compost Ordinance (Sept. 2001)

- Positive list & compliance test for input materials
- Quality requirements linked to application areas
- Regular quality approval, sampling and analytical Methods
- Product certification by external control bodies
- Requirements for quality assurance systems
- Labelling and recommendations for the proper use
- Record keeping and comprehensive documentation
- Central registration at the Ministry for Environment

➔ **Compost is a Product** ←

Composting in AUSTRIA

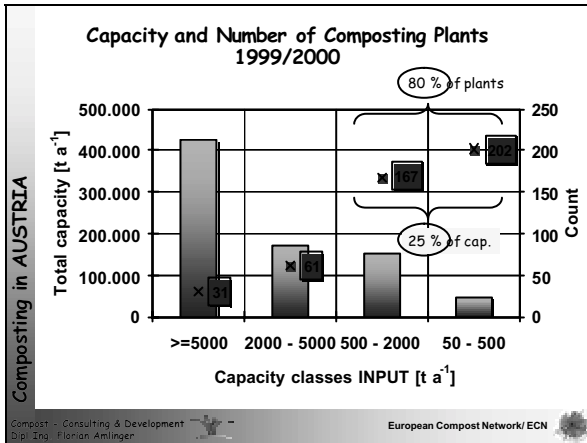
Compost - Consulting & Development
Dipl.-Ing. Florian Amlinger European Compost Network/ ECN

Heavy Metal Limits for Compost

	Cd	Cr ^{tot}	Cu	Hg	Ni	Pb	Zn
<u>ECO Farming</u>	0.7	70	70	0.4	25	45	200
<u>Agriculture</u>	1	70	150	0.7	60	120	500
<u>Landscaping</u>	3	250	500	3	100	200	1800

Composting in AUSTRIA

Compost - Consulting & Development
Dipl.-Ing. Florian Amlinger European Compost Network/ ECN



Figures on Separate Collection and Composting

Number of Composting plants		470
Capacity	t f.m. y ⁻¹	970,000
Treatment		
Total Bio- & Green Waste	t f.m. y ⁻¹	600,000
Potential Bio- & Green Waste	t f.m. y ⁻¹	800,000
Sewage sludge [30 % d.m.]	t f.m. y ⁻¹	180,000
Home Composting	t f.m. y ⁻¹	771,773
spec. Biowaste (total inhabitants)	kg inh ⁻¹ y ⁻¹	48
spec. Bio- & Green Waste (total inhab.)	kg inh ⁻¹ y ⁻¹	74
spec. Biowaste (users of bio-bin)	kg inh ⁻¹ y ⁻¹	103
participants in the bio-bin collection [% of total inhabitants]	%	43%

Composting in AUSTRIA

Compost - Consulting & Development
Dipl.-Ing. Florian Amlinger European Compost Network/ ECN

Compost Associations in Austria

- **Industrial Composting Plants**

➔ 300,000 t

➔ 13 plants

- **Agricultural Composting Plants**

➔ 280,000 t

➔ 350 plants

Composting in AUSTRIA

Compost - Consulting & Development
Dipl.-Ing. Florian Amlinger European Compost Network/ ECN

Agricultural Composting in Lower Austria

Inhabitants		1.2 MIL.
Number of Composting plants		81
Total Throughput	Tonnes y ⁻¹	165,000
Treatment per Inh.	kg y ⁻¹	138
Agricultural Composting Plants		47
Total Throughput	Tonnes y ⁻¹	85,000
Compost produced	Tonnes y ⁻¹	50,000
Compost use :		75 % Agriculture 25 % other uses
Registration Fee	Once	400 €
Membership Fee	per year	0.15 € t ⁻¹

Composting in AUSTRIA

Compost - Consulting & Development
Dipl.-Ing. Florian Amlinger European Compost Network/ ECN

ECN/ORBIT e.V. - Separate Collection Workshop Barcelona 2003
Pres. No. 05: Separate Collection in Austria - Mr. F. Amlinger

Ranges of Income

Treatment fee	
Biowaste	40 – 50.-- € per t
Green waste	0 – 50.-- € per t

Compost Price	
Fresh, large quantities Agriculture	5.-- € per m ³
Mature, fine, small quantities	20.-- € per m ³
Blends & Substrates	20 – 40.-- € per m ³

Composting in AUSTRIA

Compost - Consulting & Development
 Dipl.-Ing. Florian Amlinger

European Compost Network/ ECN

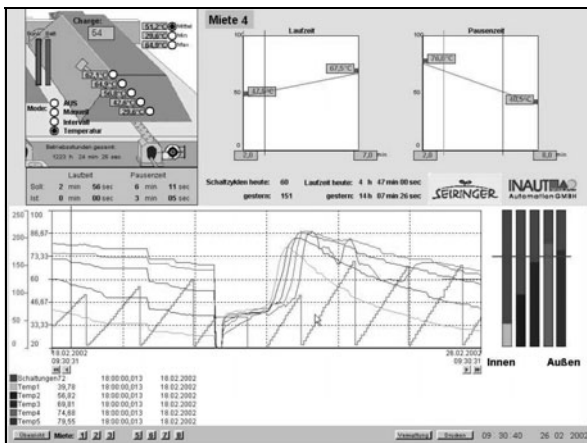
QAS of the Agricultural Composting Association
 2 – 3 Inspections per Year

Composting in AUSTRIA

- **CONTROLLING**
 - ✓ Obligations of the Austrian Compost Ordinance
 - ✓ 1 - 4 Sampling and Analyses
 - ✓ Compost Quality
 - ✓ Compost Use
 - ✓ Check of Records
 - o Licence, Materials, Quantities, Process Control
 - ✓ Changes of Management & Process
- **ADVISE**
 - ✓ Technical Equipment
 - ✓ Process Control
 - ✓ Quality Management
 - ✓ Recommendations for Compost Use (legal limitations & options)

Compost - Consulting & Development
 Dipl.-Ing. Florian Amlinger

European Compost Network/ ECN



ECN/ORBIT e.V. - Separate Collection Workshop Barcelona 2003
 Pres. No. 05: Separate Collection in Austria - Mr. F. Amlinger

Composting in AUSTRIA

2 Organic Farmers ... Partners of the Municipality

	Hermagor	Total
Inhabitants	1,750	7,300
Households	~ 760	2,716
Inh. with Bio-bins		20%
Collection Tour	30 km → 63 Bio-bins / week	
	m ² / y	kg / Inh * y
BIOWASTE	276	~ 30
GREEN WASTE	2,100	~ 85
TOTAL	2,376	~ 115
Composting Plant	Built by the Waste management Association	
Investment	152,000 €	
Size	4,800 m ²	

40% financed by public funds

Compost - Consulting & Development
 Dipl. Ing. Florian Amlinger

European Compost Network/ ECN

Composting in AUSTRIA

2 Organic Farmers ... Partners of the Municipality

Machinery	
Collection truck	Municipality
Windrow turner	Farmer
Tractor	
Shredder	On demand hired by the Waste management Association
Screening machine	
Fees	
Collection	26,65 € / hour
Biowaste	25,07 € / m ² (~ 33 € / t) [40 - 50,- €]
Green Waste	5,23 € / m ² (~ 15 € / t)
Use of Compost	
Municipality	~ 40 %
Organic Farms	~ 60 %

Compost - Consulting & Development
 Dipl. Ing. Florian Amlinger

European Compost Network/ ECN

Composting in AUSTRIA

The Graz Model Step 1: Pre-Treatment

Compost - Consulting & Development
 Dipl. Ing. Florian Amlinger

European Compost Network/ ECN

Composting in AUSTRIA

The Graz Model Step 2: Delivery & Composting

Compost - Consulting & Development
 Dipl. Ing. Florian Amlinger

European Compost Network/ ECN

Composting in AUSTRIA

The Graz Model

	Graz	Suburbs	Total
Inhabitants	238,000	118,000	356,000
Households	106,000	39,400	145,400
BIOWASTE tons	18,000 t	4,000 t	22,000 t
kg Ca ⁻¹ y ⁻¹	(73)	(42)	(62)
GREEN WASTE			4,000 t
TOTAL			26,000 t
HH with Biobin	} 77%		} 41%
HH with Home composting	} 15%		
Number of Farms			18
Input per Farm			200 - 3,000
Composting fee (2003)			
Biowaste	31,- € t ⁻¹		[40 - 50,- €]
Green waste	11,9 € t ⁻¹		

Compost - Consulting & Development
 Dipl. Ing. Florian Amlinger

European Compost Network/ ECN

Composting in AUSTRIA

The Graz Model ... The Contract

"Service Abfall"	"Farmer"
<ul style="list-style-type: none"> ✓ Preparation of organic biowaste and green waste mixtures <ul style="list-style-type: none"> o Screening, metal & wind separation, mixing ✓ Sampling and analyses ✓ Take back of sorted impurities (1.2% m/m) ✓ Take back of low quality compost (< Class 'A') 	<ul style="list-style-type: none"> ✓ Take over & composting of a <u>defined quantity</u> (+/- 5%) of pretreated organic biowaste and green waste mixtures ✓ Limitation of other materials ✓ Full responsibility for technology and process ✓ Records according to "Compost Ordinance" ✓ Take over only of "<u>Quality Compost</u>" [- Class 'A']

Compost - Consulting & Development
 Dipl. Ing. Florian Amlinger

European Compost Network/ ECN

ECN/ORBIT e.V. - Separate Collection Workshop Barcelona 2003
 Pres. No. 05: Separate Collection in Austria - Mr. F. Amlinger

Composting in AUSTRIA

The Graz Model ... QM

QM in cooperation with the
 Agricultural Composting Association

- 4 external inspections per year on each farm
 - ✓ Check of records, materials and quantities
 - ✓ Process control
- 1 external sampling and full analyses per year according to the Compost Ordinance

Compost - Consulting & Development
 Dipl. Ing. Florian Amlinger

European Compost Network/ ECN

Composting in AUSTRIA

Home Composting

is a
 Question
 of
 Motivation



Compost - Consulting & Development
 Dipl. Ing. Florian Amlinger

European Compost Network/ ECN

The Strategy

- As much individual home composting as possible (top priority!)
- Separate collection of organic waste where individual composting is not feasible



- As many decentralised plants as possible - favouring agricultural composting plants
- As few regional plants as necessary