



QAS activity Report 2021

Kompost & Biogas Association Austria

The Austrian Compost & Biogas Association (KBVÖ) is the umbrella organisation of 5 provincial organisations situated in Tyrol, Styria, Upper and Lower Austria and Carinthia which are in operation since the early 1990ies. From the very beginning their scope was to provide competent extension work and planning and operational assistance to the composting industry as well as accompanying the communication with authorities.

The KBVÖ represents more than 450 compost and biogas plants covering all provinces of Austria. The KBVÖ is a member of:

- ECN (European Compost Network)
- EBA (European Biogas Association)
- ELSA (European Land and Soil Alliance)
- Dt. Fachverband Biogas (German Biogas Association)
- ÖGUT (Austrian Association for Environment and engineering)
- ÖWAV (Austrian Water and Wastemanagement Association)
- Fachvereinigung Bayerischer Komposthersteller e.V. (Federation of bavarian compost manufacturers)

With those organisations we share the aim to strengthen the decentralised compost and biogas production. We give a distinct preference to this strategy against centralised, large scale concepts entailing long distance transports or incineration of organic waste.

Since March 2005 KBVÖ operates the programme management biogas as part of the Austrian initiative klima:aktiv. Based on funds allocated to this programme the envisaged activities can be realised.

As the decentralised concept is mainly based on the idea that the treatment of separated organic waste is done by farmers. This contributes on one hand to an efficient recycling of the organic resources in the region of its origin and on the other hand the so-called agricultural composting scheme secures also the rural economies by creating additional income for the farmers.

With respect to composting technologies we promote a controlled process management in open windrow systems with the aim to minimise negative environmental impacts and emissions.

All members signed a self-obligation to comply with all regulatory requirements (water protection, state of the art of composting, compost application according to GAP rules, compost ordinance etc.).

Quality assurance

In Addition to the legal obligations the KBVÖ provides a mandatory comprehensive quality management and quality assurance scheme for its members. It is based on the Austrian standards (ONS2206-1 und -2, sowie auf der technischen Richtlinie ONR192206).

The legal frame for compost is embodied by the compost ordinance 2001 as well as the Abfallwirtschaftsgesetz 2002 (waste management law). More-over there are different standards which address the composting, as the QA ÖNORM S22006-1 and -2, the ONR192206, but there are also

regulations as the minimum standards for open windrow composting and the guideline state of the art of composting. The permitted input materials for composting can be found in the compost ordinance, also the frequency of the external quality monitoring depending on the amount in m³ of produced compost.

The procedure of the quality assurance of the KBVÖ is included in the agenda, rule sheet 12 of the association. The handling of deficiencies as well as the documentations of plant visits is also part of the agenda, rule sheet 12. The frequency of plant visits by the external auditor depends on the input amount into the compost plant, like mentioned in the following table.

Table 1: Frequency of external quality monitoring/analyses (source: agenda of the KBVÖ)

Input m³ Bulk weight 0,5 t/m ³	Minimum number of external quality monitoring/analyses
< 50 m ³	once
> 50 - 300 m ³	1 visit every 3 years
> 300 - 1.000 m ³	1 visit every 2 years
> 1.000 - 2.000 m ³	1 visit per year
> 2.000 - 4.000 m ³	2 visits per year
> 4.000 m ³	2 visits + 1 additional visit per started quantity of 4000 m ³ , but maximum 12 visits per year

Table 2: Frequency of certifications required (frequency of visits) (source: agenda of the KBVÖ)

Input to	Number of certifications required (frequency of visits)
< 500 to	1 visit every 3 years
>= 500 - < 1.500 to	1 visit per year
>= 1.500 - <= 4.000 to	3 visit every 2 years
> 4.000 to	2 visit per year

Each compost plant – as a member of KBVÖ and depending on the yearly throughput – is controlled on a regular basis. All other plants are controlled with unannounced on-site visits. Within the external on-site inspections are also the material fluxes assessed for their plausibility. The on-site inspection is carried out by a contracted company which prepares the inspection report including recommendations for the quality committee with respect to eventually necessary adaptations, sanctions or approval of the related plant. The quality committee decides on sanctions, awarding or withdrawal of the KBVÖ quality label.

The so-called external quality approval is the regular sampling and analysis of a compost batch by an acknowledged laboratory. A list of acknowledged laboratories which have to participate in compost ring tests on a regular basis is published on the homepage of the KBVÖ (www.kompost-biogas.info).

The illustration 1 shows the quality label. Acknowledged and quality certified facilities may present the QA sign of the KBVÖ at the site of the plant and use it within their product presentation and branding as well as on their media.



image 1: Quality label

On the reference date 1st of September 2021 there are 258 compost facilities members of the KBVÖ. Thereof are 115 plants located in Upper Austria, 43 in Styria, 62 in Lower Austria, 25 in Tyrol, 11 in Carinthia, 1 in Vienna and one in Vorarlberg. The size of facilities varies between very small plants to plants with 20.000 to input material.

The control of this system as well as the entry of the data is done by the responsible management officer. 97% of the on- site controls were positive.

Suitable waste materials and its quality requirements, final product criteria for quality compost, compost, sludge compost are ruled by national legislation (above all by the Austrian Compost Ordinance).

It includes also requirements regarding:

- Compost designation and specification
- Waste materials (waste codes) with approved origin
- Type and frequency of quality measurements for certain input materials
- Type and schedule of records and documentation
- Receipt control.

In Austria the quality requirements of input materials for composting, the products like quality compost, compost or quality sludge compost are defined and regulated.

Of the in the quality assurance scheme participating plants were about 392.782 to compost produced in the year 2020. Thereof 273.898 to were labelled as quality compost A+, 19.560 to as quality compost A and 72.046 to as quality sewage sludge compost. The remaining 27.278 to were other (sewage sludge) composts.

The whole waste recycled amounted to 866.589 to in 2020. Thereof about 250.356 to are biowaste (SN 92150, 92199, 92401, 92450, 92499), 310.831 to green waste (SN 91601, 92102, 91306, 92104, 17101, 17201, 17202, 92105) and 78.023 to municipal quality sewage sludge (SN 92201, 92212, 94803). The rest consists of other input materials (food and semi luxury food of plants, fruit- and vegetable leftovers, flowers, earth, plant ashes etc.)

In 2020 24 of the QA committed plants treated exclusively green waste and remnants (including solid and liquid dung). 30 of the member plants treated sewage sludge in 2020.

The common composting technique in Austria is the open windrow composting.

The following table shows the values of parameters of the compost plants, 187 analyses (166 analyses of biowaste and green waste compost, 21 analyses of sludge compost) of 2020 were taken into account.

Table 3: Distribution of parameters from the external quality control 2020, sludge compost analyses (n=21)

	1st Quartile	Average	Median	3rd Quartile
Organic dry substance (% TM)	30,3	38,0	38,7	47,9
C/N	12,0	15,0	13,0	16,8
Conductivity (mS/cm)	1,8	2,1	1,9	2,8
pH-value	7,0	7,2	7,1	7,5
Moisture Density (kg/l)	0,7	0,8	0,8	0,9
Dry substance (% TM)	53,6	61,5	57,0	67,9
Fibre (% TM)	0,0	0,0	0,0	0,0
Plastics > 2 mm (% TM)	0,0	0,0	0,0	0,0
Plastics > 20 mm (% TM)	0,0	0,0	0,0	0,0
Metals (% TM)	0,0	0,0	0,0	0,0
Glas (% TM)	0,0	0,0	0,0	0,0
Nitrogen (% TM)	1,1	1,5	1,6	1,9
Carbonate (% TM)	4,2	7,7	6,9	10,0
Potassium (% TM)	0,7	1,0	0,8	0,9
Phosphate (% TM)	1,0	1,4	1,2	1,7
Lead (mg/kg)	16,3	30,3	21,3	26,0
Cadmium (mg/kg)	0,4	0,5	0,5	0,6
Chromium (mg/kg)	22,9	33,1	27,7	43,7
Copper (mg/kg)	64,2	86,3	92,3	110,0
Nickel (mg/kg)	20,0	28,9	23,1	35,6
Mercury (mg/kg)	0,2	0,3	0,3	0,4
Zinc (mg/kg)	215,0	296,4	290,0	367,6
Germinal rate (15 % compost, %)	100,0	100,2	100,0	102,0
Germinal rate (30 % compost, %)	90,3	95,1	99,0	100,0
Germinal delay (15 % compost, d)	0,0	0,0	0,0	0,0
Germinal delay (30 % compost, d)	0,0	0,0	0,0	0,0
Fresh plant substance (15 % compost, %)	97,0	102,2	101,0	103,0
Fresh plant substance (30 % compost, %)	90,0	91,4	91,0	97,0

Table 4: Distribution of parameters from the external quality control 2020, biowaste and green waste compost analyses (n=166)

	1st Quartile	Average	Median	3rd Quartile	Limit value ECN-QAS
Organic dry substance (% TM)	28,5	34,8	34,0	40,2	≥ 15 % TM
C/N	11,9	13,7	13,0	15,0	
Conductivity (mS/cm)	1,4	1,9	1,8	2,3	Declaration
pH-value	7,4	7,6	7,6	7,8	Declaration
Moisture Density (kg/l)	0,7	0,8	0,8	0,9	
Dry substance (% TM)	57,8	62,9	62,5	68,1	Declaration
Fibre (% TM)	0,0	0,1	0,0	0,1	≤ 0,5 % TS
Plastics > 2 mm (% TM)	0,0	0,0	0,0	0,0	
Plastics > 20 mm (% TM)	0,0	0,0	0,0	0,0	
Metals (% TM)	0,0	0,0	0,0	0,0	
Glas (% TM)	0,0	0,0	0,0	0,0	
Nitrogen (% TM)	1,2	1,5	1,4	1,7	Declaration
Carbonate (% TM)	5,8	21,0	9,0	11,2	Declaration
Potassium (% TM)	0,8	1,1	1,0	1,3	Declaration
Phosphate (% TM)	0,3	0,5	0,4	0,6	Declaration
Lead (mg/kg)	17,6	22,7	20,9	25,0	130,0
Cadmium (mg/kg)	0,3	0,4	0,4	0,4	1,3
Chromium (mg/kg)	19,6	25,3	24,1	29,3	60,0
Copper (mg/kg)	30,7	44,7	38,7	53,0	300,0
Nickel (mg/kg)	15,0	19,0	18,2	22,9	40,0
Mercury (mg/kg)	0,1	0,2	0,2	0,2	0,5
Zinc (mg/kg)	130,8	161,6	153,3	181,9	600,0
Germinal rate (15 % compost, %)	95,0	96,9	99,5	100,0	
Germinal rate (30 % compost, %)	90,0	92,4	97,0	100,0	
Germinal delay (15 % compost, d)	0,0	0,0	0,0	0,0	
Germinal delay (30 % compost, d)	0,0	0,0	0,0	0,0	
Fresh plant substance (15 % compost, %)	95,8	103,0	101,0	110,0	
Fresh plant substance (30 % compost, %)	91,0	97,4	96,0	106,0	

For the quality assurance of 2020, 136 compost plants got the quality label. 122 plants did not match the requirements and thus were not certified.

In the years 2020 and 2021 8 first evaluations were carried out.

On the 14th of January 2021 the last QA internal audit took place, the next one is planned for the mid of January 2022.

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