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ŽAMBERK

Dostál

6. března 2007

VĚC: Expert's statement on organic fertilizer HUMOPLANT

Producer and supplier: EKO TEKNOLOGI, Kafedralna, 10, 43016 LUTSK, UKRAINE

Humoplant is organic fertilizer technologically manufactured in 2 phases: In the 1st phase, mixture of poultry bedding and peat undergoes aerobic fermentation. Basic nutrients and organic material are of natural origin. In the 2nd phase, the product is dried (according to verbal statement of the manufacturer) and finalized by granulation.

Chemical and physical features – included in the documentation/found by ÚKZÚZ (analysis 7/07)

INDICATOR		Documentati on	Analysis
Humidity in % before final drying		min. 40	55,5
Combustible materials in the dried sample in %		52-75	63,3
Total nitrogen as N recalculated to dried sample in %		2,14-2,66	2,7
Total phosphorus as P ₂ O ₅ recalculated to dried sample in %		2,1-3,8	3,3
Total potassium as K ₂ O recalculated to dried sample in %		1,09	1,8
Ration C : N		max. 20	12
pH-value		6,0 – 8,5	6,4
Pellet composition:	Mass fraction of pellets with maximum size 6 mm in %	min. 92	
	Mass fraction of pellets with minimum size 5 mm in %		93,7

Contents of risk elements complies with the legal limits in mg.kg⁻¹ of the dried residue: Cadmium 1, lead 100, mercury 1,0, arsenic 10, chromium 100, copper 100, molybdenum 5, nickel 50, zinc 300, hence suitable even for fertilizing of vegetable and fruit.

Range and way of application:

Purpose of the fertilizer: The fertilizer HUMOPLANT is suitable for crop-plants, vegetable, grassland, frit gardens, hop gardens, vineyards, forest and decorative tree species, and especially for small-scale farmers for fertilizing of plants in seed beds and pots.

Application: Apply the fertilizer by means of spreader machines or, on smaller areas, by manual spreading followed by placement into soil. It is also possible to mix the fertilizer pellets with soil and apply the mixture.

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Dosing: Growth that requires organic fertilizing (potatoes, cole crops, fruit vegetable etc.) and soils insufficiently supplied with humus are recommended to be fertilized with the dose 400 to 1000 g of the fertilizer per 1 m² (4 to 10 t.ha⁻¹). Place the fertilizer by ploughing or profile cultivator. Recommended dose for pre-seeding and pre-planting cultivation makes 0,3 to 1 t.ha⁻¹, place the fertilizer into soil by shallow cultivation. I even recommend placement of the top dressing (0,3 to 0,5 t.ha⁻¹) by cultivation. For planting of decorative and fruit trees and bushes apply 5 to 7 l of the fertilizer according to the hole size. For application for bed and pot flowers (indoor, boxes, balconies) mix with soil before seeding in the recommended volume ratio 20 to 40 of volume parts of soil on 1 part of the fertilizer. For growing and replanting of indoor plants and flowers apply the fertilizer on the bottom of the pot in the ratio 1 : 20 to 1 : 40 related to the pot volume, mix with part of the soil, lay the plant in, and fill up with the remaining soil. For additional fertilizing insert a spoon of the pellets into the soil into holes in the pot, slightly press to the bottom and cover with soil. The specified doses are just approximate. For application on last areas it is recommended to elaborate the doses according to soil analyse.

Evaluation:

Assuming the original humidity 40 %, **application of the recommended basic dose** 4 to 10 t.ha⁻¹ of the fertilizer HUMOPLANT before ploughing gives into soil minimum 1,25 to 3,12 t of combustible materials per 1 ha, that is about 69 to 390 % of the yearly need of input of organic materials in farm fertilizers. This need was determined by the method of balance of organic materials in arable soil (NEUBERG et al., 1990). The recommended dose brings minimum 58 to 144 kg of N, 50 to 126 kg of P₂O₅ and 26 to 65 kg of K₂O per 1 ha. The dose of nutrients corresponds to minimum 29 to 72 % of the yearly need of the crop, that requires fertilizing by farm and organic fertilizers. Hence, by application of one full dose over-fertilization neither of soil nor of crop with nutrients occurs. To the contrary, room for repeated fertilization with this fertilizer creates, this time with a smaller dose, that the producer before and after starting the vegetation recommends, or the room for additional fertilization with other fertilizers in the range of the very efficient system of organic-mineral fertilization. For fertilization to an individual crop at starting of the vegetation, the dose makes 0,4 to 1 t.ha⁻¹. The needed yearly income of organic materials in the farm and organic fertilizers will be exceeded with the full dose of 10 t.ha⁻¹. But, it is assumed, that after this dose, repeated organic fertilization in the next full dose will be performed only in the third or fourth year after the previous fertilization by HUMOPLANT. Should the full doses be applied in shorter intervals, unwanted immobilisation of nutrients for good ratio of nutrients to nitrogen does not occur. Hence, keeping the dose of nitrogen according to plant requirements, unwanted effects after fertilization with HUMOPLANT cannot be expected.

The recommended dose for the pot cultures or for cultures with the dose in recalculation to the hole are adequate what input of organic materials and nutrients is concerning.

Past all doubt, organic fertilizer for planting of crop on soil made of peat and poultry bedding is not only a fertilizer with **nutrients**, that show direct and consequential effect, but also material with **supporting effect**. Known are stimulating effects of fertilizer to growth and development of plants, survival rate and vitality of plants, on decrease of stress during negative influences (drought, overdosing of pesticides or other pollutants, etc.). It contributes to recovery of metabolism due to improvement of humification by completing of products of humification. In soil, organic fertilizers fulfil the function of accumulation, supplies, regulation and protection, decrease acidity and increase microbiologic activity. The fertilizer contains some portion of fulvic acids and soluble high molecular humus materials. These water-soluble humus materials support sequestration of soil solution thus improving its function by transport of nutrients (especially micro nutrients) from soil into roots of plants.

Also known is an important effect on quality and stability of soil aggregates as basis of the soil structure.

Microbiologic picture of the final dried fertilizer is favourable even for utilization by little-range growers (see the protocol on results of laboratory tests No. 03/07 SZÚ Praha). At humidity of 16,3 %, the fertilizer does not contain germs of Salmonella, contents of enterococci and coliform bacteria are under 50 KTJ per 1 g of dried residue.

The final **pellet form** is a contribution to practice. The fertilizer, if dried out to the final contents of water 15 % maximum, will gain popularity especially of little-range growers due to its storage stability and easy handling. Large-range growers will use the fertilizer where farm fertilizers cannot be used for revitalization of the soil horizon (e.g. hop gardens, vineyards, fruit gardens, forest and decorative wood species) or where farm fertilizers are produced in insufficient volume.

Uniformity of spreading of both original materials in the final product can be checked by standard analytic methods (contents of N and ratio C:N in individual partial samples). In spite of that I recommend to check uniformity indirectly by **checking of technological discipline**. That means, checking of records of daily consumption of both raw materials and checking of reliability of the mixing device.

Composition – contents of nutrients, dosing and form of the fertilizer HUMOPLANT, as it is stated in the production documentation, correspond to tits declared utilisation for fertilization in common conditions of agricultural production including large-scale gardening, fruit gardening, hop gardening, vineyards, forest and decorative cultures. I recommend the above-mentioned fertilizer to registration according to the law No. 156/1998 Collection of laws about fertilizers in wording of the laws No. 308/2000 Collection of laws, No. 147/2002 Collection of laws and No. 317/2004 Collection of laws. The expert's report was worked out on the basis of a proposal the label, description of manufacture technology and according to the protocols of ÚKZÚZ, SZÚ on the fertilizer HUMOPLANT. The submitted documents (but the protocol by SZÚ) refer to the fertilizer with humidity of 40 %. Should the fertilizer not be dried to humidity under do 15 % (protocol SZÚ), I do not recommend the pellet form. Even then the product will meet the above purpose for large-scale growers.

For the need of sale in retail for using of the fertilizer by small-scale growers and in household I recommend to dry the fertilizer v to the humidity of 15 %, in order that the supposed form of the fertilizer in pellets meets the required durability and hygiene. As well I recommend specifying the dosing according to nitrogen contents in the fertilizer re-determined after this final modification.

At Žamberk on 6th March 2007

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