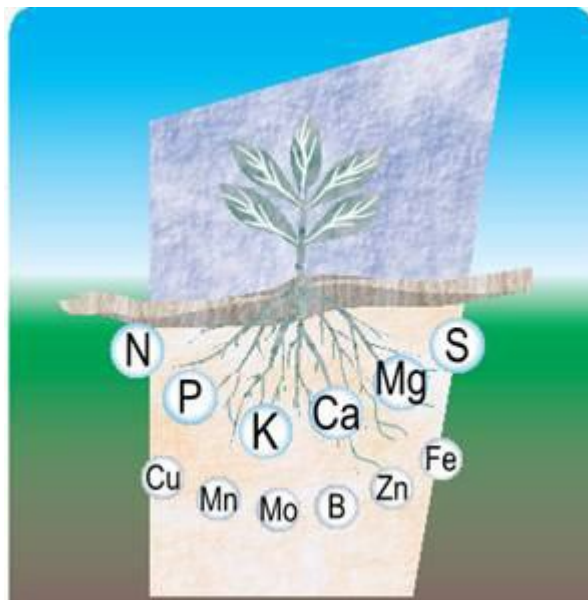


BIO FERTILIZERS ARE THE BASE OF AGRICULTURE PRODUCTS QUALITY IMPROVEMENT :

Organic waste of stockbreeding complexes and processing industry are fertilizers themselves. But the efficiency of such fertilizers is just 10-15% of possible. In processing of these waste products on biogas plant, takes place a substantial improvement of their properties.



Depending on storage method and time organic waste lose 25-50% of organic matter and nutrients (first of all nitrogen N). There is more loss at frost action with the following defrosting up to 70%. In the table 1 there are shown the average loss of nitrogen and organic matter depending on the period of storage.

Table1. The average loss of nitrogen N and organic matter depending on the period of storage %

Loss	Substrate	Period of Storage		
		2 Months	4 Months	6 Months
Total Nitrogen	Organic Waste	15-20	25-35	40
Organic Matter		20-25	30-35	50

In Europe there has been applying for twenty thirty years now a new energy-saving technology of processing the organic waste to bio-fertilizers. This technology makes it possible to get the natural bio-fertilizer by means of anaerobic digestion. This fertilizer is rich in bioactive substances and microelements. The main advantages of bio-fertilizers compared to conventional fertilizers (mould, manure etc) are form, availability and nutrients balance, high level of organic humification.

Organic matter is a powerful energy material for soil microorganisms that is why after its application activation of nitrogen-fixing and other microbiological processes occur in soil. In table 2 there are given the data of bio-fertilizers composition.

Table 2. Bio-fertilizer composition from biogas plant. Solid fraction 25-30% DM*

Bio-fertilizers (fermented substrate)	Composition kg/ton				
	N	NH ₄ -N	P ₂ O ₅	K ₂ O	MgO
Pig manure	5,9 -6,5	1,4-2,0	5,3-5,8	6,1-6,3	1,5-1,8
Cow manure	4,3-5,0	1,0-1,2	2,7-2,9	7,5-7,8	1,3-1,5
Horse manure	3,6-3,8	1,0-1,1	4,0-4,3	4,3-4,8	1,5-1,8

Bio-fertilizers (fermented substrate)	Composition kg/ton				
	N	NH ₄ -N	P ₂ O ₅	K ₂ O	MgO
Poultry manure	17-18	3,0-3,5	10-10,9	8,0-8,8	3,5-4,2
Grass	3,2-3,5	0,7-1,0	1,37-1,4	4,2-4,8	0,5-0,6
Haylage	3,5-3,8	0,5-0,9	1,25-1,3	4,0-4,5	0,5-0,6
Maize silage	3,7-4	1,2-1,3	1,3-1,4	4,2-4,5	0,8-1
Sugar beet tops	2,1-2,3	0,5-0,9	1,25-1,4	3,5-4	0,7-0,9
Sparging	14-16	2,0-2,5	6,0-6,5	5,4-5,5	0,6-0,8
Grains	16-18	1,9-2,3	6,0-6,3	5,3-5,5	0,6-0,8
Sugar beet pulp	5,0-6,2	..	3,3-3,5	4,2-4,5	1,2-1,6
Slaughterhouse waste	10-12	1,8-2,0	20-25	3,0-3,5	2,5-2,6
Milk plant waste	2,5-3,2	0,4-0,8	1,0-1,2

Screening	8-10	1,8-2,0	5,6-6,0	5,2-5,3	0,7-0,8
Potato processing waste	4,5-4,7	1,5-1,8	2,8-3,5	4,6-4,8	1,2-1,4
Cake (fruits)	6-6,8	..	6,4-6,7	5,3-5,8	2,1
Organic food waste	5,6-5,8	1,6-1,9	3,2-3,6	4,0-4,3	2,5-2,7
Rape-cake	4,5-5	..	2,6-3,8	5,6-7	3,2-3,4
Activated sludge	3,9 -4,2	2,4-2,2	2,2-2,9	2,1-2,22	0,5-0,27
Pig manure	3,1-3,8	1,4-2,0	2,3-2,4	2,1-2,4	0,5-0,8
Cow manure	1,8-2,2	1,0-1,2	0,8-1,6	2,2-2,8	0,4-0,5
Poultry manure	7,1-8,2	3,0-3,5	6,8-7,9	5,0-5,6	1,5-2,2
Haylage	2,2-2,8	0,9-1,5	1,9-2,3	2,0-2,5	0,5-0,7