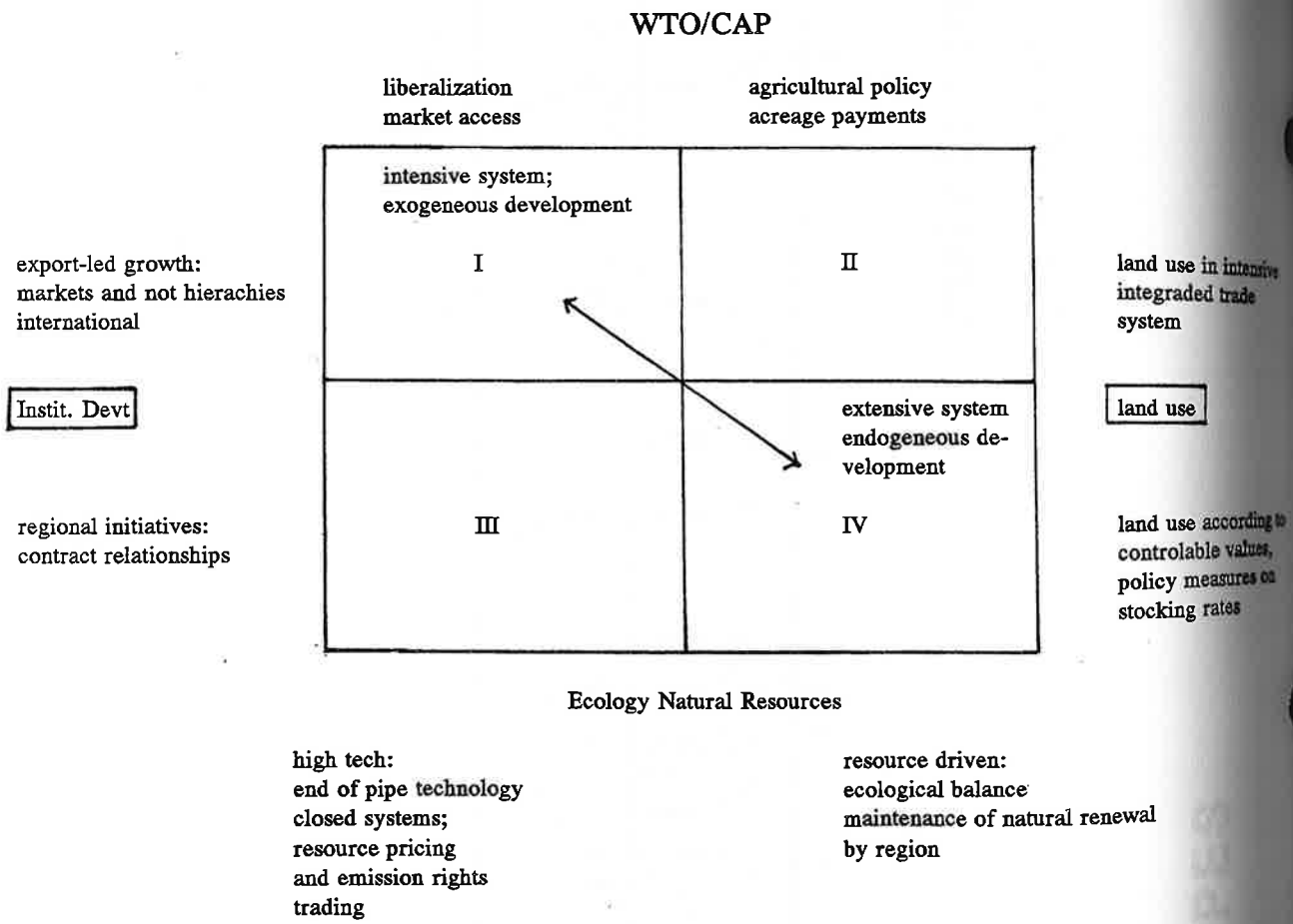
Scheme 1. Alternative routes towards sustainailiby in Europe



ochemical performance of white rats' blood gr/litre TABLE 1

ame	Groups			
	I	II	III	IV
eneral protein	77.7+/-1.93	73.46+/-2.78	70.8+/-3.45	81.02+/-2.24
bumen	39.01+/-1.24	31.22+/-3.23	49.21+/-2.70	45.76+/-1.88
obulin	60.99+/-0.45	61.78+/-0.54	50.78+/-0.85	54.25+/-0.84
G	0.63	0.61	0.96	0.84
ea	7.43+/-0.29	9.19+/-0.27	6.42+/-0.36	7.35+/-0.28
caline osphatase tivity	4.46+/-0.29	4.91+/-0.39	2.65+/-0.55	2.05+/-0.55
d corpuscles antity ucocytes'	7.24+/-0.28	7.74+/-0.38	6.66+/-0.28	6.2+/-0.54
antity	6.40+/-1.29	8.14+/-2.13	6.18+/-0.89	5.64+/-0.79
emoglobin	139.9+/-2.79	134.32+/-5.18	128.3+/-8.17	127.9+/-8.6
thaemoglobin	1.34	1.06	1.78	1.78

Nitrite content in food TABLE 2

Sort	Districts of Voronezh region	Nitrate content	
		actual	limiting norm
Sudanka hay	Verhnehavskiy	9691	500
Lucerne and boon hay		10200	500
Boon hay	Paninskiy	3719	500
Cereals and leguminous hay		3380	500
Oat hay		3719	500
Lucerne hay		4597	500
Boon hay	Ramonskiy	2046	500
Rye hay		3185	500
Lucerne hay		4898	500
Beetroot		2826	800
Silage		692	300
Boon hay	Repyovskiy	961	500
Boon hay	Semilukskiy	6166	500
Boon and lucerne hay		4898	500
Grass flour		5248	800
Granulated lucerne	Liskinskiy	2629	500
Boon hay		5469	500
Grass flour		3890	800

Nitrate content in fresh meat of slaughtered animals

TABLE 3

Sort of meat	Supplier(districts of Voronezh region)	Overall consumption of nitrates with food within 24 hours mg/kg	Nitrate content in meat mg/kg
beef	Verhnehavskiy	47320,0	259,7
pork		11022,5	294,1
beef	Paninskiy	43528,0	218,9
pork		9434,0	231,7
beef	Ramonskiy	36582,0	160,8
pork		14661,7	350,4
beef	Uch. hozyaistvo	33127,0	112,7
pork	"Beryozovskiy"	3747,5	125,6
beef	Repyovskiy	19603,0	80,7
pork		5610,0	92,0
beef	Semilukskiy	48412,0	280,4
pork		7358,5	210,5
beef	Liskinskyi	44513,0	210,7

Content of nitrate ions in by-products (mg/kg) TABLE 4

Name of the samples	Animals		
	cattle	pigs	sheep, mutton, and the like
Muscle tissue	312	365	323
Liver	545	585	485
Kidneys	525	559	435
Rennet bag	485	491	418
Paunch	451	-	412
Mesh	369	-	315
Lungs	315	323	325
Heart	300	285	245
Diaphragm	283	238	218
Spleen	279	221	208

Nitrate content of minced meat and end products TABLE 5

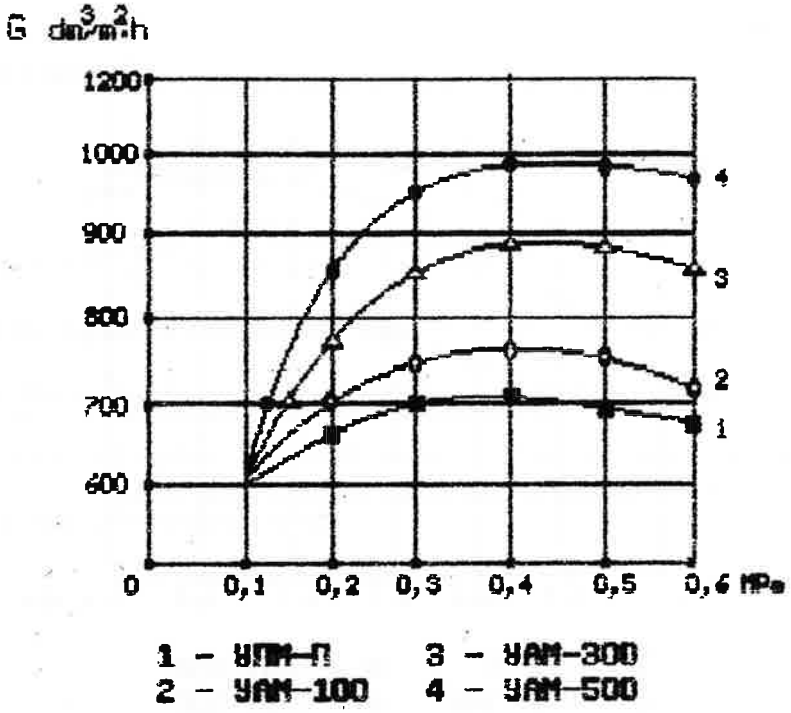
Name	Nitrate content in minced meat mg/kg	Mode of heat treatment	Nitrite content in end product
"Pohodnaya" boiled sausage	325	frying, boiling	43,3
"Lipetskaya" half-smoked sausage	380	hot smoking, boiling	31,0
"Skhodnenskaya" half-smoked sausage	380,8	the same	28,1
"Obedennye" hot dogs	250,4	frying, bolining	46,8

Table 1. Sewage composition before and after the ultrafiltration separation

Index	Initial sewage	Ultrafiltration concentrate	Ultrafiltration permeate
Odour, humbers	to 5	to 1	to 1
Colour	reddish-brown	dark-red	light-rosy
pH	6,5-8,5	7,0-7,2	7,0
Suspended substances	1800-2000	250-318	50
Fats	1000-1500	depending on concentration degree	none
Hardness mg.equi/dm3	10-12	4-5	2,8
CCO mg/dm3	1500-2000	108	88,3
BCO mg/dm3	600-800	45,6	23,0
NO(-,2)	0,02	0,009	0,005
NO(-,3)mg/dm3	0.05	0,015	0,008
Quantity of microorganisms per 1 cm3			
Psychrophilic number	25*10 4	9,2*10 3	2*10 1
Mesophilic number	13*10 3	2,7*10 2	0,08*10 1
Coli-titer of bacteria	143 titer 333	333 143	333
Spore forming bacilli (aerobic)	0,2*10 4	0,4*10 2	solitaries
Spore forming bacilli (anaerobic)	0,3*10 2	0,15*10 2	none
Coccic forms	4,4*10 4	3,9*10 2	1,6*10 1
Fungi	1,1*10 2	8,1*10 1	none
Yeast	0,8*10 2	0,97*10 1	none

Table 2
Comperative data of amino acid composition for different fodder products.

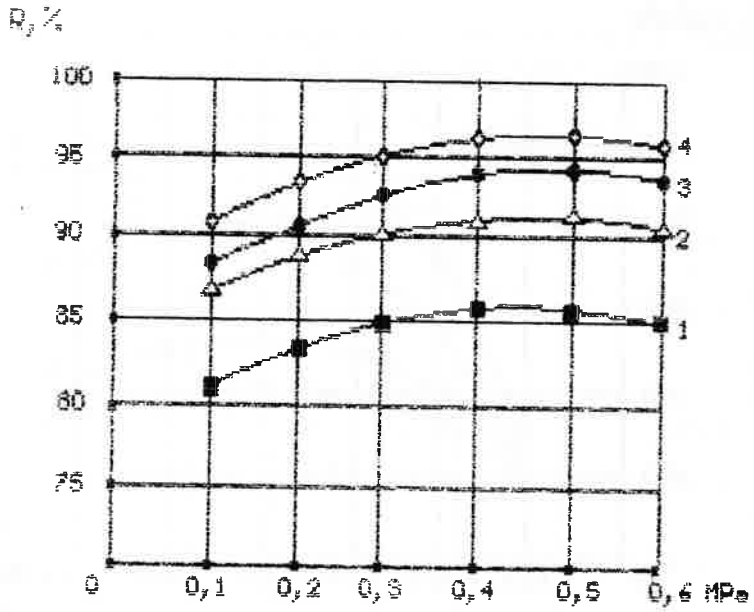
Fodder products	Fraction of amino acids, mg/g										
	Ly-sine	me-thi-omin	phe-nil-ala-mine	leu-cine	iso-len-cine	va-lyne	gly-cine	ar-gi-mine	gis-ti-dine	tri-pto-pha-ne	tre-omi-ne
Albumen-fat ultrafiltration concentrate	16,86	9,77	11,1	18,94	5,38	10,04	18,71	20,99	1,96	14,48	
Meat flour	20,0	5,6	13,3	21,5	12,2	17,8	-	24,1	5,9	5,8	12,2
Meat-bone flour	19,4	5,2	16,9	27,5	16,0	21,8	-	29,5	12,9	4,8	226
Bone flour	6,2	1,2	3,3	7,4	4,2	4,8	21,1	9,5			
Flour from poultry shambles	37,3	10,1	-	-	-	-	-	-	-	-	-
Hydrolysis yeast	3,2	8,6	15,3	43,2	21,6	26,7	21,1	22,1	10,3	2,5	18,6
Wheat bran	15,7	1,9	5,5	9,5	6,5	7,7	-	9,6	3,9	1,9	4,3
Bagasse	61,0	0,1	2,4	5,0	3,3	3,8	-	2,9	1,7	0,8	4,3



1 Polysulfonamide УПМ-П
2,3,4, cellulose acetate УАМ-100

Figure 1

Pressure dependance of specific capacity of semi-permeable membranes during ultrafiltration process.



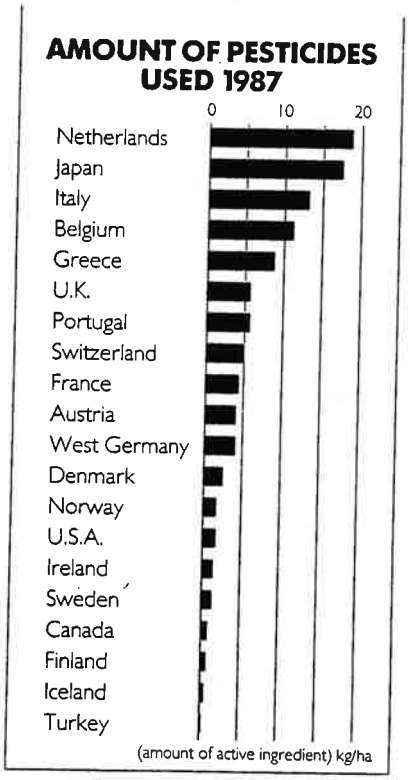
1 - УПМ-П 3 - УАМ-300
2 - УАМ-100 4 - УАМ-500

1 Polysulfonamide УПМ-П
2,3,4, cellulose acetate УАМ-100

Figure 2

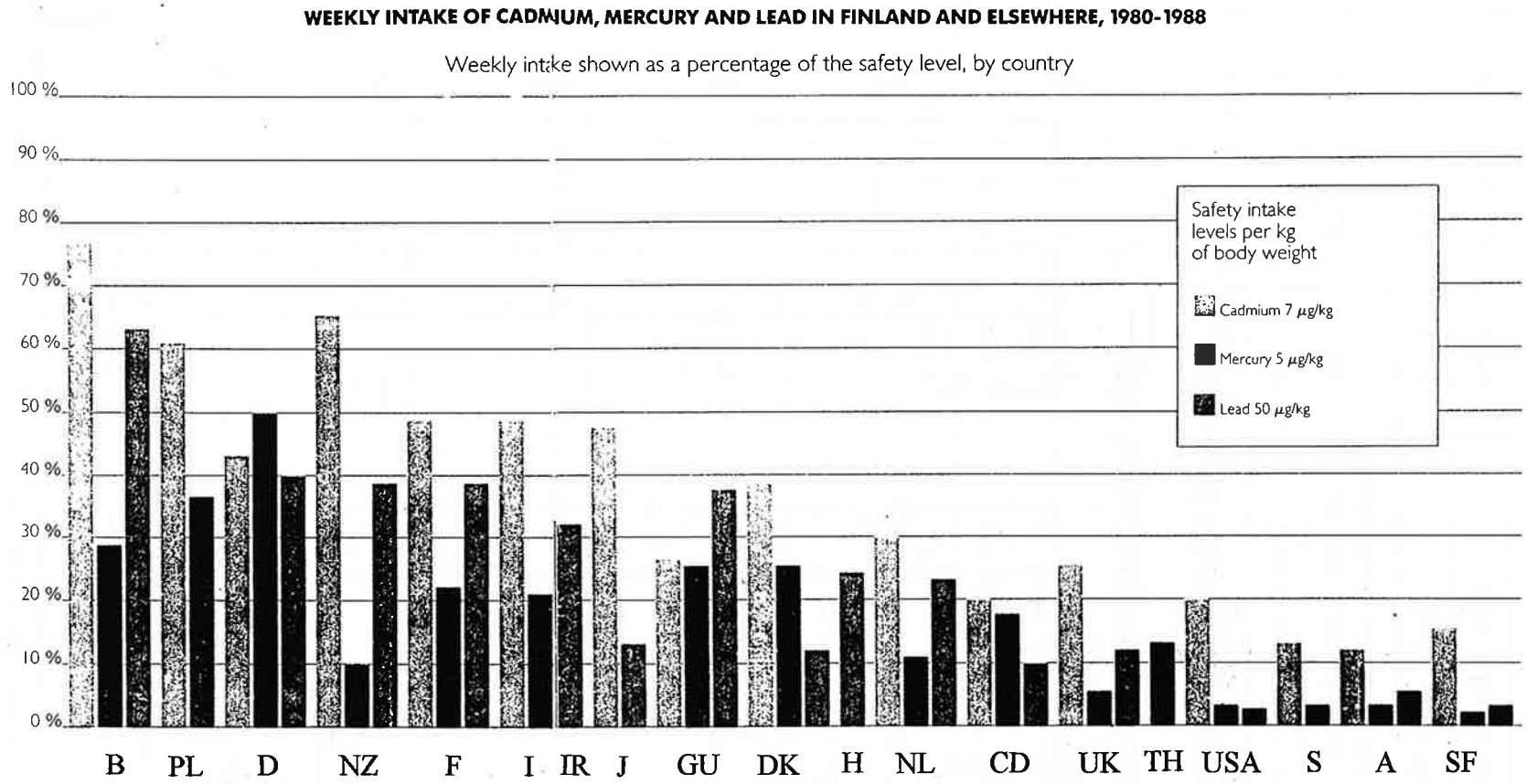
Pressure dependance of trapping rate of semi-permeable membranes during ultrafiltration process.

Figure 1.



Source: **FAO/WHO Gems (1988)**

Figure 2.



Source: **FAO/WHO Gems (1988)**

Fig.1. Diseases incidence in experimental groups of pigs

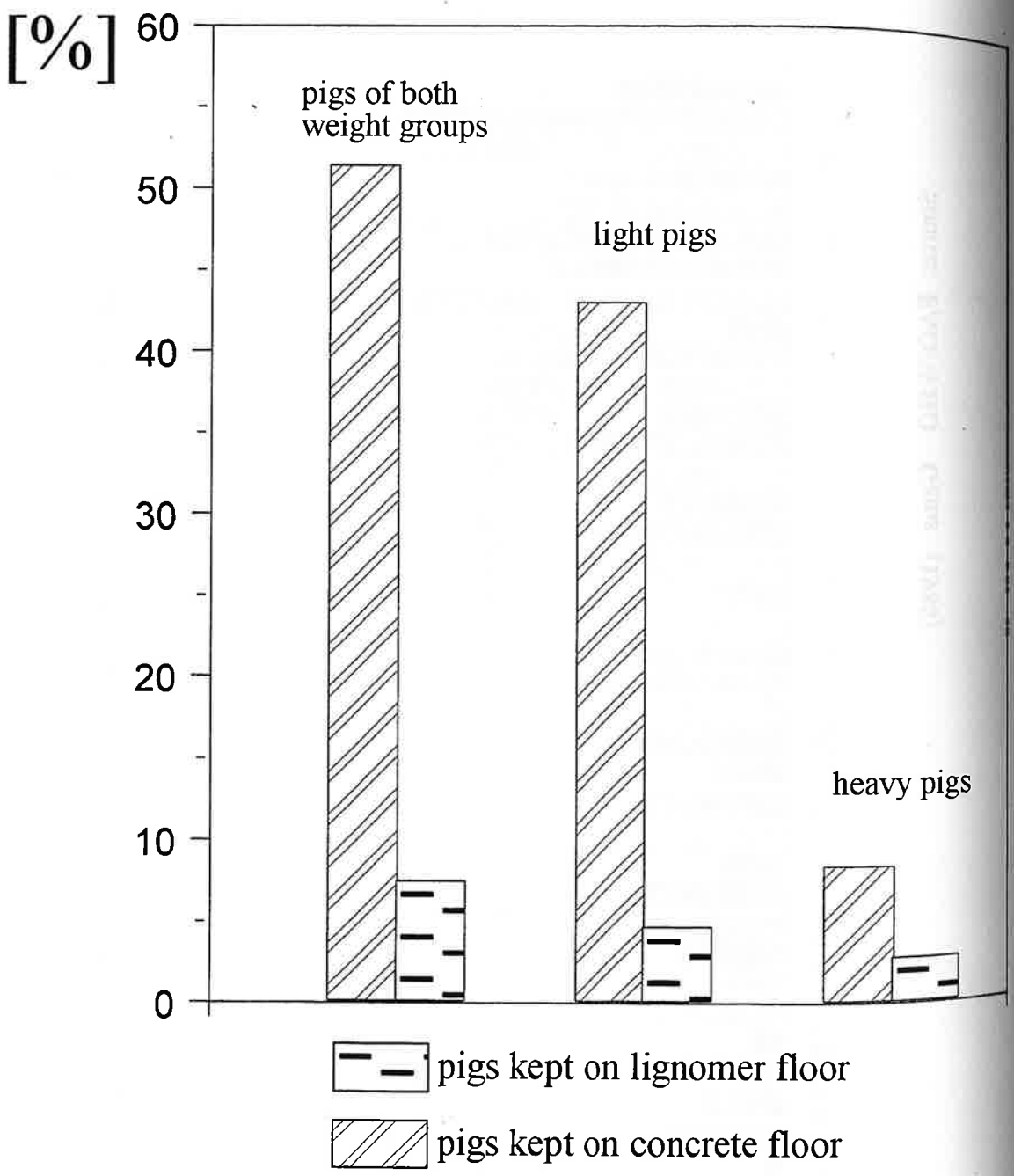


Table 1

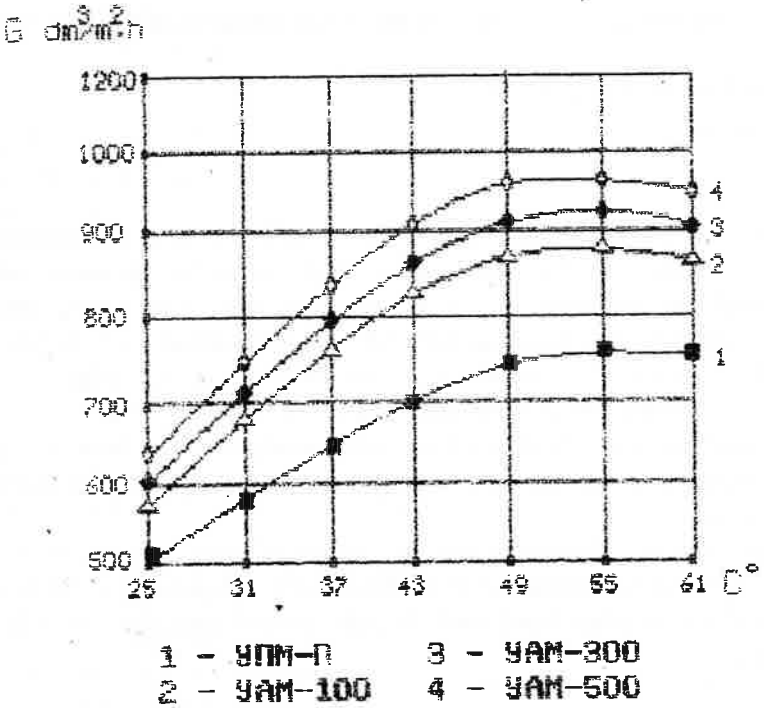
Level of styrene in the examined muscles and fat of swine (mean values in mg/100g)

Type of sample	Concentration
m. longissimus dorsi	0.011 - 0.430
ham muscles	0.008 - 0.184
back fat	0.080 - 0.330
ham fat	0.020 - 0.730
abdominal fat	0.000 - 0.220
perirenal fat	determined only qualitatively - smell of styrene felt during thermal treatment

Table 2

Rearing results of examined swines (mean values)

Investigated parameters concerning pigs rearing and carcase characteristics	Floor from polymerized wood		Concrete floor	
	pre-slaughter weight			
	110kg	140kg	110kg	140kg
weight of pigs before slaughter (kg)	114.7	149.0	118.3	136.5
weight gain in g/day	410.4	485.9	423.8	487.2
age of pigs at slaughter (days)	284	309	283	283
days of fattening	232	253	227	227
length of carcass (cm)	85	91	87	90
back fat thickness (mean value from 5 measurements)	28	38.5	26	29
weight of ham (kg)	10.0	12.4	10.1	11.0
slaughter yield (%)	69.5	69.8	65.6	69.0



1 - УПМ-П 3 - УАМ-300
2 - УАМ-100 4 - УАМ-500

1 Polysulfonamide УПМ-П
2,3,4, cellulose acetate УАМ-100

Figure 3

Temperature dependance of specific capacity of semi-permeable membranes during ultrafication process.

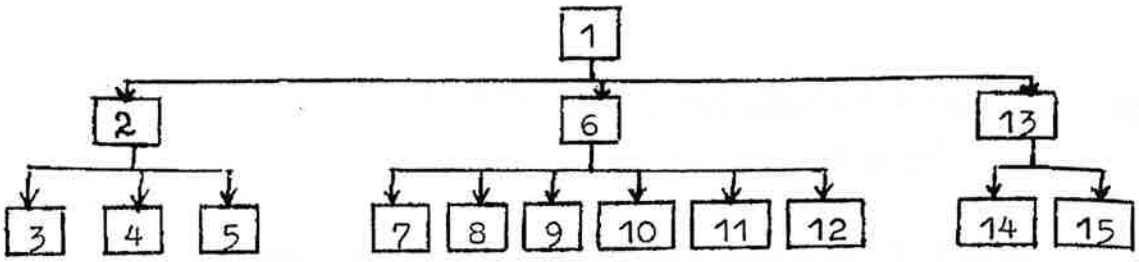


Fig. 1. Extended classification limited by the effectiveness of new generation of ecologically pure food products:
1 - Dominant factors; 2 - Storing; 3 - Raw material; 4 - Price-estimating; 5 - Transport; 6 - Production; 7 - Organizational; 8 - Fuel and power; 9 - Structural; 10 - Sanitary and ecological; 11 - Technical; 12 - Technological; 13 - Commercial; 14 - Price-estimating; 15 - Transport.

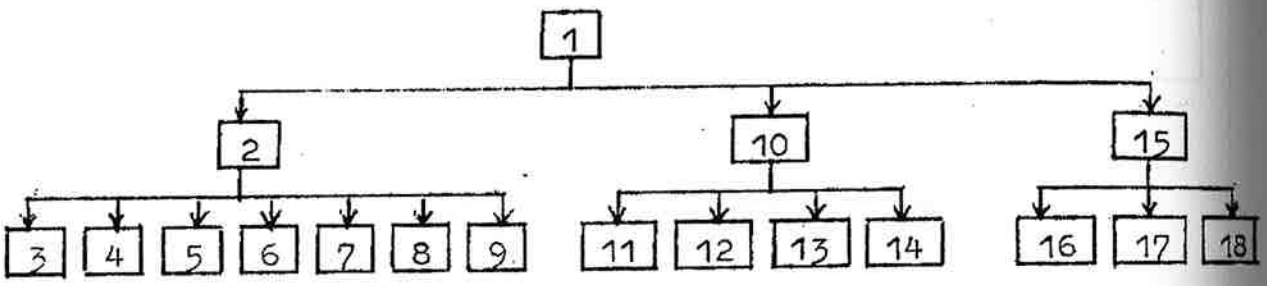


Fig. 2. Diagram of detailing sanitary and ecological factors:
1 - Sanitary and ecological factors; 2 - Sewage pollution; 3 - Municipal sewage; 4 - Wasted fuel and lubrication; 5 - Mineral and organic toxines; 6 - Protein wasted; 7 - Fat wasted; 8 - Mechanical admixtures; 9 - Microbiological; 10 - Air contamination; 11 - Gaseous toxines; 12 - Dispersion toxines; 13 - Cancerogenes; 14 - Mechanical weighted substances; 15 - Sanitary and microbiological contamination; 16 - Bacterial count of washing - off; 17 - Daily mass of garbage; 18 - Periodicity of removal of garbage.

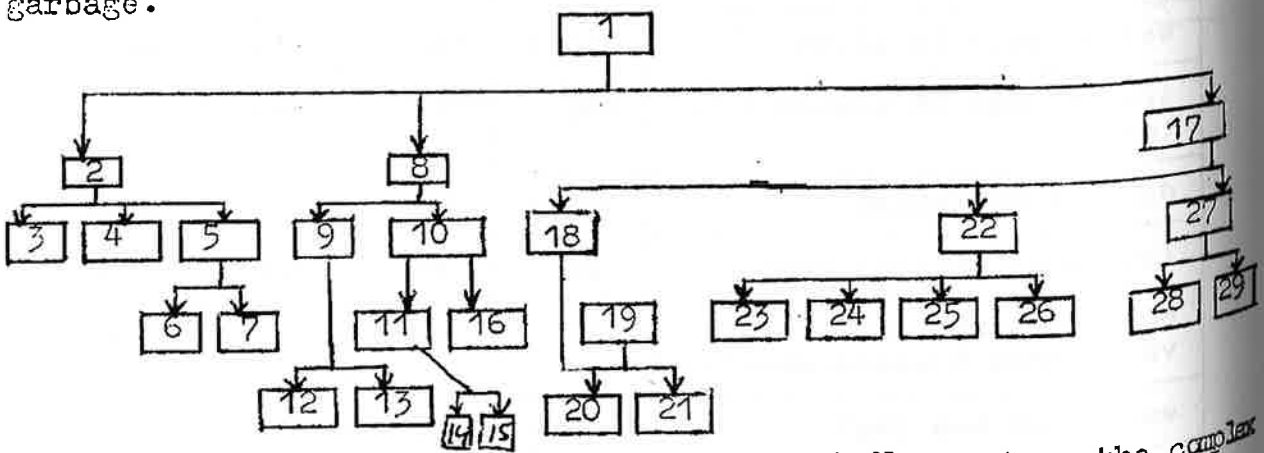


Fig. 3. Classification of dominant factors influenced on the complex quality of technological processes:

1 - Dominant factors influenced on the complex quality of technological processes; 2 - raw material; 3 - functionally - technological properties; 4 - (OXC) permissible scatter of a mass quota of fat, protein, carbohydrates, moisture in original raw material; 5 - level of contamination; 6 - microbiological; 7 - toxic substances; 8 - commercial; 9 - organizational; 10 - technical; 11 - construction; 12 - qualification of personnel; 13 - software; 14 - arrangement; 15 - mechanization level; 16 - automation level; 17 - technological; 18 - microbiological; 19 - enzyme; 20 - endogene; 21 - exogenous; 22 - physical; 23 - temperature; 24 - temporal; 25 - baric; 26 - measurements; 27 - chemical; 28 - concentration; 29 - kinetic.

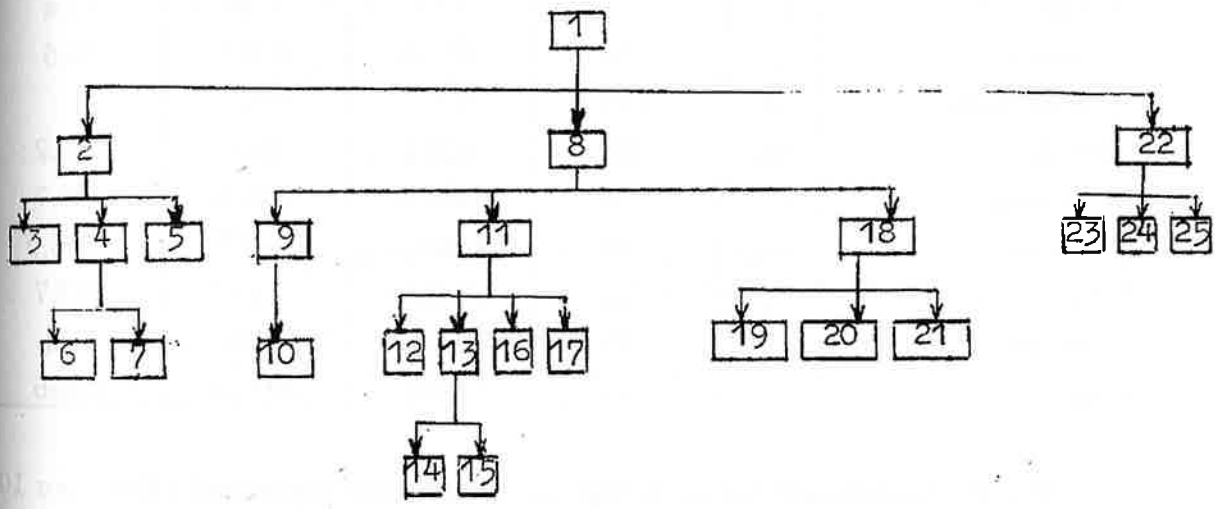


Fig. 4. Classification of differential indices of complex quality of technological processes:
1 - Differential indices of complex quality of technological process; 2 - raw material (input); 3 - permissible fluctuations of OXC (see fig. 3 (4)); 4 - permissible level of contamination; 5 - permissible fluctuations of functional and technological properties; 6 - macrobial; 7 - toxic substances; 8 - commercial; 9 - organoleptic; 10 - number of personnel; 11 - technical; 12 - sizes; 13 - expenditures; 14 - power; 15 - material; 16 - mechanization level; 17 - automation level; 18 - technological; 19 - output; 20 - consumption of raw material; 21 - functional properties; 22 - consumer (output); 23 - organolepric; 24 - sanitary; 25 - medico-biological.