

Показано, що додавання посліду як косубстрату до жирових відходів виробництва шкіри впливає на якісні та кількісні показники процесу зброджування. Визначено, що найбільший вихід біогазу характерний для співвідношення «жирові відходи: курячий послід» 1:1. Раціональним для одержання біогазу при 23-добовому терміні бродіння є концентрація субстрату, яка складає 7,5%. Концентрація метану в біогазі залежно від співвідношення косубстратів складає $65-70 \pm 3,2\%$.

Ключові слова: біогаз, метан, жировмісні відходи, послід, коферментація, анаеробне зброджування.

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THE WAY OF INCREASING BIOGAS AT THE FERMENTING FAT-CONTAINING WASTE TANNERY

The main waste of genuine leather production is fat-containing raw material (fat with impurities of wool) with high content of inorganic compounds and surfactants. Anaerobic digestion is one way of processing such waste. One of the techniques for introducing biogas technologies as a way to dispose of fatty waste from the leather industry is the use of cosubstrates that can provide the necessary content of nitrogen and trace elements, regulate the pH of the digestion medium (in the range of 6.5 - 7.5) and reduce the concentration of salts without reducing the rate of the process of methanogenesis. The article shows that the addition of chicken manure as a co-substrate to fatty waste products of leather affects the qualitative and quantitative parameters of the fermentation process. It is determined that when co-fermentation of fatty raw materials with the chicken manure the output of biogas and methane content in it depends on the ratio of cosubstrates. The rational concentration of the substrate for biogas production with a 23 day fermentation period is a concentration of 7.5 %. The concentration of methane in biogas is $65-70 \pm 3.2\%$, depending on the ratio of the co-substrate. The maximum yield of biogas is characteristic for the ratio of fat / chicken manure 1:1 ($64 \pm 1.8\%$ methane), at a ratio of 9:1 biogas output is reduced by $8.5 \pm 0.4\%$ with a methane content of $66 \pm 2.64\%$. With an increase in the concentration of chicken manure to 4:1 biogas output is $45 \pm 1.8\%$ from its output in the ratio of components 9:1. It was established that for the production of biogas from fatty waste of leather production, the ratio of fat / chicken manure 9:1 is rational.

Key words: biogas, methane, fatty waste, chicken manure, cofermentation, anaerobic digestion.

[1, 2].

[3].

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C/N,

[4].

(30-25):1,

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6,5–7,5.

(11%). (41%), (23%), (22%) (20%) [6].

() [8] C/N () [7]. () 73%. 3:2. 62,4³ 60%.

– 65,6±0,3% [9]. 61,9±1,4%

1:5 3). 53,5±1,0% [10]. 59,8±0,4%, (20 133 ° , –

() 25 23 47 , 75 % [11].

– 73% [12]. (6 %) 0,476 C/N. 1

« » (. ,), 3% NaCl () .

0,01 . [13–15]. Scout PRO SPE-123

–8– (CP) [16].

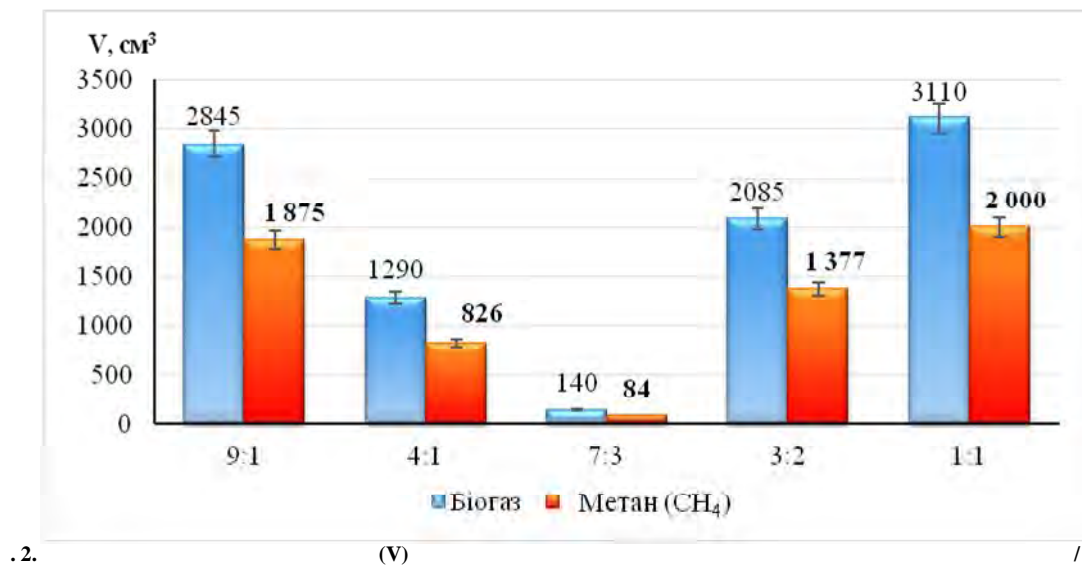
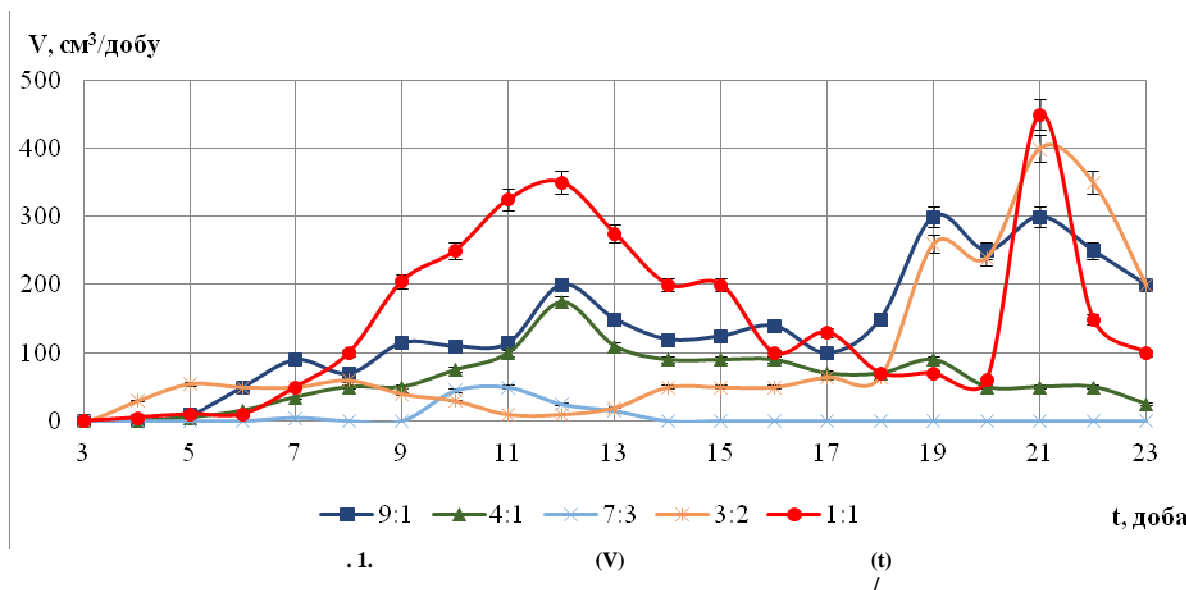
1⁰ - 0,8. –80 . (: 0,5[±]₃) : 9:1, 4:1, 7:3, 3:2, 1:1, 7,5 % [3].

» (. ,). – 3,5

.1, .1

		, %	, %	, %
1		1,9±0,095	0,13±0,007	97,97±4,90
2		61,1±3,05	28,9±1,445	10±0,5

23
4-5
12
7:3 4:1,
(. 2)



(20 35,6%) [17],

5,76. (/ 9:1, 3:2, 1:1)

12 19 (.1). / 1:1 (. 2). 1:1 18

7) 50% 70-72% 12 15-45%. 8 9:1, 3:2 1:1 (

1:1 - 64 ± 1,8%. / 3:2 9:1 66 ± 2,6%, 1:1

8,5 ± 0,4% 6 ± 0,25% ,

/ (9:1). 1:1 [18].

(9:1),

3%

/ 9:1.

/N

0,4% 1,8% / 1:1 (64 ± 1,8%), 9:1 4:1 8,5 ± 45 ±

9:1.

/ 9:1.

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