

IMPROVING THE METHOD OF REFINING NON-TRADITIONAL VEGETABLE OILS

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Abstract

This article presents the positive results of non-conventional oilseed conditioning in terms of temperature and humidity, continuous processing of oilseeds and oil refining, as well as increased digestibility of oilseed meal in the consumer's body when oilseeds are treated with moisture and heat, oil refining of oilseeds. When the process is carried out in two stages, first with a solution of sodium hydroxide in water, and then with a solution of sodium aluminate, it leads to an increase in the amount of refined oil.

Aim

To study the consumption of non-traditional vegetable oils, which are widely used in practice today and are new to the population. Unconventional vegetable oils: improving the refining process of soybean oil, rapeseed oil, olive oil in Uzbekistan.-

Materials and methods

Research and experiments were carried out in laboratory conditions and production tests. In oil refining technology, vegetable oils extracted from locally grown soybean seeds were used as raw materials. Modern physicochemical assessment methods were used for research and analysis.

Results

The government of the republic paid great attention to the development of the food industry. Reducing the area of cotton cultivation, increasing the reserve crop area, creates ample opportunities for cultivation of non-traditional oilseeds for field conditions. For this reason, growing sunflower, soybean and other seeds as non-traditional oilseeds under field conditions is widely considered. Despite the fact that the technological equipment of our enterprises is focused on the processing of cotton seeds, we started to import soybeans on the national scale and mastered the technology of soybean processing. Cultivation and processing of local non-traditional oilseeds - safflower, sunflower, flax, sesame and fruit and vegetable seeds - has gradually developed. The total annual capacity of oil plants allows processing of 4.3 million tons of oilseeds. Of this, 3.3 million tons of cotton seeds and 1 million tons of soybean and sunflower seeds are intended for processing. Statistics show that the processing volume will increase in the coming years, but the cotton seed processing capacity will decrease.

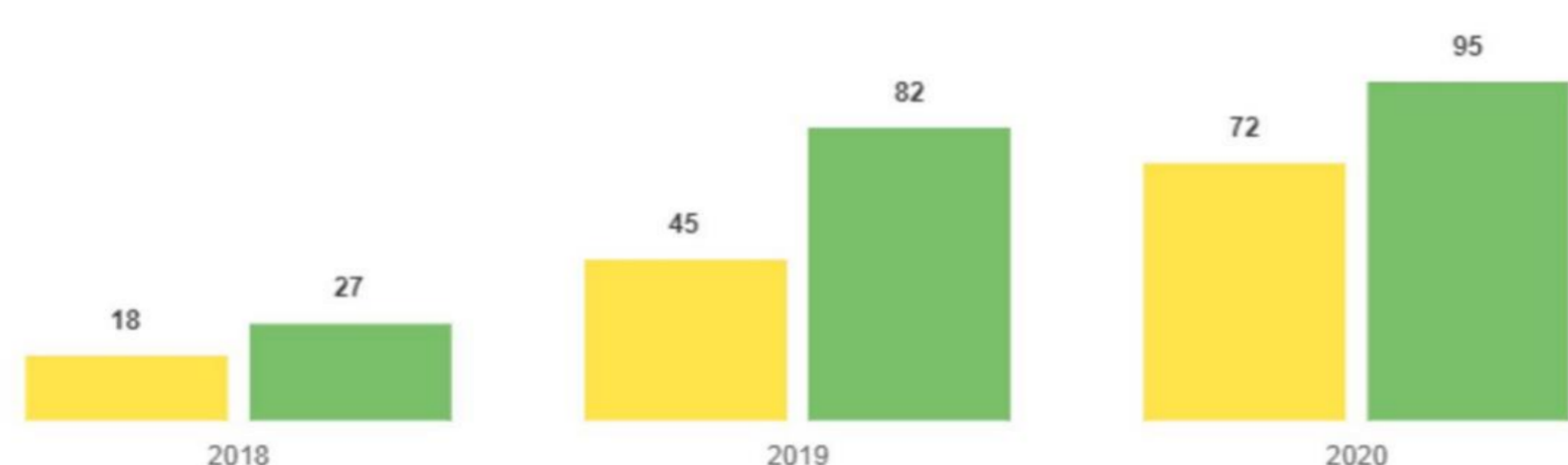
The following main tasks are carried out within the framework of the research: The main qualitative and quantitative parameters of soybean oil purification process in selected alkaline solutions were analyzed, and the results are presented in Tables 1-2.

Oil indicators to be named	Unit of measure	Starter press oil	Oil refined with a water solution (150 g/l concentration and 0.5% excess alkalinity compared to oil weight)	
			Sodium hydroxide	Sodium aluminate salt alkaline solution
Acid number	mg KOH/g	4.15	0.21	0.28
Peroxide number	mmol/kg	16.2	7.8	8.9
35 Yellow color in units	-girl. one	50.4	10.8	19.4
	-blue one	2.6	0.1	0.3
Refined oil output	%	-	89.8	92.7

Changes in soybean oil quality parameters during refining under the influence of alkaline solutions

Volumes of cultivation of oilseeds in 2019-2021

Unconventional oil crops o Cultivated areas (thousand hectares) o Gross yield (thousand tons)



3. Refining conditions and indicators of soybean oil

Alkali consumption		Refined oil indicators			Oil output
Stupidity	Excess amount %	Acid Color number of mg KOH/gr	girl blue		
using an aqueous solution of NaOH					
200	150	0.32	27	3	87.1
200	150	0.29	24	2	85.7
200	150	0.26	21	1	84.3
200	150	0.22	18	-	82.9
(Na3AlO3)*Na2O*SiO2 aqueous solution was used					
125	50	0.33	29	4	92.5
125	50	0.30	26	3	92.0
125	50	0.28	23	2	91.4
125	50	0.26	20	1	91.0

Oil indicator name	Unit of measure	Starter press oil	Oil purified with water solution (concentration 150 g/l and 0.5% by oil weight too alkaline)	
			Sodium hydroxide	Sodium aluminate salt alkaline solution
Acid number	mg KOH/	7.22	0.25	0.30
Peroxide number	g mmol/	20.2	9.6	11.4
35 Yellow color in units	kg -girl	70.6	12.0	25.0
	one -blue one	4.8	0.2	0.8
Residual amount of hydrocarbons	%. 10-7	38	28.2	30.1
Amount of 3.4 benzo(a)pyrene	µg/kg	5.2	1.2	0.8

Conclusion

In Uzbekistan, extraction and refining of oil from non-traditional vegetable oils, including soybean and sunflower seeds, has been shown to be very effective. At the end of the research, the use of new types of alkaline solutions in the refining of vegetable oils obtained from non-traditional oilseeds creates an opportunity to improve the technological processes of oil purification, as a result, oil enterprises achieve high economic efficiency.

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