

# EFFECT OF COMPOSITE SYSTEMS BASED ON HYDROPHOBIC SILICA ON THE MORPHOLOGICAL CHARACTERISTICS OF CAULIFLOWER

A.P. Holovan, PhD, researcher associate, T.V. Krupskaya, PhD, senior researcher,  
V.V. Turov Doctor of Sciences (Chemistry), professor

*Chuiko Institute of Surface Chemistry NAS of Ukraine, Kiev, 03064, 17, General Naumova Str,  
[alyusik2001@ukr.net](mailto:alyusik2001@ukr.net)*

The ability of hydrophobic silica AM-1 to easily stick on the seed surface [1], allows it to be used in composite systems for pre-treatment seed processing, as a carrier of trace elements, growth regulators, mineral and organic fertilizers, as well as nanofungicides.

The aim of this work was to compare the morphological characteristics of cauliflower sprouts of the variety "Snowball", the seeds of which, were pre-treated using composite materials based on hydrophobic silica AM-1 with the content of mineral (AM-1/min) or organic (AM-1/org) component.

Table 1. Morphological characteristics of cauliflower sprouts varieties "Snowball"

Sample	Energy of germination, %	Germination, %	Stem length, cm	Root length, cm	Diameter of leaf plate, cm
Control	50,0%	75,0%	3,5	3,0	1,0
AM-1/org	<b>60,7%</b>	67,9%	3,9	4,0	1,0
AM-1/min	28,6%	53,6%	3,5	3,7	<b>1,2</b>
AM-1	42,9%	<b>82,1%</b>	<b>4,5</b>	4,0	1,0

The highest germination energy is observed for seeds treated with the AM-1/org composite material, and germination is observed for seeds treated with the initial AM-1 (Table 1). It can also be noted the length of the root of the sprouts is almost 1/3 longer in all the studied samples, except for the control, which may be due to the influence of hydrophobic silica on the activation of the nutrients penetration through the cover of seed. The presence of the mineral component in the composite has a positive effect on the length of the stem and the size of the leaf plates of the shoots, which in turn will contribute to the formation of large inflorescences.

Thus, the optimal composition of the composite for pre-sowing treatment of cabbage seeds should contain organic and mineral components, besides AM-1, to increase the germination energy of seeds and stimulate the morphological characteristics of the sprouts.

## References

1. Крупская Т.В., Головань А.П., Лупашку Т. и др. Нанокompозитная система на основе танина и метилкремнезема для активирования развития семян // Доповіді НАН України. 2017. – 10. – С. 83-90.