

# INFLUENCE OF VARIOUS FORMS OF NITROGEN FERTILIZERS ON GROWTH AND DEVELOPMENT OF SOPHORA JAPANESE

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*The authors found that the growth and development of Sophora are more intensive when using ammonium sulfate and urea as compared to the version where ammonium nitrate was used as a nitrogen fertilizer. A similar regularity has been kept in the study of the influence of various forms of nitrogen fertilizers on the dry mass of fruit organs (buds and flowers) of Japanese Sophora.*

*The lowest accumulation of organic matter is also the biomass of medicinal plant raw material of Sophora Japanese noted when using, as a nitrogen fertilizer, ammonium nitrate.*

*Thus, the forms of nitrogen fertilizers significantly affect the growth and development of Japanese Sophora, among which urea, especially ammonium sulfate, was the best form.*

**Key words:** nitrogen, phosphorus, urea, ammonium sulfate, ammonium nitrate, sulfur, buds, biomass, coloured, potassium.

**Introduction:** It is known that an increase in the yield of agricultural crops, including Japanese Sophora, is associated with increased nutrition.

Mineral nutrition – is one of the main regulatory factors of the environment, with an area which can achieve greater productivity of plants.

The biology of Japanese Sophora development has been studied quite well. However, the role of nitrogen, phosphorus, potassium and especially sulfur in the metabolism, growth, development and biosynthesis of biologically active substances with Sophora of Japanese is not clear enough.

The importance of many elements of mineral nutrition in the vital activity of most agricultural plants has been studied quite well (M.A. Belousov, 1965, N.P. Malinin, P.V. Protasov, 1957, T.P. Pirakhunov, 1977, et al.).

For example, many studies have been devoted to the study of nitrogen importance in the life of cotton in the growth, development, metabolism, and productivity (Tsivinskii, 1937, Golodkovsky, 1937; Mukhamadzhanov, Pirakhunov, Salohutdinov, 1968; Yarovenko, 1969; Belousov, 1975, et al.).

However, the influence of various forms of nitrogen fertilizers on the growth, development, productivity and metabolism of Japanese Sophora in different soil conditions of Uzbekistan has not been studied sufficiently.

**Methods of research:** Japanese Sophora plants were grown at the experimental station of the Tashkent State Agrarian University and in the experimental section of the Tashkent Pharmaceutical Institute. In each term of the determinations in the plots of the experimental section, 7-10 typical plants were cut from each variant, which were then dried in a thermostat at a temperature of 105°C to constant weight and weighed.

**Results of the research.** It should be noted that the forms of nitrogen fertilizers significantly affect the growth and development of Japanese Sophora (Table 1).

Table 1

**The height of the main stem, depending on the forms of nitrogen fertilizers (cm). Vegetative experiments.**

№	Variant name	Phases of development			
		Beginning of budding	budding	Flowering	Seed ripening
1	Control (without fertilizers)	40,6	42,7	44,6	45,7
2	P+K (background)	42,8	48,9	52,5	54,2
3	NH <sub>4</sub> NO <sub>3</sub>	54,7	61,8	63,6	66,5
4	CO(NH <sub>2</sub> ) <sub>2</sub>	56,8	63,7	67,5	69,4
5	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	56,3	62,9	67,0	68,7

It is known that the final stress of photosynthesis is the accumulation of the biological mass of plants in connection with which the dynamics of accumulation of dry matter by plants of Japanese Sophora, depending on the forms of nitrogen fertilizers, can act as an important indicator in its characterization.

The results of our study indicate that the nature of the accumulation of dry matter by the Japanese Sophora largely depends on the forms of applied nitrogen fertilizers.

Differences in the regularity in the growth and development of Japanese Sophora, depending on the forms of nitrogen fertilizers, are repeated in the accumulation of the organic mass of this plant.

A greater accumulation of biological mass by Japanese Sophora was obtained using urea and ammonium sulfate. From them the variant with application of ammonium nitrate lagged considerably. The lowest accumulation of organic matter took place on the control version.

Thus, it was found that the growth and development of Sophora Japanese nitrogen fertilizers are more favorable when using ammonium sulfate and urea compared with the version where ammonium nitrate was used.

Under the control variant, where no mineral fertilizers were used, suppression of growth and development of Japanese Sophora was observed.

The determination of the biological mass of plants is evidenced by the fact that this index is the largest in the case of the application of nitrogen fertilizer in the form of urea, especially in the form of ammonium sulphate.

The lowest accumulation of organic mass was observed when using ammonium nitrate.

**Conclusions:** The growth and development of Japanese Sophora proceed more favorably with the use of ammonium and urea sulphate compared to the version where ammonium nitrate was used.