



Growth and Development Biology of *Crotalaria* (*Crotalaria Juncea* L.) Plant

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Abstract: This paper provides valuable information on the growth and development biology of *crotalaria* (*Crotalaria juncea* L.), recording the growth and development of the plant through phenophases.

Keywords: stem, root, seed, fodder.

In the world, special attention is being paid to the development and regular improvement of agrotechnology for the cultivation of non-traditional leguminous grain, fodder and siderate crops that meet the demand of the population for food and livestock fodder and increase soil fertility. One such plant is *Crotalaria juncea* L., a short-day plant that is sensitive to changes in light. Prolonged light retards plant development, relatively late flowering and shedding of flowers, resulting in an extended growing season. *Crotalaria juncea* L. is an annual fodder plant belonging to the Fabaceae family, *Crotalaria* genus, characterized by fast growth, branching, abundant and beautiful flowers. The stem is erect, grows up to 2-3 meters in height, strongly branched, the stem is light green and hairy. The leaves are lanceolate, arranged alternately on the stem, covered with hairs on both sides. The flowers are yellow and it is a heat-loving plant. Growth accelerates when the weather warms up. *Crotalaria juncea* seeds are bean-shaped, large, black and gray, 0.5-0.7 mm long and 0.4-0.5 mm wide. The weight of 1000 seeds is 39.6-41 g. A favorable temperature for seed germination in room conditions is 20-24°C, and at this temperature, 90-100% of seeds germinate in 1-2 days. At a lower temperature (16-18°C), germination was 58%. In field conditions, 70-80% of *Crotalaria juncea* seeds germinated depending on the soil climate.

The seeds of the plant ripen in the last decade of October, and it was found that they do not significantly lose their fertility for 4-5 years. From the morphobiological characteristics of the plant, during the virginil period, its seeds are sown in late April and early May. After sowing, the seeds will germinate after 2-5 days, depending on the characteristics of soil treatment and weather conditions. The average air temperature during this period is 18-26°C. After 5 days of germination, the leaves are green, their length is 0.7-1.8 cm, width is 0.4-0.6 cm, and the height of the grass is 0.5-1 cm. The root of the plant is characterized by slow growth in the first day of its life. At the end of the grass stage, when it is planted in the field, it deepens to 3-4 cm, and when it is planted in flat ground, it is 1.5-2.5 cm.

Juvenile stage. On the tenth day of May, the plant was 2 cm tall, the cotyledon leaves grew to 2-3 x 0.5-0.7 cm, and from that moment the first and second true leaves began to form. These simple leaves are green in color and have an elongated lanceolate shape. The root deepened to 6-7 cm and formed several lateral roots of 0.5-1 cm. The number and size of the leaf increases day by day. In the second and third decade of May, 4-6 leaves appear on one bush. The leaves are sessile, sessile on the plant. The size and quantity of the subsequent leaves will increase. At this stage, the size of the seed

palla leaf is 1.5-2 x 0.4-0.5 cm. A week later, the height of the plant is 12-15 cm, 6-8 leaves are formed in it, and the stage is 25-30 days.

At the beginning of June, rapid growth of the plant was observed. The plant was in an adult virginal state without going into an immature state. At this time, the air temperature is on average 25°C, the height of the plant reaches 30-40 cm, 2 seed leaves are stored in it, its size does not change (1.5-2 cm) and 10-12 leaves are formed. The root is an arrow root, deepens to 7-10 cm and the number of small lateral roots increases.

The adult virginal stage lasts 10-20 days. Thus, the total virginal period is 30-65 days of plant life. During this period, the immature stage (formation of lateral branches) was not observed. Lateral branches appear during the generative period. In the second decade of June, 5-6% of plants begin to bud. Up to 6 buds appear on each bush. The height of the flowering bush is 40 cm, and 2-4 side branches have appeared. Their length is 11-20 cm, up to 24 leaves are formed. In the third decade of June, the height of the plant is 45-50 cm, in some bushes it is 70-80 cm, and 6-7% of the bushes are flowering, and the rest are in the budding phase.

The size of the leaf plate is much larger, its length is 6-8 cm, and its width is 1-2 cm. The number of leaves on the main stem is up to 30. It was found that the taproot was 7-10 cm deep in most of the bushes, and 10-14 cm deep in some bushes. At the end of June, the growth rate of the plant is very fast. Average daily growth reaches 2-3 cm. The height of the main stem is 100-115 cm in some bushes, each of these bushes produces 3-6 green pods. The size of the pod is 0.5-2 x 0.5-1 cm, and up to 8 seeds have begun to form inside it. The number of opened flowers in each bush is 3-5. Flowers and pods begin to appear on the top and side branches of the main 1st order branch of the plant. From this moment on, in each bush of *Crotalaria juncea*, simultaneous emergence of bud, flower and fruit, as well as the shedding of the seed stage can be observed. So, the seed lives in the plant for 50-60 days, the order of branching is in 4 orders, I-order 85-100 cm, II-order 45-60, III-order 40-60 cm, IV-order 10-15 cm. Mainly II-III-IV branches bloom. Bud formation was observed in each leaf axil without leaf shedding. It should be noted that in June-July, not a single leaf of the plant is shed and is kept green.

In August, it was observed that the growth and development of the plant was very accelerated. The average height of the stem can reach 180-220 cm, and the highest can reach 250-290 cm. Mesotonic and acrotonic branching was observed in most of the bushes, and bazeton branching type was observed in some bushes. The best growth and branching of the plant occurs in June-July, pod fruit formation occurs in August, and the fruit fully ripens in the second and third decade of October.

Therefore, the *Crotalaria juncea* plant is of great importance in animal husbandry and national economy, and as a result of the accumulation of nodule bacteria in its roots, it was also observed in experiments that it increases soil fertility.

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