

The Development of the Root System of the Genus Astragals Species in Southern Kazakhstan

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Abstract

Root - the most important vegetative plant organ with a complex morphology and structure multiple functions in communication with the underground plant components of the environment. The development of the root system of 3 species of *Astragalus* in ontogeny, studied in the south of Kazakhstan. The root of *Astragalus turczaninovii* seedlings in the sowing (April) clearly expressed rod length of 14-17 mm. In juvenile plant root length of 16-21 mm, lateral roots 5 mm. On hypocotyl marked transverse folds and wrinkles, which is a sign of the root retraction.

Keywords: Root system; Genus astragals species; Vegetative plant organ

Introduction

In the immature state the length of taproot 13-14 cm, developed short lateral roots (5-7 cm) of the first order. By the end of the first year the plant is growing in the immature state, the main root is 25-30 cm in the horizon - A (sandy loam), at a depth of 6-7 cm from the soil surface developed lateral roots, length 5-6 cm, the root of *A. turczaninovii* grows slowly in the state, but in the adult vegetative ahead of other species. The root of the young plant generative core, length 75-80 cm penetration in the sun horizon (loamy). At a depth of 5-7 cm depart first lateral roots. The number of lateral roots is less than 8. They extend to 25-37 cm in horizon B2 (compacted sandy loam) at a depth of 30-40 cm 3 species of *Astragalus* [1].

Thus, the young generative state of the main root is located in the loamy soil horizon and reaches a depth of 80.0 cm, the side in the sandy loam horizon. The main root of the middle-plant reaches a length of 90.0 cm, penetrating the plaster sun horizon. The upper part of the taproot thicker to 0.8 cm at a depth of 5-30 cm. In loamy B2 horizon of the main root of the roots extend to 142 order. The old-age plant main root length of 130.0 cm, with a diameter of 1.1 cm root collar, girth area 1.1-1.3 m². It reaches to the horizon CI (gypsum layer), where the middle part of it dies. Two lateral roots - of the order of (10-11) arranged horizontally within the horizon B2 and BC [2].

Astragalus root system refers to the rod-like fibrous. The conditions in the south of Kazakhstan *A. turczaninovii* in generative period of ontogenesis, universal type of root system, the root system is concentrated in the sandy loam and loamy B2, the CK horizons, but the main root is able to penetrate the gypsum horizon CI. The main root in step G3 starts to die off in the seventh year of vegetation [3].

The root of *Astragalus alopecias* seedlings in the sowing (April) clearly expressed core, 18-20 mm in length. In juvenile plant taproot length of 60-72 mm. At a depth of 6 cm formed lateral roots of the first order of 5 mm long. In the immature period, the length of the main taproot of 8-10 cm, at a depth of 4-5 cm, 3-4 laid horizontal lateral roots that penetrate into the horizon A (sandy loam) at a depth of 4-5 cm in adult vegetative state taproot alopecias. Deepened to 19.0-21.0 cm in horizon B2 (compacted sandy loam), the length of lateral roots 10-15.0 cm [4].

Young generative plants develop a taproot, stay vertically to a depth of 80-85 cm, in the horizon of the sun. Sinking apex persists. At a depth of 20 cm in horizon BI first lateral roots depart. The main area

of proliferation of lateral roots is at a depth of 20-60 cm from the soil surface in sandy loam horizon B2. Lateral roots are few and 4. They extend in the B2 horizon (compacted sandy loam) and the sun (light loam), mainly horizontal, deep into the soil horizon gipsirovannuyu - CK (plaster coat) [5].

At the middle-upper part of the generative plant taproot thickened up to 6 cm penetration depth of the main root 110.0-120.0 see in the horizon the CK. At a depth of 40.0 cm in sandy loam horizon - the sun from the main roots extend to 6-7 2 orders and sight roots, length 30-50.0 cm in old-age plants apical and middle part of the main root is dying at a depth of 80,0 cm, but the total length of the roots to a depth of 170 cm with 6-8 II of the order of roots penetrating the horizon C1 (detrital dense layer), with the girth area of 1.4-1.6 m² [6].

Phonological observations allow us to establish inter-conditionality of the rhythm of development of plants and the environment. Phenophases morphologically expressed in the appearance of plants on certain organs: kidneys, leaves, buds, flowers, fruits, closely linked to the changes within the plant, depending not only on their genetic characteristics, but also on external conditions.

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