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Article

Perennial Dicotyledonous Weeds Occurring in Peanut (Arachis Hypogaea L.) Crop Fields

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Abstract: This article analyzes the species composition, morphological characteristics, and bioecological features of perennial dicotyledonous weeds occurring in peanut (*Arachis hypogaea* L.) agrocenoses. Their biological development, distribution patterns, and competitive ability were evaluated. The study indicates that deep root systems and high ecological adaptability enhance weed persistence and adversely affect peanut productivity. The findings provide a scientific basis for effective weed identification and management in peanut agrocenoses.

Keywords: peanut, perennial dicotyledonous weeds, agrocenosis, bioecological characteristics, morphological traits, species composition, vegetative propagation, weed management.

Introduction

Peanut is one of the important leguminous crops used for food and oil production. In the Republic of Uzbekistan, expanding the area under this crop and achieving high productivity require the scientific organization of agrotechnical measures [1]. One of the main factors limiting productivity in peanut agrocenoses is weeds, which compete with the crop for nutrients, moisture, light, and growing space [2].

Perennial dicotyledonous weeds are distinguished from other weed species by their strong root systems, ability to reproduce vegetatively, and ecological adaptability. Due to their long-term persistence in agrocenoses, they negatively affect the growth, development, and productivity of peanut and reduce the effectiveness of weed management measures [3].

Studying the species composition and biological characteristics of perennial dicotyledonous weeds occurring in peanut crops is of significant scientific and practical importance for determining their distribution patterns and developing effective control measures [4].

The objective of this study was to determine the species composition of perennial dicotyledonous weeds occurring in peanut agrocenoses, describe their morphological characteristics, and evaluate their distribution patterns [5].

Materials and Methods

The study was conducted to identify perennial dicotyledonous weed species occurring in peanut (*Arachis hypogaea* L.) agrocenoses and to characterize their morphological and bioecological features. Field observations were used to identify weed species occurring within peanut crop fields and to record their distribution under different agroecological conditions.

Weed species were identified on the basis of their morphological characteristics, including stem structure, leaf arrangement and shape, flower and inflorescence characteristics, fruit and seed morphology, and root-system development. The identified species were classified according to their botanical families and biological life forms. The bioecological assessment included analysis of flowering and seed-production periods, vegetative and generative reproduction characteristics, root-system development, ecological adaptability, and distribution within agricultural fields. Information on the geographical distribution of the identified species in Uzbekistan was also considered.

The collected observations were analyzed descriptively to determine the main morphological and biological characteristics of the perennial dicotyledonous weeds occurring in peanut agrocenoses. The resulting species information was used to assess their potential competitive effects on peanut crops and to identify implications for weed monitoring and integrated weed management.

Results

1. Turkestan spurge is a perennial weed belonging to the family Euphorbiaceae. Its natural distribution range includes Central Asia and adjacent regions, including Iran, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, and the Xinjiang region of China. The plant is usually 5–17 cm tall, with an erect, cylindrical, simple, or occasionally branched and well-leaved stem. The leaves are simple, three-veined, ovate or broadly elliptic in shape, while the lower leaves are characterized by an opposite arrangement [6]. The fruit is a three-lobed capsule, and the seeds are ovate, smooth, and have greenish spots. The plant flowers from April to June and produces seeds during this period. It occurs mainly as a weed in rainfed crop fields and is distributed in the Fergana Valley and Samarkand Region of Uzbekistan [7].

Figure 1. Morphological Characteristics and Seeds of the Prostrate Spurge (*Euphorbia prostrata*)

2. Prostrate cinquefoil is a perennial weed belonging to the family Rosaceae. The plant has an erect, simple or branched stem, usually reaching a height of 10–50 cm. The basal leaves are long-petiolate and consist of 2–5 pairs of pinnate segments, playing an important role in the vegetative development of the plant. The stem leaves are arranged alternately, and their shape and size may vary to some extent depending on growing conditions. The flowers are yellow and occur singly in the leaf axils [8]. The fruit is an achene with a smooth surface and a dark gray color, while the seeds are small, dull, and dark gray. The plant flowers from May to July, and its fruits mature during this period. It occurs mainly as a weed along roadsides, in irrigated crop fields, and in agrocenoses with sufficient

moisture. It is widely distributed throughout almost all regions of the Republic of Uzbekistan, where it grows among agricultural crops and competes with cultivated plants for nutrients, moisture, and light [9].

Figure 2. Morphological Characteristics and Seeds of *Potentilla supina* L. (Prostrate Cinquefoil)

3. Camelthorn is a perennial weed species belonging to the family Fabaceae. The plant has an erect, strongly branched, and thorny stem, usually reaching a height of 50–130 cm. The branches are smooth, and the leaves are densely arranged. The lower thorns are hard, reaching 7–15 mm in length and 1–1.5 mm in thickness. The fruit is a hairless, curved, indehiscent legume, usually containing 4–7 seeds [10]. The root system is very deeply developed and may reach a depth of up to 10 m in some cases, indicating the plant's high adaptation to drought conditions. The flowers are red or purple and form inflorescences of 3–8 flowers. The plant flowers from May to September and produces seeds during this period. It occurs mainly as a weed in irrigated crop fields and is distributed in the Tashkent, Jizzakh, Surkhandarya, Kashkadarya, Bukhara, Samarkand, and Fergana regions [11].

Figure 3. Morphological Characteristics and Pods of Smooth Licorice (*Glycyrrhiza glabra* L.)

4. Smooth licorice is a perennial weed species belonging to the family Fabaceae. The plant usually reaches a height of 45–120 cm. The leaves are compound and imparipinnate, reaching a length of 9–15 cm. The leaflets are arranged in an oblong-ovate or lanceolate shape. The inflorescence is a loose raceme, 7–8 cm long. The flowers are light purple or bluish-purple. The fruit is a legume, usually containing 2–7 seeds. The plant flowers from April to July and produces seeds from July to September. It occurs mainly as a weed along irrigation canals, in melon and gourd fields, and in cotton agrocenoses, and is widely distributed throughout all regions of the Republic of Uzbekistan [12].

Figure 4. Morphological Characteristics and Seeds of Field Bindweed (*Convolvulus arvensis* L.)

5. Field bindweed is a perennial rhizomatous weed belonging to the family Convolvulaceae. The plant produces a long rhizome, from which numerous stems develop that creep along the ground or twine around other plants. The stems are usually 30–100 cm long and may exceed 1 m under favorable conditions. The leaves are arranged alternately, are ovate-lanceolate or sagittate (arrow-shaped) in shape, and have entire margins [13]. The flowers are white or light pink, funnel-shaped, and usually occur singly in the leaf axils, sometimes in groups of 2–3. The fruit is a smooth, ovoid or spherical capsule, usually containing 4 seeds. The seeds retain their viability in the soil for many years, often 20–30 years and, in some cases, even longer. The plant flowers and produces seeds from April to September. Field bindweed is widely distributed in irrigated crop fields, gardens, along roadsides, and on abandoned lands, and occurs in almost all regions of Uzbekistan [14].

Figure 5. Morphological Characteristics and Seeds of Clustered Dock (*Rumex conglomeratus* Murr.)

6. Clustered dock is a perennial weed species belonging to the family Polygonaceae. The plant has a reddish stem that is widely branched and usually reaches a height of 50–100 cm. The root system is well developed, with thickened formations observed in the root crown region. The flowers are small and densely arranged in branched inflorescences. The plant flowers from May to June, and its seeds fully mature from June to September. It occurs mainly as a weed around crop fields and in moist areas and is widely distributed in the Namangan, Fergana, Syrdarya, Samarkand, Tashkent, Jizzakh, and Bukhara regions [15].

Figure 6. Morphological Characteristics and Seeds of Curly Dock (*Rumex crispus* L.).

Discussion

The identified perennial dicotyledonous weeds demonstrate several biological characteristics that can contribute to their persistence in peanut agrocenoses. In particular, well-developed root systems, vegetative propagation, long-term seed viability, and adaptation to different moisture conditions may allow perennial weeds to survive agricultural disturbances and compete effectively with cultivated plants.

The observed differences in morphological structure and distribution among the identified species indicate that weed management should be based on species-specific biological characteristics. Species with deep or well-developed root systems may require control measures that reduce both above-ground growth and underground regenerative structures, while species with persistent seeds require long-term monitoring and prevention of seed replenishment.

The distribution of the identified weeds across irrigated fields, rainfed agricultural areas, roadsides, and other disturbed habitats also indicates that their occurrence is closely associated with agricultural and environmental conditions. Consequently, regular field monitoring is important for detecting perennial weeds at an early stage and selecting appropriate integrated management measures.

The results further suggest that morphological and bioecological identification should form an important component of integrated weed management in peanut production. Accurate identification of dominant perennial species can help determine the appropriate timing and combination of agronomic, mechanical, biological, and chemical control measures.

Perennial dicotyledonous weeds occurring in peanut agrocenoses are characterized by a high degree of adaptability based on their morphological and bioecological characteristics. These species compete with the cultivated crop for nutrients, moisture, and light due to their strong root systems and ability to persist in agrocenoses for long periods. The morphological characteristics and distribution patterns of the weed species identified in the study are of significant scientific and practical importance for their timely identification and the planning of effective control measures. The findings provide a scientific basis for organizing weed monitoring in peanut crops and improving integrated weed management systems.

Conclusion

The study identified six perennial dicotyledonous weed species occurring in peanut agrocenoses and characterized their principal morphological, biological, and distributional features. The identified weeds demonstrate substantial ecological adaptability and possess characteristics that may increase their persistence in agricultural fields and their competitive effects on peanut plants. The results indicate that well-developed root systems, vegetative propagation, persistent seeds, and adaptation to different environmental conditions are important factors contributing to the continued occurrence of

perennial weeds. Their distribution across agricultural fields and other disturbed habitats further emphasizes the importance of systematic monitoring. Effective management of perennial dicotyledonous weeds in peanut agrocenoses should therefore be based on accurate species identification, knowledge of their biological characteristics, timely monitoring, and the integration of appropriate control measures. The findings provide a scientific basis for improving weed monitoring and developing more targeted integrated weed-management strategies in peanut production

REFERENCES

[1] N. M. Turdiyeva and O. X. Mustafayeva, "Distribution of weeds in crop fields and methods of their control," *Agrokimyo va O'simliklarni Himoya Qilish Jurnali*, no. 3, pp. 45–49, 2021.

[2] R. L. Zimdahl, *Fundamentals of Weed Science*, 4th ed. Amsterdam, The Netherlands: Academic Press, 2013.

[3] L. G. Holm, J. V. Pancho, J. P. Herberger, and D. L. Plucknett, *World Weeds: Natural Histories and Distribution*. New York, NY, USA: John Wiley & Sons, 1997.

[4] A. N. Sennikov, Ed., *Flora of Uzbekistan*, vol. 1. Tashkent, Uzbekistan: Fan Publishing House, 2016.

[5] A. Qurbonov and A. Yuldashev, *Weeds in Agricultural Crops and Methods of Their Control*. Tashkent, Uzbekistan: Fan, 2019.

[6] M. A. Ross and C. A. Lembi, *Applied Weed Science: Including the Ecology and Management of Invasive Plants*, 3rd ed. Upper Saddle River, NJ, USA: Pearson Prentice Hall, 2009.

[7] P. Sheoran, V. Sardana, A. Kumar, A. Mann, and S. Singh, "Integrating herbicidal and conventional approach for profitable weed management in groundnut (*Arachis hypogaea*)," *Indian Journal of Agronomy*, vol. 60, no. 4, 2015, doi: 10.59797/ija.v60i4.4496.

[8] A. K. Patra and B. C. Nayak, "Integrated weed management in rainy-season groundnut (*Arachis hypogaea*)," *The Indian Journal of Agricultural Sciences*, vol. 74, 2014.

[9] S. Srinivasan, A. P. Srinivasaperumal, A. Sundari, and S. Dinakar, "Effect of integrated weed management on growth and yield of irrigated groundnut (*Arachis hypogaea* L.)," *International Journal of Research in Agronomy*, vol. 7, no. 2, pp. 425–427, 2024, doi: 10.33545/2618060X.2024.v7.i2f.335.

[10] S. N. Chaudhari, B. S. Jordan, W. S. Grey, J. W. Prostko, and W. K. Jennings, "A systematic review of chemical weed management in peanut (*Arachis hypogaea*) in the United States: Challenges and opportunities," *Weed Science*, vol. 72, no. 1, pp. 5–29, 2024, doi: 10.1017/wsc.2023.71.

[11] O. Saidmamatov, U. Matyakubov, I. Rudenko, V. Filimonau, J. Day, and T. Luthe, "Employing ecotourism opportunities for sustainability in the Aral Sea region: Prospects and challenges," *Sustainability*, vol. 12, no. 21, Art. no. 9249, 2020, doi: 10.3390/su12219249.

[12] P. Bardwaj, N. Bhardwaj, and K. Kant, "Effect of integrated weed management practices on weed biomass and weed control efficiency in summer groundnut (*Arachis hypogaea* L.)," *Journal of Pharmacognosy and Phytochemistry*, vol. 8, no. 6, pp. 970–971, 2019.

[13] S. Shehu, M. B. B. M. [et al.], "Growth analysis and yield of two varieties of groundnut (*Arachis hypogaea* L.) as influenced by different weed control methods," *Agriculture and Biology Journal of North America*, 2015.

[14] R. Gürbüz, R. Taşkın, and H. Alptekin, "Weed control efficiency and yield response of peanut (*Arachis hypogaea* L.) to different herbicides," *Scientific Reports*, vol. 16, Art. no. 19831, 2026, doi: 10.1038/s41598-026-42773-9.

[15] K. Narwal and B. S. Yenagi, "Integrated herbicide-based weed management practices for improving growth, yield attributes and crop safety in groundnut (*Arachis hypogaea* L.) under

rice–groundnut cropping system," *Journal of Scientific Research and Reports*, vol. 32, no. 4, pp. 297–307, 2026, doi: 10.9734/jsrr/2026/v32i44098.