ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE

ISSN: 2692-515-x, Impact Factor: 9.23

American Academic publishers, volume 6, issue 01,2026

Journal: https://www.academicpublishers.org/journals/index.php/ijai

SELECTION OF GREEN PEAS VARIETIES RESISTANT TO STEM BEDDING FROM A CONTROL NURSERY

Mamatqulova S.U[1]**.,** basic doctoral student

Nahalbaev J.T[1]**.,** Doctor of Philosophy in Agricultural Sciences (PhD)

Mamaraximov B.I[1]., Doctor of Agricultural Sciences, professor

Lalmikor Agricultural Research Institute[1]

Abstract: This article presents information on the determination of the resistance of pea samples from a control nursery to stem lodging using field evaluation methods and its recommendation for study as a starting point for further stages of the selection process

Keywords: pea, variety sample, control nursery, stem lodging, resistance, selection, evaluation

Blue pea is an annual, self-pollinating plant. Its varieties differ sharply from each other by one, two or three pairs of contrasting (alternative) characters. Blue pea is easy to cross, and is a convenient object for genetic research due to the inheritance of contrasting characters in them. [7]

This plant is a very convenient plant for genetic research due to its well-differentiated morphological characters and the presence of only seven pairs of chromosomes (2n = 14). The use of wild species to increase genetic diversity in the creation of new varieties of blue pea allows introducing a new character into the selection process. [5]

In the early 1980s, the task of creating varieties resistant to lodging in the selection of blue pea plants was partially solved by introducing dwarf and semi-dwarf varieties into production. Examples of these varieties include Pannispeliy, Gribovsky11, Viola, and others. The height of the stem of these varieties, even in years with high humidity, did not exceed 80-90 cm. These varieties were 30-50 cm shorter than the well-known early variety 301. [3]

Currently, the creation and introduction into production of varieties resistant to lodging remains an important task in the selection of green peas. New green peas varieties created for the irrigated lands of Uzbekistan require lodging resistance. One of the main problems facing breeders around the world today is the creation of varieties of green peas resistant to lodging in irrigated areas. When lodging, the plant stem bends or breaks. This, together with the loss of grain, creates conditions for a decrease in grain quality and the development of various diseases. At the same time, it creates many difficulties in mechanized harvesting of the formed crop, and also causes a large part of the crop to remain in the field. [6]

In breeding, there is a negative correlation between stem height and lodging resistance. It is mentioned in the literature that the height of the green pea plant should be short (up to 50 cm), semi-short (51-80 cm), medium tall (81-150 cm) and tall (151-300 cm). [1]

Losing is one of the factors that causes a decrease in the yield of many cereal and legume crops. This factor can even lead to a 50% yield loss in high-yielding rice plants. Significant lodging slows down transpiration - the movement of organic and inorganic substances in the xylem and phloem layers of the stem, while lodging increases the likelihood of the stem being closer to wet soil and increases the risk of various diseases that negatively affect grain quality. [2]

ORIGINAL ARTICLE
INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE
ISSN: 2692-515-x, Impact Factor: 9.23
American Academic publishers, volume 6, issue 01,2026
Journal: https://www.academicpublishers.org/journals/index.php/ijai

In conclusion, we can say that studying and analyzing the tolerance of blue pea varieties in the control nursery to lodging, and on this basis selecting relatively resistant forms and recommending them for further stages of selection work will serve to sharply increase productivity.

Materials and methods. The experimental materials were 20 blue pea varieties studied in the control nursery of the Laboratory of Legume Selection and Seed Production of the Lalmikor Research Institute of Agriculture.

The resistance of the varieties in the control nursery to stem lodging was monitored during the growing season and evaluated according to the method given in the methodological manual "Methodology of State Variety Testing of Agricultural Crops, First Edition. Moscow-2019". [4] The resistance of varieties to stem lodging was assessed based on a scoring system from the time this symptom appeared during the growing season until harvest.

The evaluation criteria were as follows:

— varieties that do not lodge — 5 points;
— varieties that are lodged, but recovered or slightly lodged — 4 points;
— varieties that are moderately lodged — 3 points;
— varieties that are heavily lodging, making mechanized harvesting difficult — 2 points;
— varieties that are lodging long before harvesting and are unsuitable for mechanical harvesting — 1 point.

Evaluation of resistance to lodging and grain shedding of blue pea cultivars and systems in the control nursery. Grain 2025

№	Variety name	**Resistance to lodging, points**		Productivity, s/ha		
		At the beginning of ripening	Before the harvest	I	II	Average
1	Vostok-84 (andoza)	3	3	5,9	5,7	5,8
2	NP G-L XKN 2025/01	5	5	7,9	7,5	7,7
3	NP G-L XKN 2025/02	4	3	3,3	3,3	3,3
4	NP G-L XKN 2025/03	3	3	4,6	4,4	4,5
5	NP G-L XKN 2025/04	5	5	9	8,6	8,8
6	NP G-L XKN 2025/05	3	3	5,3	5,1	5,2
7	NP G-L XKN 2025/06	4	4	6,1	6,3	6,2
8	NP G-L XKN 2025/07	5	5	8,8	8,5	8,7
9	NP G-L XKN 2025/08	3	3	7,3	7,1	7,2
10	NP G-L XKN 2025/09	5	5	7,6	7,4	7,5
11	NP G-L XKN 2025/10	5	5	8	7,7	7,9
12	NP G-L XKN 2025/11	3	3	3,1	3,4	3,3
13	NP G-L XKN 2025/12	5	5	3,9	4,1	4
14	NP G-L XKN 2025/13	4	3	5,3	5,6	5,5
15	NP G-L XKN 2025/14	4	3	3,5	3,5	3,5

ORIGINAL ARTICLE
INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE
ISSN: 2692-515-x, Impact Factor: 9.23
American Academic publishers, volume 6, issue 01,2026
Journal: https://www.academicpublishers.org/journals/index.php/ijai

16	NP G-L XKN 2025/15	5	5	2,7	2,4	2,6
17	NP G-L XKN 2025/16	4	3	2	2,1	2,1
18	NP G-L XKN 2025/17	3	3	5,3	5	5,2
19	NP G-L XKN 2025/18	3	3	3,9	3,9	3,9
20	NP G-L XKN 2025/19	3	3	4	4,1	4,1

The Vostok-84 variety, which was presented as a standard variety, was rated 3 points for resistance to lodging at the beginning of ripening, and showed average resistance to lodging before harvest, which remained unchanged. Almost 50 percent of the 20 variety samples were rated 4-5 points, showing high resistance to lodging and indicating suitability for mechanized harvesting. In particular, the varieties NP G-L XKN 2025/01, NP G-L XKN 2025/07, NP G-L XKN 2025/07, NP G-L XKN 2025/09, NP G-L XKN 2025/10, NP G-L XKN 2025/12, NP G-L XKN 2025/15 showed high resistance to lodging until the end of the growing season. On the contrary, the varieties NP G-L XKN 2025/03, NP G-L XKN 2025/05, NP G-L XKN 2025/08, NP G-L XKN 2025/11, NP G-L XKN 2025/17, NP G-L XKN 2025/18, NP G-L XKN 2025/19 showed average resistance to stem lodging and were rated 3 points. Nevertheless, among the varietal samples, indicators of 2 and 1 points were not observed, and it was determined that there were no forms with strong resistance to lodging. When analyzing the average yield indicators, the grain yield among the varieties varied from 2.1 c / g to 8.8 c / g. The highest yielding varieties were identified as NP G-L XKN 2025/04 (8.8 s/g), NP G-L XKN 2025/07 (8.7 s/g), and NP G-L XKN 2025/10 (7.9 s/g), yielding significantly more than the standard variety Vostok-84 (5.8 s/g). It was also found that the varieties that showed strong resistance to stem lodging also had higher yield indicators. In particular, it was noted that the resistance to lodging was high in the NP G-L XKN 2025/01, NP G-L XKN 2025/04, NP G-L XKN 2025/07, NP G-L XKN 2025/10 varieties, with a score of 5, and relatively high yield indicators (7.9 s/g-8.8 s/g) until the end of the growing season.

Conclusion

The results obtained show that during the selection process, special attention was paid to the property of stem non-lodging, and most of the new varieties showed high resistance to lodging compared to the standard variety. This increases their efficiency in production conditions, especially in mechanized harvesting systems. These varieties allow harvesting without loss of yield even in adverse weather conditions. The NP G-L XKN 2025/01, /04, /07, /09, /10, /12, /15 20 varieties have a complex set of economically valuable traits and were assessed as promising for further selection stages.

References:

1. Abdukarimov D.T. Xususiy seleksiya. Toshkent – 2007. -341 b.
2. Котляр И.П., Ушаков В.А., Кайгородова И.М., Пронина Е.П.Селекция гороха овощного на технологичность. Овощи России. 2019. - С. 34-38.
3. Методика Государственного сортоиспитания селскохозяйственных култур. Выпуск. «Зерновые, крупянные, зернобобовые, кукурузе и кормовых култур» М., 2019.
4. M.Phisiological aspects of lodging. In: Sinceof rise. T.Matsuo, K.Kumazawa, R.Ishii, K.Ishihara, H.Hirata (eds) Food and Agricultura policy research Center,Tokyo, 1995.2:971-982.

ISSN: 2692-515-x, Impact Factor: 9.23
American Academic publishers, volume 6, issue 01,2026
Journal: https://www.academicpublishers.org/journals/index.php/ijai

5. Smykal P., Kenicer G., Flavell A.J. et al. Phylogeny, phylogeography and genetic diversity of the Pisum genus. Plant Genetic Resources: Characterization and Utilization. V. 9 (1): 2011. -P. 4–18.
6. Ярославцев А.А., Колчина Л.А., Алексанина Т.И., Тимофеев В.Н. Сравнительная оценка сортов гороха по урожайности и устойчивости к болезням. 2019. № 20 – Декабрь. 2019. -104 b.
7. G‘ofurov A.T., Fayzullayev S.S. Genetika. Toshkent-2010. 39-bet., Maqsudov Z.Y. Umumiy genetika. Toshkent-1980.164-165-b., Musayev D.A., Turdibekov Sh., Saidkarimov A.T., Almamatov A.S., Rahimov A.K. Genetika asoslari. Toshkent-2012. 16-b., Gulyayev G.V. Dubinin A.P. Seleksiya I semenavodstvo polevix kultur s osnovami genetiki Kolos Moskva-1980.C-54., Norboyev U.T., Tog‘ayeva M.B., Teshayeva D.R. Biologiya va genetika. Buxora-2023. 110-b.