

경기지역의 인삼 신육성 계통 4, 5년생의 생육특성

Growth Characteristics of Four and Five Years Old Ginseng(*Panax ginseng* C.A. Meyer) of New Lines in Gyeonggi Province

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Background

- This study examines the main growth characteristics, physiological stress, or diseases damage for 4- and 5-years old ginseng in the new lines cultivated in Gyeonggi for development of new lines of Ginseng

Methods and Results

- ❖ In Yeoncheon county Gyeonggi province, Eumseong 24, 25 and 26, which are two-years old seedling in the new line ginseng were transplanted in 7 lines × 9 rows (70 plants)/1.62^m in 2017 along with Gumpoong and Yeonpoong as the control lines while Eumseong 9 and 12 as well as Chunpoong as the control line were transplanted in the same way in 2016. The ginseng shading was installed with the front post of 170cm high and the rear post of 100cm high using the rear line while as the sun blocking material, the aluminum shade plate was used. As for the new growth lines of 4- and 5-years ginseng in the new growth line, the aerial parts of the ginseng (such as plant height, stem height, stem diameter and leaf length, etc.) and underground part of ginseng (such as root length, root diameter and root weight, etc.) were examined. In addition, the physiological stress such as the leaf discoloration, rusty root and root rot as well as the resistance against the disease were examined.
- ❖ It was found out that as for the aerial parts of 4-years old ginseng in test line, Eumseong 24, 25 and 26 were better in the growth than the control lines were while in 4-years old ginseng, Eumseong 9 and 12 were better in the growth than Chunpoong as the control line was.
- ❖ As for the root weight of the 4-years old ginseng for the underground part, Eumseong 24 and 25 were heavier in the growth than the control lines were while in 4-years old ginseng, Eumseong 9 and 12 were heavier n the growth than the control lines were while in 5-years old ginseng.
- ❖ The leaf discoloration did not happen to both 4- and 5-years old ginseng. As for the root rot, 4-years old Eumseong 24, 25 and 26 suffered less root rot in the same way as for the control line. 5-years old Eumseong 9 and 12 had root rot as much as the control line. 4-years old Eumseong 24, 25 and 26 have rusty root as much as the control line while as for 4-years old ginseng, Eumseong 9 showed a lot of rusty roots in the same way as the control line.

Conclusion

- ❖ Finally, considering the growth characteristics, physiological stress and root rusty of the aerial parts and underground parts of the ginseng, we selected Eumseong 24, 25 and 26 as the excellent lines for 4-years old ginseng, and Eumseong 12 as the excellent lines for 5-years old ginseng



Fig. 1. Growth of the underground part of 4-years old ginseng in growth line.



Fig. 2. Growth of the underground part of 5-years old ginseng in growth line.

Table 1. Growth of stem of 4- and 5 years old ginseng of tested variety and lines

Years	Line	Plant height (cm)	Stem length (cm)	Stem diameter (mm)
4	Gumpoong	62.5	40.8	7.7
	Yeonpoong	57.9	37.0	7.8
	Eumseong24	68.7	42.6	9.0
	Eumseong25	69.3	45.6	8.2
	Eumseong26	68.6	44.5	8.2
5	Chunpoong	45.3	28.7	8.9
	Eumseong9	47.5	35.2	9.4
	Eumseong12	49.2	30.0	7.6

Table 2. Growth of leaf of 4- and 5 years old ginseng of tested variety and lines

Years	Line	Leaf length (cm)	Leaf width (cm)	Petiole length (cm)	No. of petiole	SPAD
4	Gumpoong	19.2	7.5	10.9	5	34.3
	Yeonpoong	16.2	6.7	9.9	5	36.4
	Eumseong24	21.7	8.5	10.8	5	36.9
	Eumseong25	19.1	8.4	10.7	5	36.7
	Eumseong26	18.7	7.6	11.9	5	38.0
5	Chunpoong	23.9	6.4	8.5	5	36.1
	Eumseong9	26.0	7.5	8.7	5	39.7
	Eumseong12	15.1	6.2	8.3	5	37.5

Table 3. . Growth of underground part of 4- and 5 years old ginseng of tested variety and lines

Years	Line	Root length [cm]	Main root diameter [mm]	Raw root weight [g]	Root rot [0~9] [†]	Leaf discoloration [0~9] [‡]	Rusty root [0~9] [§]
4	Gumpoong	26.1	23.1b	34.3bc	2	0	1
	Yeonpoong	26.1	24.4 b	35.3bc	2	0	1
	Eumseong24	26.0	28.3 a	54.6a	0	0	1
	Eumseong25	25.5	24.6 b	41.0b	0	0	0
	Eumseong26	26.3	23.4b	34.1bc	1	0	1
5	Chunpoong	27.3a	22.8ns	36.9b	1	0	1
	Eumseong9	27.9a	24.0	41.5b	2	0	3
	Eumseong12	29.5a	27.2	53.4a	1	0	0

[†] Degree of root rot – 0 : no occur, 1 : under 1%, 3 : 1 ~ 10%, 5 : 10.1 ~ 30%, 7 : 30.1 ~ 50%, 9 : over 50.1%

[‡] Degree of leaf discoloration – 0 : no occur 1: under 1%, 3 : 1 ~ 10%, 5 : 11 ~ 25%, 7 : 26 ~ 40%, 9 : over 41%

[§] Degree of rusty root – 0 : no occur 1 : under 1%, 3 : 1 ~ 10%, 5 : 11 ~ 25%, 7 : 26 ~ 40%, 9 : over 41%.

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