

# 내고온성 참당귀 계통 선발을 위한 특성평가

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## Evaluation for selection of Heat Resistant Line of *Angelica gigas*(Cham-Dang-Gui)

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### Objectives

*Angelica gigas* is a perennial plant belonging to the Umbelliferae family. Dry roots are used for medicinal purposes, but they are weak at high temperatures, causing problems in yield. This study was carried out to evaluate the heat resistance for selection in lines of *Angelica gigas*(Cham-Dang-gui).

### Materials and Methods

Ten lines were used to select high-temperature-tolerant lines. According to the growth period, it was divided into seedling period and peak growth period and treated at high temperature. During the seedling period, they were treated at 45°C for 24 hours using a chamber, and survival rate and chlorophyll content were examined 7 days later. During the peak growth period, leaves withering rate and chlorophyll content were investigated after exposure to natural high temperatures from July to August rather than artificial high temperature treatment.

### Results

As a result of the survival rate and chlorophyll content survey, when selecting high-temperature-resistant lines, the two lines, K23-H09 and K23-H10, show the same tendency in the seedling stage and peak growth stage, and can be judged as high-temperature-resistant lines of *Angelica gigas* in the future.

Table 1. Agronomic traits in lines.

Traits	K23HR H01	K23HR H02	K23HR H03	K23HR H04	K23HR H05	K23HR H06	K23HR H07	K23HR H08	K23HR H09	K23HR H10	K23J 01
No. of leaves	3.7±0.5	3.5±0.3	3.6±0.5	3.1±0.3	3.6±0.5	3.4±0.5	3.1±0.3	3.2±0.2	2.8±0.4	3.3±0.2	2.7±0.5
Plant length(cm)	11.5±1.3	11.9±1.1	11.6±0.8	12±1.6	13.6±1.6	11.8±0.9	11.8±0.9	14±1.1	10.1±1.3	11.1±0.9	12.2±1.6

Table 2. Comparison of survival rate in lines.

survival rate(%)		K23HR H01	K23HR H02	K23HR H03	K23HR H04	K23HR H05	K23HR H06	K23HR H07	K23HR H08	K23HR H09	K23HR H10	K23J-01
seedling stage	1st	0	0	0	0	0	0	0	55	83	74	100
	2nd	0	0	0	0	0	0	0	62	96	95	100
growth stage		36	59	43	32	32	59	68	66	97	97	64

Table 3. Comparison of chlorophyll in lines .

SPAD value		K23HR H01	K23HR H02	K23HR H03	K23HR H04	K23HR H05	K23HR H06	K23HR H07	K23HR H08	K23HR H09	K23HR H10	K23J 01
seedling stage	1st	3.7b	5.5b	6.2b	7.4b	8.5b	7.0b	5.1b	25.1a	25.9a	27.4a	29.1a
	2nd	8.6bc	3.7cd	5.3bcd	6.1bcd	3.2d	10.2b	8.2bcd	23.8a	25.2a	22.7a	28.3a
growth stage		17.3c	17.0c	18.5bc	15.3c	15.9c	16.7c	17.9bc	21.3b	27.7a	29.3a	18.4bc

\* DMRT,  $P < 0.05$

Table 4. Degree of damage to leaves by heat of *Angelica gigas*.

Degree (1~9)		K23HR H01	K23HR H02	K23HR H03	K23HR H04	K23HR H05	K23HR H06	K23HR H07	K23HR H08	K23HR H09	K23HR H10	K23J 01
growth stage		4.5ab	4.2ab	4.0ab	4.7a	4.6ab	4.1ab	3.6ab	3.3b	2.1c	1.8c	3.8ab

Degree 0:no damage: 1:wilting or dried slightly on leaf tip:3:surface area 1/4 dried:5:surface area 1/4 ~ 1/2 dried

\* DMRT,  $P < 0.05$

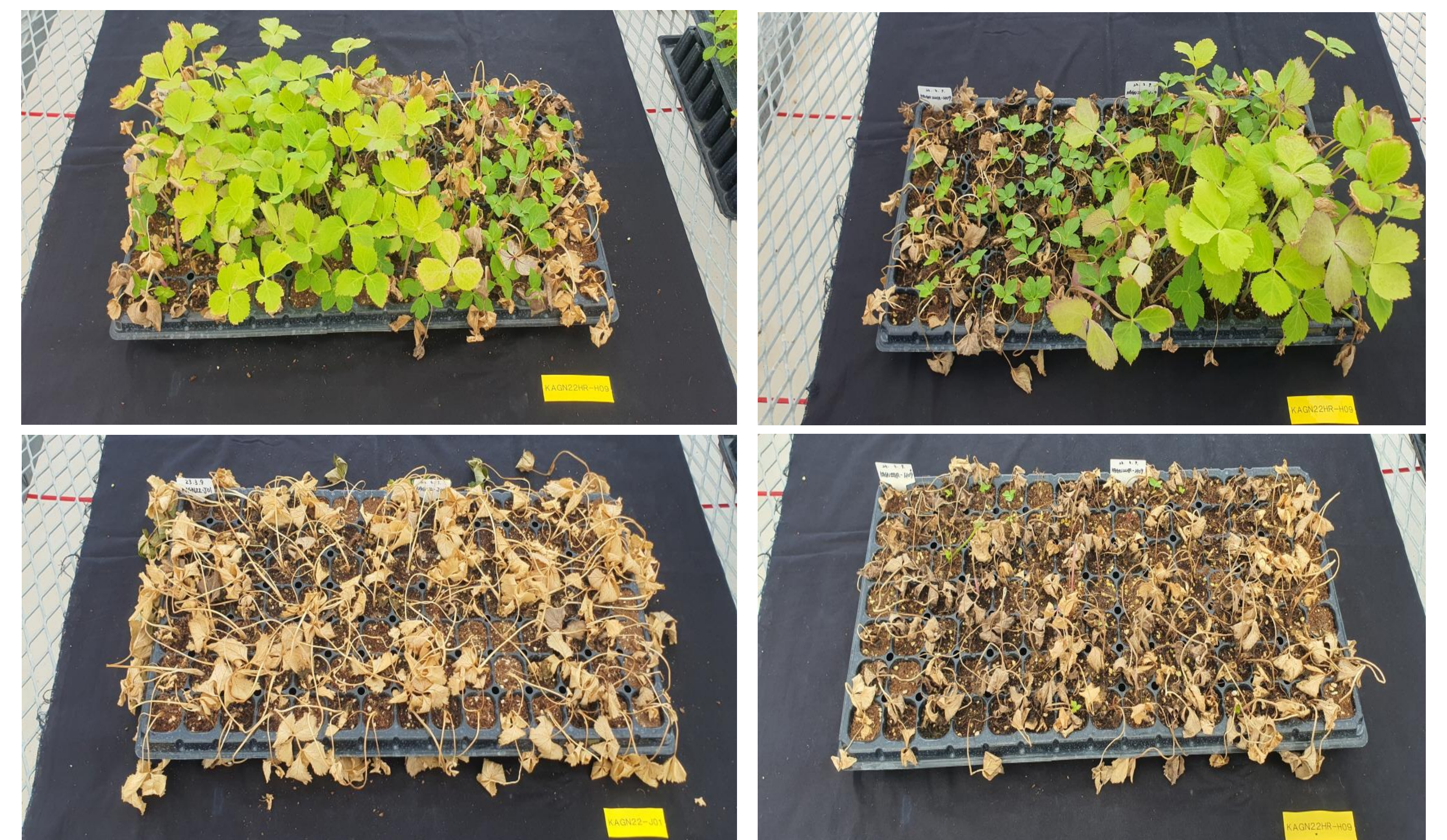


Fig 1. Comparisons of heat resistance in seedling stage (resistance line ↑, sensitive line ↓)

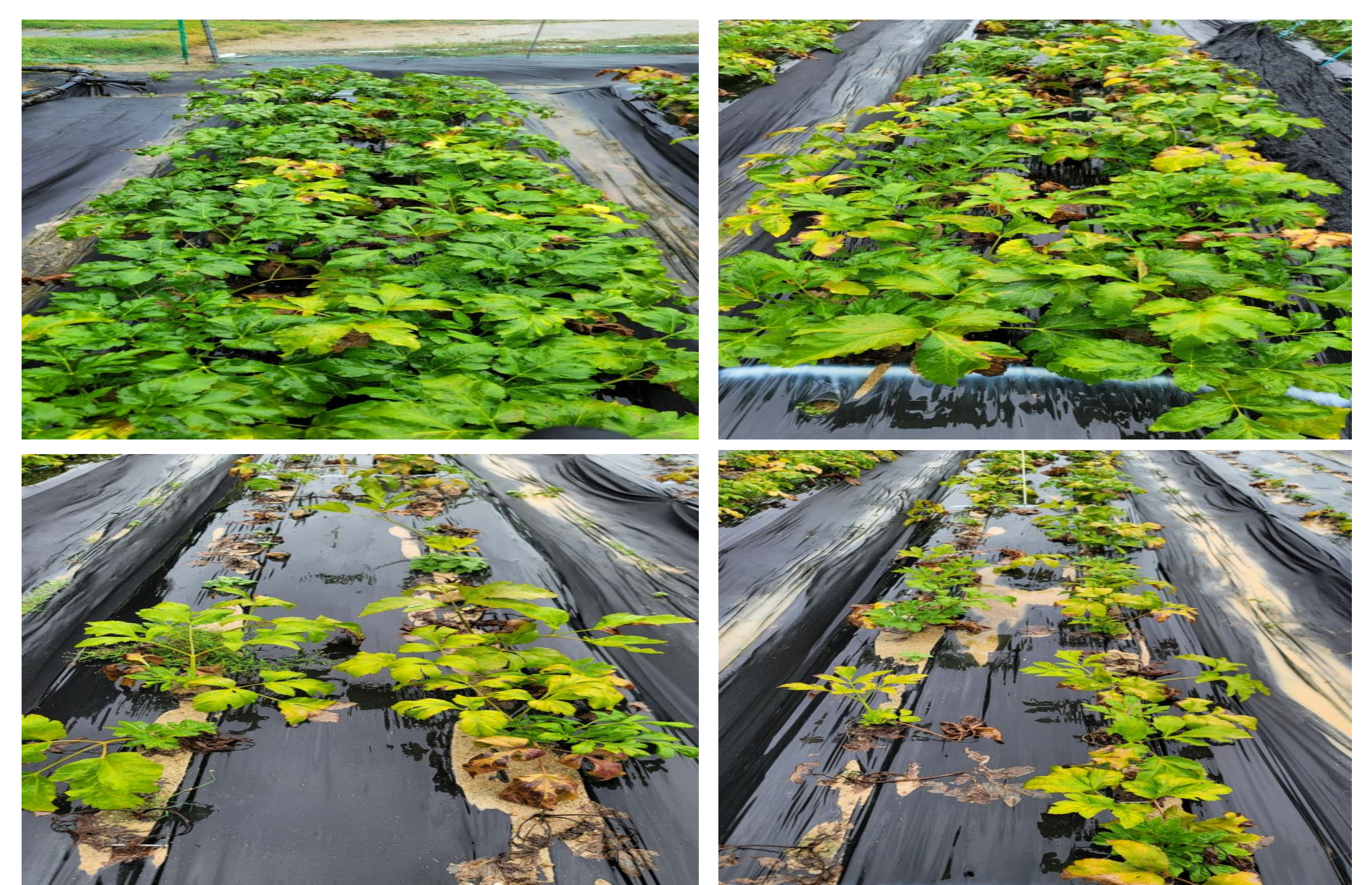


Fig 2. Comparisons of heat resistance in peak growth stage (resistance line ↑, sensitive line ↓)