



Study on Shading Cultivation for Mass Growth of *Filipendula glaberrima*

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Introduction

Filipendula glaberrima is a native plant of Korea. This plant has analgesic and antispasmodic effects in traditional knowledge, and effect on moisturizing, wrinkle improvement, anti-aging, and whitening in recent research. Even though the demand for *F. glaberrima* as cosmetic materials is increasing, there is rarely research on cultivation or utilization. *F. glaberrima* grows in a humid and shady environment, so it is necessary to install a light shield to block the light. Therefore cultivation studies especially about shading condition were conducted for mass production.

Materials and Methods

In order to identify the proper cultivation method, *F. glaberrima* seeds were collected at Chungju, Korea and they were propagated in June, 2020. When planting, the intervals were 60cm in width and 60cm in length, and cover the ridge with black vinyl that can prevent weeds and moisture evaporation to prevent soil temperature rise. And shading treatments were 0, 30, 50, 70 and 90%.

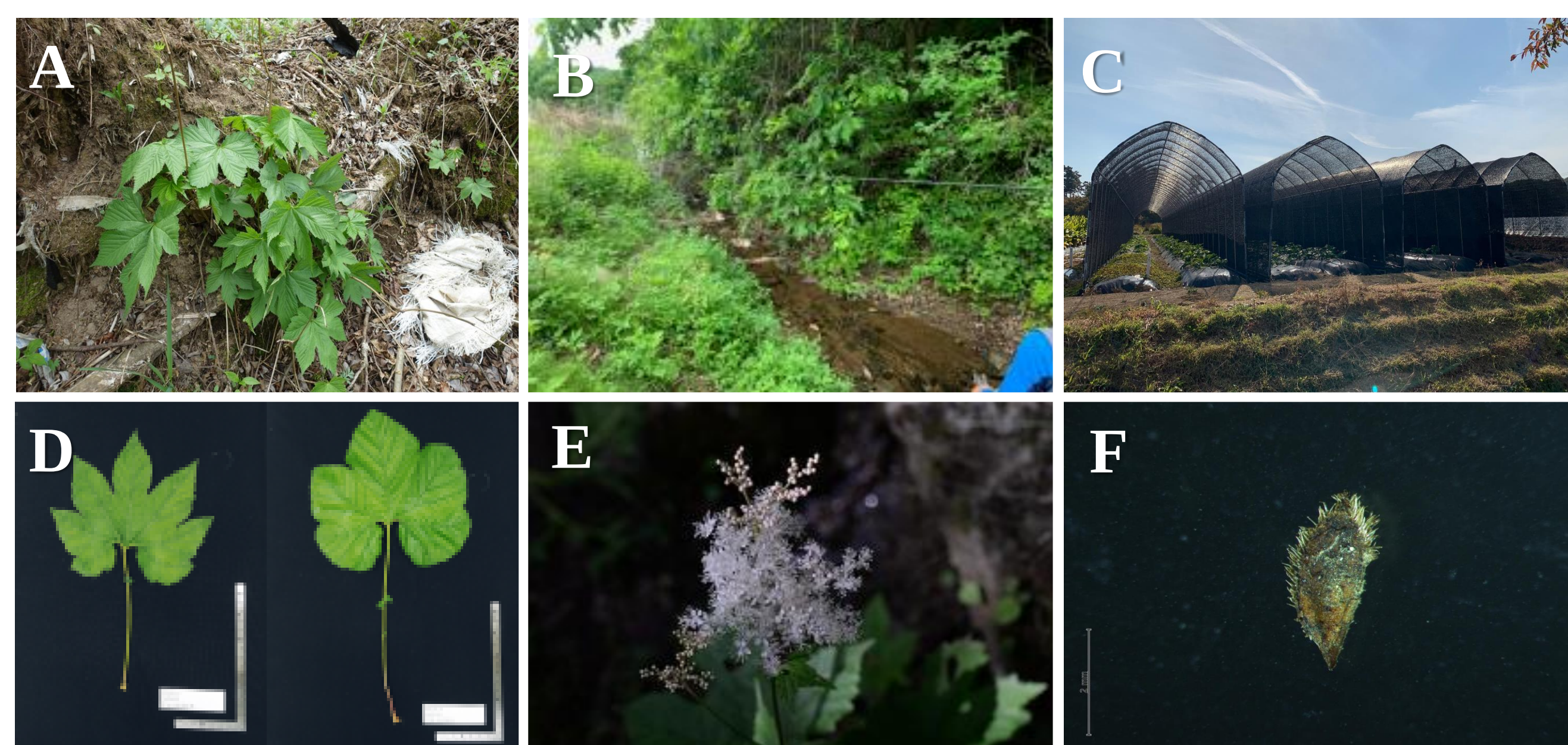


Figure 1. *Filipendula glaberrima*

(A) Native plant, (B) Native place, (C) Cultivated place, (D) Leaves, (E) Flower, (F) Seed

Results

When 50% light was blocked, the yield per square meter of the upper part was 1.91 kg (based on dry), which was 4 times higher than when no light was blocked. After that, 30% were excellent with 1.24kg. The quantity of no shading treatment was 0.38kg, because the edges of the leaves to burn or turn yellow, and the plant can wither and die. Due to insufficient amount of light required for growth, the yield under 90% light blocking condition was the lowest.

Conclusion

To use *F. glaberrima* as a new income crop, the study on shading cultivation was conducted. As a result of the experiment, the best growth was achieved when 50% of the light was blocked. It was followed by 30%, 70%, 0%, and 90% in that order. This result is expected to be useful basic data for cultivation and to help increase the productivity and income of industry.

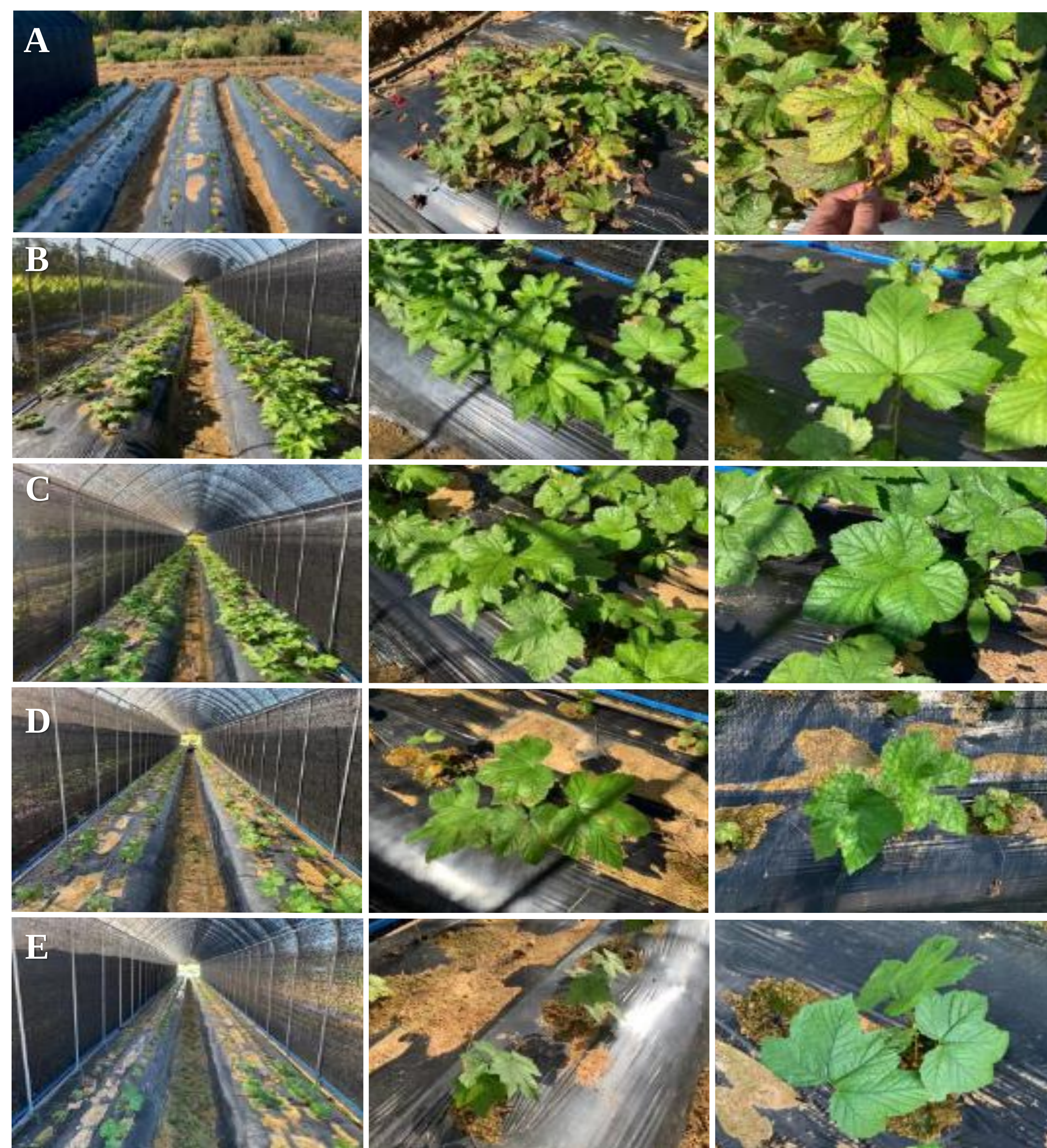


Figure 2. Growth of *Filipendula glaberrima* by Shading treatment

(A) 0%, (B) 30%, (C) 50%, (D) 70%, (E) 90%

Table 1. Growth Characteristics of *Filipendula glaberrima*

Shading (%)	Plant Height (cm)	Stem			Leaf		Yield per 1 m ² (g)
		Number (ea)	Length (cm)	Width (mm)	Length (cm)	Width (cm)	
0	14.43 e	6.45 c	7.73 d	1.86 c	7.24 b	9.3 e	388.5 d
30	38.94 b	8.35 b	22.25 a	3.25 a	26.75 a	22.16 b	1,247 b
50	41.34 a	10.7 a	23.02 a	3.21 a	18.64 ab	23.99 a	1,917 a
70	31.53 c	7 bc	19.83 b	2.1 b	11.56 b	15.96 c	1,044 c
90	22.05 d	4.75 d	13.88 c	1.45 d	8.8 b	11.46 d	164.5 e

* Means with difference letters are significantly different at $p < 0.05$ by Duncan's Multiple Range Test (DMST)

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