



농촌진흥청  
국립식량과학원

# Occurrence of Peanut Wilting Disease Caused by *Pythium myriotylum* in Korea

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## Abstract

Peanut (*Arachis hypogaea* L.) is one of the widely cultivated crops in the world and is also popular as health food because they contain good source of vitamins and fiber. In Korea, peanut is repeatably cultivated in Jeju-si, Yeosu-si and Gochang-gun. Peanut is vulnerable by soil pathogens until harvest because pods grow underground. In July 2022, symptoms of wilting aboveground were found in Yeosu-si and Wanju-gun. When the collected collars of peanuts were cut, it was confirmed that the vessel browned. Surface-sterilized soil- surfaces were plated on PDA medium and incubated at 25°C. Genomic DNA was extracted from three isolated strains (YJ1-2, YJ3-2 and JJ2-1), and was amplified using ITS4 and ITS5 primer set. Based on the ITS gene sequences, three strains were confirmed to highly similarity to *Pythium myriotylum* with 99%. To substantiate the pathogenicity of strains, peanut seeds and *P. myriotylum* three strains were co-cultured on water agar to observe root growth. After eight days, root length measurements showed that all three strains inhibited peanut root growth. Also, the same symptom as in the field was observed when peanut plants were inoculated with *P. myriotylum*. This is the first report of peanut wilting disease caused by *P. myriotylum* on peanut in Korea.

## Collection of wilting peanut and isolation of fungi



Table. List of isolated *Pythium myriotylum*

	Isolates		region	Year
1		JJ2-1	Wanju	2022
2	<i>Pythium</i>	YJ1-2	Yeosu	2022
3	<i>myriotylum</i>	YJ3-2	Yeosu	2022

Fig. 1. A. Observation of peanut wilting symptoms in Yeosu-si. B. *Pythium myriotylum* isolate YJ1-2 Oospore. C. Sporangia. Scale bar: 10µm

## Phylogenetic analysis of peanut isolates

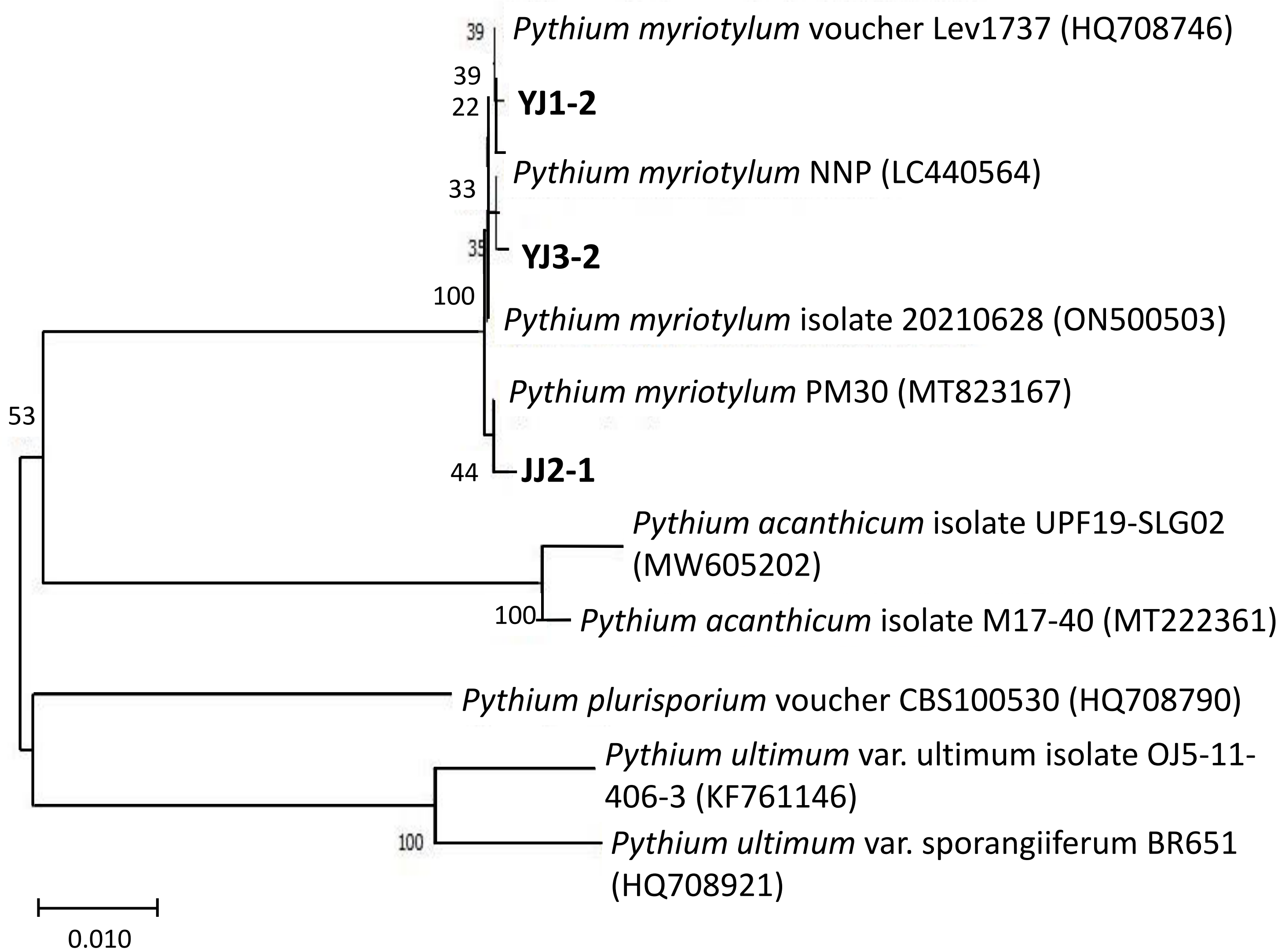


Fig. 2. Phylogenetic analysis of *Pythium myriotylum* isolates based on **Cytochrome c oxidase subunit I** gene. Phylogenetic tree was constructed using neighbor-joining Method.

## Pathogenicity of *P. myriotylum* isolates

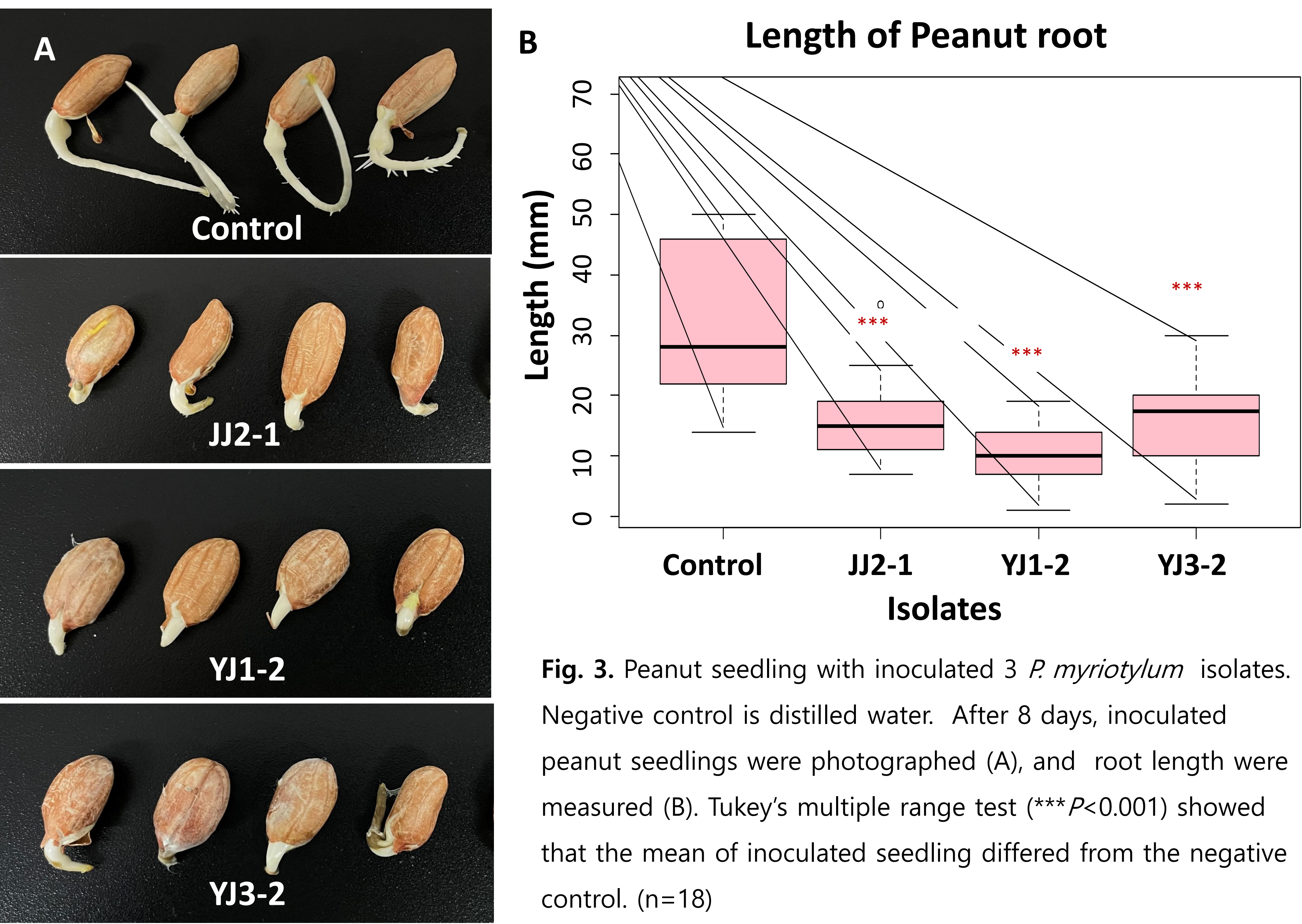


Fig. 3. Peanut seedling with inoculated 3 *P. myriotylum* isolates. Negative control is distilled water. After 8 days, inoculated peanut seedlings were photographed (A), and root length were measured (B). Tukey's multiple range test (\*\*\*)  $P < 0.001$  showed that the mean of inoculated seedling differed from the negative control. (n=18)



Fig. 4. Pathogenicity test of 3 *P. myriotylum* isolates. Peanut plants were inoculated with *P. myriotylum* V8 agar block with wound inoculation method. After 11 days, inoculated peanut plants were photographed.

## Conclusion

▪ This study is first report of disease caused by *Pythium myriotylum* on peanut in Korea.

**Acknowledgement** This work was carried out with the support of “Cooperative Research Program for Agriculture Science & Technology Development (PJ016095022023)” Rural Development Administraion, Korea