

## Mass-flowering of Cultivated Moso Bamboo, *Phyllostachys edulis* (*Poaceae*) after More Than a Half-century of Vegetative Growth

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Bamboos are long-lived monocarpic species of *Poaceae*; few studies have assessed their entire lifespan from seedling to the reproductive phase. In July 2021, moso bamboo, *Phyllostachys edulis* (Carrière) J.Houz., cultivated from seedlings for more than half century, mass-flowered at the Kamigamo Experimental Station at Kyoto University, Kyoto Pref. and the Fuji Bamboo Garden, Shizuoka Pref., Japan. We observed the rare phenomenon and estimated the age of these bamboo stands at the time of flowering to be 66 and 67 years, respectively, based on historical records and interviews with staff at both facilities. From these and previous studies, we found that moso bamboo clones with a monocarpic life history have a lifespan of 66–69 years in Japan. However, mass-flowering has never been reported in naturally occurring moso bamboo forests across Japan over the approximately 300 years since its introduction from China. This suggests that life history traits, including reproductive characters might have some variation in moso bamboo.

**Key words:** Bamboo, flowering, lifespan, long-term experiment, monocarpic reproduction, *Phyllostachys edulis*, *Phyllostachys pubescens*, stone monument.

Bamboos (*Poaceae*) are long-lived plants with a monocarpic life history (Janzen 1976). The length of their lifespan presents challenges for tracking individuals from the seedling phase through to reproduction. Thus, their lifespan (or flowering interval) is often estimated from historical records (Janzen 1976, Veller et al. 2015, Zheng et al. 2020). For example, *Phyllostachys nigra* (Lodd. ex Lindl.) Munro var. *henonis* (Mitford) Rendle and

*P. bambusoides* Siebold & Zucc. have estimated flowering intervals of approximately 120 years in Japan (Shirai 1911, Kawamura 1911a, b, c, 1912, 1927, Kobayashi et al. 2022), but the true lifespan has only been quantified a few times (Table 1); long-term experiments are necessary to address this question quantitatively (Konno 1937).

Moso bamboo, *P. edulis* (Carrière) J.Houz. [= *P. pubescens* (Pradelle) J.Houz.,

小林慧人<sup>1,2</sup>, 西山典秀<sup>3</sup>, 柏木治次<sup>4,5</sup>, 柴田晶三<sup>6</sup>: モウソウチク (イネ科) が半世紀以上の栄養成長期を経て一斉開花した

タケ (イネ科) は長寿命の一回繁殖性を示す植物であると知られるが, 実生から有性生殖までを評価できた研究はほとんどない. 2021年7月, 京都大学上賀茂試験地 (京都府) と富士竹類植物園 (静岡県) で実生の段階より保育されてきたモウソウチク *Phyllostachys edulis* (Carrière) J.Houz. [= *P. pubescens* (Pradelle) J.Houz., *P. heterocyclus* (Carrière) Matsum. var. *pubescens* (J.Houz.) Ohwi] の林が一斉開花の様相を示した. 筆者らはこの珍しい開花現象を観察し, 過去の栽培記録や両施設のスタッフらへのインタビューに基づき, 開花時の林齢がそれぞれ66年, 67年であると推定した. 先行研究と合わせて考えると, 日本国内には66–69年の寿命で一回繁殖性を

示すモウソウチクがあることがわかった. 一方, 現在日本各地に生育するモウソウチク林はおおよそ単一クローンと考えられており, 中国より導入後おおよそ300年が経過する中で未だ一度も一斉開花していない. これらから, モウソウチクの繁殖特性などの生活史の様式には, 種内変異があることが示唆された.

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