

Obituary

Ohmi Ohnishi

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Dr. Ohmi Ohnishi, Emeritus Professor at Kyoto University and a pioneering figure in the field of buckwheat genetics, passed away on November 5th, 2023, at the age of 80. His death is a significant loss to the global buckwheat research community. In 1980, Professor Ohnishi became one of the founding members of the International Buckwheat Research Association (IBRA), significantly contributing to establishing and operating this vital group. Throughout his career, he was a driving force behind the publication of the IBRA's journal, *Fagopyrum*, which has been crucial in fostering collaboration among buckwheat researchers worldwide.

Moreover, Professor Ohnishi devoted himself to advancing the genetics of common buckwheat and clarifying the origin of cultivated common buckwheat. I (author of this contribution, Yasuo Yasui) was fortunate to spend twenty years, from 1988 onwards, working alongside Professor Ohnishi at Kyoto University on the genetic research of buckwheat. I would like to share some anecdotes from that time, recalling our moments together.



Figures 1 and 2. Professor Ohmi Ohnishi at his home in Kyoto. In Figure 2 are in the background some plants of *Fagopyrum esculentum* ssp. *ancestrale*.

In 1988, when I met Professor Ohnishi as a master's student, he was working on developing chromosomal linkage maps for common buckwheat. The markers he used were isozymes and phenotypic mutations that he

had discovered through sib-matings of common buckwheat. At that time, many researchers collaborated on developing linkage maps for crops such as corn and rice. Remarkably, Professor Ohnishi was working on the

common buckwheat linkage map by himself. He carried out electrophoresis from 8:00 am to 4:00 pm, and then stained allozyme markers for 100 to 200 individuals to determine their genotypes until 7:00 pm. During breaks in the electrophoresis process, he conducted sib-mating experiments to detect mutations and the establishment of mapping populations. He maintained this routine daily, and I remember he often looked a bit tired during seminars and would frequently doze off. Although I do not handle as much work as Professor Ohnishi did, I seem to have taken after him in dozing off during seminars and meetings.

After preparing the morphology and isozyme markers for common buckwheat himself, Professor Ohnishi surveyed the diversity of common buckwheat worldwide.



Figure 3: Cover page of journal *Fagopyrum*, 11 (1991) with the photo of in that time newly discovered *Fagopyrum esculentum* ssp. *ancestrale*

His results showed that, with some exceptions in Europe and Nepal, the degree of population differentiation in common buckwheat is very low; there is vigorous gene flow as if all the populations around the world were one single genetic group. Furthermore, his most remarkable achievement was clarifying the origin of common buckwheat. In the 1980s, it was commonly believed that buckwheat originated in Siberia, while some researchers suggested that Yunnan Province in China, where wild plants of the *Fagopyrum* genus thrive, could be the potential origin. Therefore, Professor Ohnishi explored the regions around Yunnan Province by himself and discovered the wild ancestral species of common buckwheat, *F. esculentum* ssp. *ancestrale*, which had not been found by botanists or crop scientists worldwide before. His energetic investigations continued until around 2010 after his retirement, revealing that *ancestrale* also grows naturally in Sichuan Province and eastern Tibet. Using isozyme markers to study the diversity of *ancestrale*, he demonstrated that cultivated common buckwheat originated in the east Tibet. Moreover, Professor Ohnishi discovered a self-fertile wild species, *F. homotropicum*, closely related to cultivated buckwheat, enabling the development of self-pollinating cultivated buckwheat. The self-fertility gene from *F. homotropicum* is actually utilized in countries like Canada and Japan.

In this way, Professor Ohnishi, throughout his life, developed genetic markers for common buckwheat and further clarified the origin of cultivated buckwheat by elucidating the genetic diversity within/among cultivated and wild buckwheat. Many researchers in the International Buckwheat Research Association (IBRA) refer to Professor Ohnishi's papers and conduct research using the materials he discovered. Incredibly, Professor Ohnishi carried out this significant achievement almost entirely on his own. Undoubtedly, Professor Ohnishi is a giant in buckwheat research, and we must strive to surpass his achievements to advance the field of buckwheat research further. Lastly, there is a phrase that Professor Ohnishi has always said since I met him: "What is your question? Solving your question is what research is all about. The significance of your question drives your research." Let us keep his words close to our hearts, surpass his achievements, and diligently advance buckwheat research! That would be our finest way to honor Professor Ohnishi's legacy.