

# AAINews

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## From Tottori Sand Dunes to Deserts in the World

This time I would like to talk more details about the Arid Land Research Center of Tottori University, which I mentioned briefly in the previous issue (AAINews Vol.20). This center was established in June 1990 for the purpose of "conducting comprehensive research in the field of prevention of desertification and agricultural development in arid land and for providing necessary facilities for faculty members and researchers of national universities working in this field". The center was developed from its former body, the Sand Dune Utilization Research Center attached to the university's department of agriculture, which had conducted research regarding the agricultural utilization of sand dunes.

Let me first discuss the history of agricultural activities in the sand dunes in Tottori. Tottori Sand Dunes lie along the coast of the Japan Sea, extending 16km from east to west and 2km north to south. Before starting agriculture in the sand dunes, it was necessary to prevent movements of sand caused by the wind. For this purpose, Japanese black pine and some acacia species suitable for this sandy environment were planted to serve as a windbreak in the early Showa era. In those days the fields were watered using the so-called system of hama-ido which are cone-shaped pit-wells bored into the sand. Every field had this kind of well, and farmers would carry water from the well in a pair of wooden buckets hanging from a balancing pole carried on their shoulders. This was mainly a woman's task, and in summer these women would have to carry as much water as, say 50 bathtubs for each 10 are of land. They had to spend two hours in the morning and another two hours in the evening watering their farm land in this way, and this hard labour was called the "wife killer". However, in 1952, when Tottori Prefecture started establishing irrigation facilities in the sand dunes as part of its irrigation project, sprinklers, which had been tested at the above Sand Dune Utilization Research Center for the first time in Japan, were also introduced to local farmers and they were finally freed from the laborious business of watering. Since then research and studies at the research center have contributed to the increase in farming areas and agricultural productivity of various products such as shallots, yams, and grapes. Today one third of the total sand dune area in the prefecture, or 8,500ha, is utilized for agriculture.

The period of agricultural development of Tottori's sand dunes as described above corresponded with the period of Japan's rapid economic growth, at the end of which the country successfully joined other developed industrialized countries. Given this background context, the Sand Dune Utilization Research Center was restructured to form the Arid Land Research Center, based on the idea that, although there is no real arid land in Japan, it is the developed country's responsibility to help and contribute to the prevention of desertification and the development and utilization of arid land in the world. With this development goal in mind the research for sand dune utilization and agriculture in Tottori has been expanded and applied to studies of deserts elsewhere in the world, and research activities have started in countries such as Iran, China, Egypt, Mexico and Kazakhstan. This center is divided into six sections, namely natural environment, water resources, physiology and ecology, plant production, arid-land greening, and grassland and soil conservation. There are 23 faculty members including overseas visiting scholars and 80 students including foreign students (as of March 1998). In 1998 the center celebrated the completion of a large-scale environment control facility - the Arid Dome. This facility consists of a central dome 15m in height and 39m in diameter and several different laboratories. Such a large-scale and comprehensive lab facility for arid land studies is very unique in the world. However, actual fieldwork is still crucial in the area of agricultural studies, as it always requires extensive applied research. Therefore, while I wish for further development of this new research center in its own way, I also hope young researchers and students seize every opportunity to go abroad and study deserts elsewhere in the world. It is also expected overseas researchers work in this research facility, so that we can promote cooperative and supplementary research activities.

(By Iiyama in Tottori, February 1999)



Experimental Field



Arid Dome