Preface

In the earth, volcanic activity has come to occur in places almost without break since at least 3.5 billion years ago. At the present time about 800 terrestrial volcanoes are recognized as active. Whenever we think of the activity of volcanoes, what first comes to mind will be the vastness of volcanic fumes and lava flows. A large number of disaster records from past volcanic activities show, for example, a giant volcanic fume reaching a height of several tens of kilometers and very fine volcanic ash drifting in the sky for a long time, resulting in serious damage to photosynthesis of plants on the ground due to the obstruction of sunlight and weaker intensity reaching the ground. Furthermore, many violent volcanic activities accompanied by earthquakes have been reported to affect people dwelling near volcanoes, causing great loss of life.

Once volcanic activities, however, terminate and become calm for a long time there occur many biological activities such as plants growing on thick volcanic ash deposits, and they help develop the volcanic ash, including other pyroclastic materials, into volcanic ash soils. Volcanic ash soils under temperate, humid climates have characteristic properties such as very fine particle size, large specific surface area and distinctively black soil color that are rarely found in soils derived from other parent materials. In 1949, J. Thorp and G.D. Smith first recognized these as a soil group in a global system of soil classification and gave them the name of Ando soils, coined from the Japanese term for dark soils. At a later time, Ando soils were renamed as Andisols, and Aridisols was added as one of 11 Orders, which are ranked by highest categories in the world soil classification system of Soil Taxonomy.

The total distribution of Andisols worldwide is estimated to account for more than 0.8% of the earth's surface, covering more than 124×10^4 km^2. Comparing the acreage of Andisols worldwide with those of soils derived from other parent materials, one discovers they are not widely distributed, in fact, but considerably more narrowly. In spite of the relatively smaller acreage of Andisols in the world, most of these soils are located on stable, flat land surfaces and have become a very important agricultural resource, though some Andisols require some soil amelioration due to undesirable characteristics for crop production such as low soil reaction originating from active aluminum. Furthermore, I believe that another background factor for including Andisols in the highest categories of the world soil classification system comes from the many studies with detailed data carried out on the distribution, nature, properties and management of these soils. In Japan, New Zealand, Chile and some humid temperate or tropical regions Andisols have a considerably wide distribution and importance to agricultural development in these regions. For example, in Japan Andisols cover about one-sixth of the total land surface, and occupy 27% of all agricultural lands, with 51% of the acreage used as a soil medium for upland crop and fruit tree production.

This special issue was planned and produced in consideration of the important background mentioned above.

Satoshi Matsumoto