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BOOK REVIEW

SMECK, N. E., CIOLKOSZ, E. J. (ed.): FRAGIPANS: THEIR OCCURRENCE CLASSIFICATION, AND GENESIS. SSSA Special Publication Number 24. – Soil Science Society of America, Inc., Madison, Wisconsin 1989.

The book consists of nine contributions dealing with the identification, distribution, properties, classification, and genesis of fragipans. A fragipan is identified in Soil Taxonomy as a genetic subsurface horizon that is dense and brittle. From the agricultural perspective, fragipans are undesirable because they restrict rooting depth and penetration of water. Fragipans form primarily under forest vegetation and in various parent materials including glacial drift, loess, colluvium, lacustrine deposits, and alluvium. They have been mapped primarily in the USA and New Zealand, but they may also occur in other countries. Paper 1 informs that the extent of fragipans is 5320 km² in Czechoslovakia. Papers 2, 3, 4 and 5 describe the occurrence and properties of fragipans in different parts of the USA. Much attention is given to the genesis of fragipans, especially in papers 2, 5, 6, 7 and 8. The following conditions are the most conducive to the fragipan formation: parent material, topography, climate, vegetation, and time. It is concluded that fragipans form at weathering discontinuities originating either as a result of a weathering front or due to the occurrence of a lithologic or chronologic discontinuity. Three mechanisms of the fragipan formations are suggested: physical ripening, clay bridging, and bonding by an amorphous component. The dominant mechanism may vary and give the variety of fragipans. Many authors favor fragipan bonding by amorphous Si or Si-rich aluminosilicates. More reliable and consistent definition of fragipans is needed for a better understanding of the fragipan genesis.