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# Pollen grain surface in *Vaccinium myrtillus* as seen in scanning electron microscopy

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Abstract

Pollen grain surface of *Vaccinium myrtillus* L. was analyzed by scanning electron microscopy. Pollen grains remain in tetrahedral tetrads. Grain surface is verrucose, consisting of thick, irregularly shaped muri, surrounding small, round or oval lumina. The surface of the muri is fissured, and minute papillae can also be noted.

Scanning electron microscopic analysis of pollen grain surface is very useful for elucidation of exine ultrastructure as well as for solving taxonomical problems. It was already applied to identify fruit cultivars (Fogle 1977).

The wild blueberry (*Vaccinium myrtillus* L.) was collected in Podhale Highland area, near Tatra Mountains. Pollen grains from freshly opened flowers were examined in scanning electron microscope following the methods described previously (Muszyński et al. 1977, Maas 1977).

Developed pollen grains of *Vaccinium myrtillus* remain in tetrahedral tetrads (Fig. 1), the individual grains being tricolporate. The pollen grain surface is verrucose, only the porus areas being smooth (Fig. 2). The structure of the pollen grain surface resembles surface of an orange rind. Detailed picture of the surface shows, however, its highly developed ultrastructure, consisting of thick, irregularly shaped muri, which encircle small, round, oval or longitudinal lumina (Fig. 3). On the

muri small ridges are superimposed. Under large magnification, minute papillae can be distinguished (Fig. 4).

Ultrastructure of pollen grain surface in *Vaccinium myrtillus* is similar to that observed in *V. ovatum*, *V. ashei* × *V. constable* and *V. darrovi* × *V. tenellum* (Maas 1977). *Vaccinium myrtillus* pollen grain surface is perhaps more regularly shaped, and the minute papillae are present, which were not observed in the other *Vaccinium* species. The sculpturing of pollen grain surface in described *Vaccinium* is rather unusual, because more regular shapings prevail among plants.

## REFERENCES

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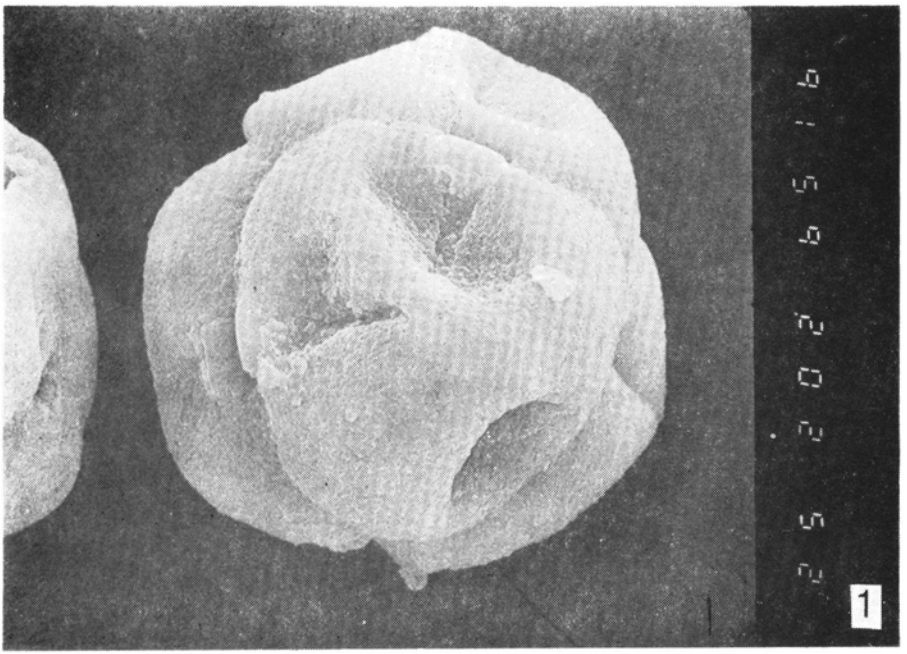
Maas J. L., 1977. Pollen ultrastructure of strawberry and other small-fruit crops. J. Amer. Soc. Hort. Sci. 102: 560-571.

## *Struktura i ultrastruktura powierzchni ziarn pyłku u jagody czarnej (borówki czarnej, Vaccinium myrtillus L.) uwidoczniona w mikroskopie elektronowym odbiciowym*

Streszczenie

Dziko rosnące rośliny *Vaccinium myrtillus* L. zebrano na Podhalu. Widoczna pod małym powiększeniem struktura powierzchni ziarn pyłku sprawia wrażenie szorstkiej, nieregularnej, przypominając powierzchnię owocu pomarańczy. Pod dużym powiększeniem ultrastruktura powierzchni wykazuje jednak regularne urzeźbienie w postaci grubych muri, otaczających niewielkie, okrągłe, owalne lub podłużne lumina. Muri mają powierzchnię żebrowaną, z drobniutkimi wyrostkami. Taka powierzchnia, choć słabiej urzeźbiona, stwierdzona została u kilku gatunków *Vaccinium* i ich mieszańców przez Maasa. Ten typ struktury jest rzadko spotykany, przeważa urzeźbienie regularne.



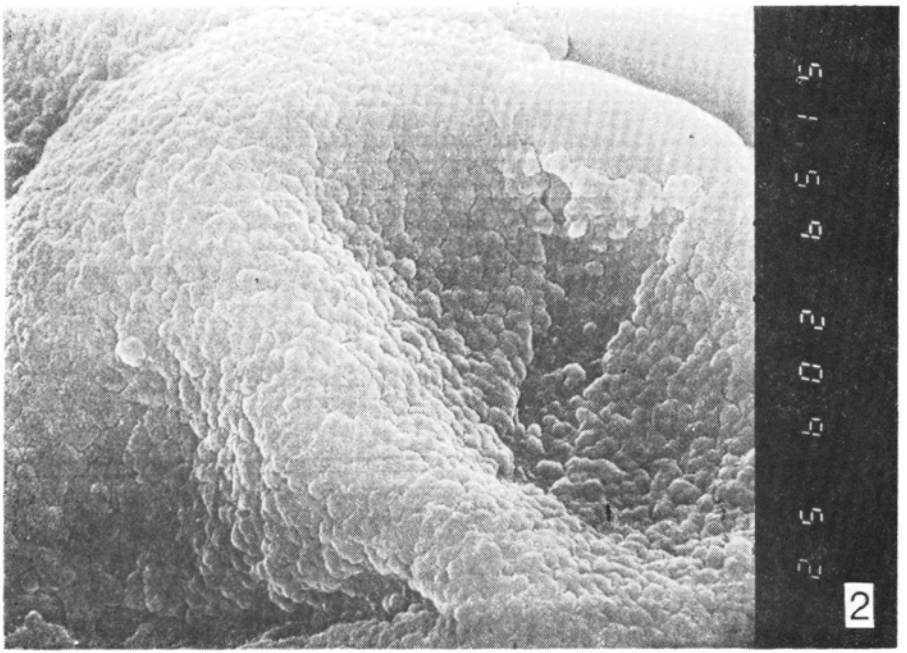
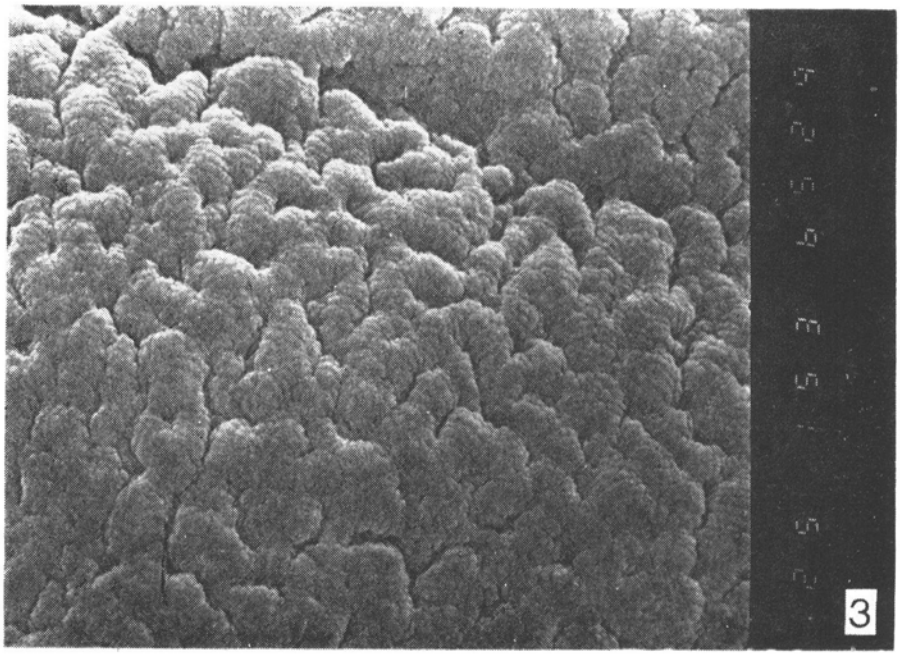




Fig. 1. Tetrahedral pollen tetrad. 3 400 ×

Fig. 2. Verrucose surface of a pollen grain with smooth porus. 16 000 ×



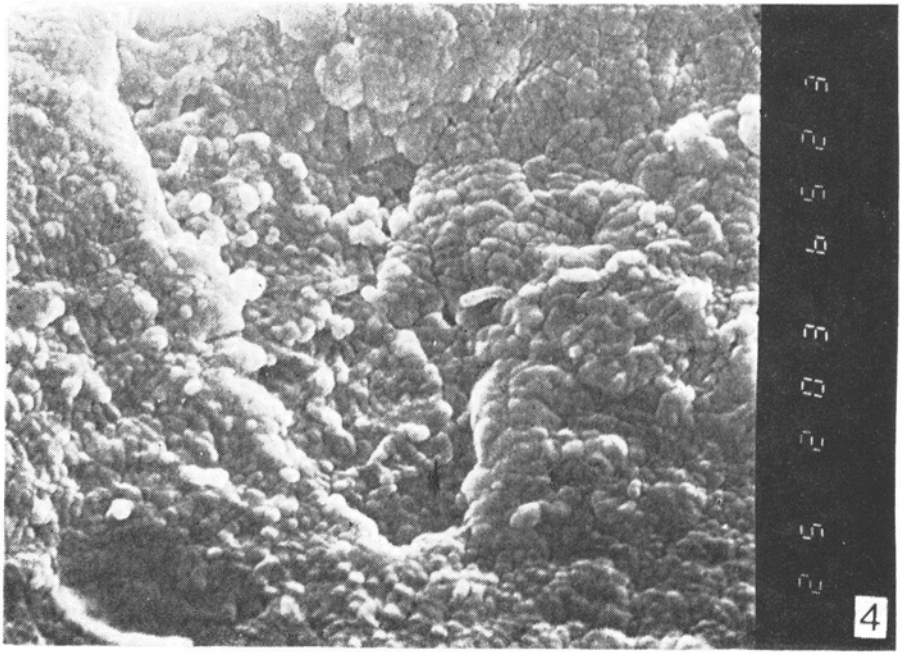




Fig. 3. Regularly shaped ultrastructure of pollen grain surface. 25 000 ×
Fig. 4. Minute papillae on muri. 34 000 ×