

Studies on Polyploid Plants.

Triticum-Haynaldia Hybrids with Special Reference to the Amphidiploids
Triticum dicoccum × *Haynaldia villosa*.

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GENUS *Haynaldia* has been used for intergeneric hybridization with the genus *Triticum* by several investigators. Hybrids have been produced with representatives of *vulgare*—and of *durum*—group, all being highly self-sterile. The hybrids set seeds very rarely when flowering free in the field, but somewhat more when pollinated with a third species or with the *Triticum* parent. Tschermack¹ (1929), however, obtained in the subsequent generations a fully fertile hybrid from the cross *Tr. turgidum* ($2n = 28$) × *Haynaldia villosa* ($2n = 14$). The cytological studies of

During the last few years we crossed and studied a series of double and triple hybrids, as well as allopolyploids produced in crossing *Triticum* species with *Haynaldia villosa*. We produced a large number of F_1 — *Tr. dicoccum* × *Haynaldia villosa*, and several plants of the cross combination *Tr. vulgare* (Novinka) × *Haynaldia villosa*. The majority of the spikes of these hybrids bloom free, while some of them were crossed back to the parental species or pollinated with pollen from a third species. From the seeds thus obtained we grew two plants in 1935 and fifteen plants in 1936.

The plants grown in 1935 resulted from free blooming of the F_1 — hybrid *Tr. dicoccum* × *Haynaldia villosa*. One of them had 42 somatic chromosomes, while the other one had 28 somatic chromosomes. Both plants were self-sterile. The former plant has probably resulted from a cross pollination of the hybrid (*Tr. dicoccum* × *Haynaldia villosa*) with *Tr. vulgare*. The female gamete obviously has not been reduced, containing complete chromosome sets from *Tr. dicoccum* ($n = 14$) and *Haynaldia villosa* ($n = 7$);



Fig. 1.

Spikes. From left to the right: (1) *Haynaldia villosa*, (2) Hybrid *Triticum Timopheevi* × *Haynaldia villosa*, (3) *Tr. Timopheevi*, (4) Hybrid *Triticum dicoccum* × *Haynaldia villosa*, (5) *Tr. dicoccum*, (6) Hybrid *Triticum vulgare* × *Haynaldia villosa*, (7) *Triticum vulgare*.

this hybrid showed that it is an amphidiploid plant with 56 somatic chromosomes² (Berg, 1934).

¹ Tschermak, E., "Ein neuer fruchtbarer Weizenbastard (*T. turgidum* × *T. villosum*)", *Forsch. auf d. Geb. d. Pflanzenbaus u. d. Pflanzenzüchtung Festschr. Rümker*, P. Parey, Berlin, 1929.

² Berg, H. K., "Cytologische Untersuchungen an *Triticum turgidovillosum* und seinen Eltern", *Zeitschr. für ind. Abst. u. Vererbgs.*, 1934, 67, 342-373.

the hybrid being a hexaploid one and having all chromosomes from three different species, namely, *Tr. dicoccum*, *Tr. vulgare* ($n = 21$) and *H. villosa*. It was self-sterile.

In 1936 we grew one plant from the cross (*Tr. dicoccum* × *H. villosa*) × *Secale cereale* ($n = 7$). The hybrid has 28 somatic chromosomes and represents a trigeneric hybrid which has all the chromosomes from *Tr. dicoccum*, *H. villosa* and *S. cereale*, i.e., $14 \div$