tests in this experiment yielded 61.0 Q/ha (P 0.05; LSD=5.9 Q/ha) at a protein level of 10.7%], showed that most of the experimental hybrids yielded much less than the standard. However, some crosses of lines 10, 11 and 12 with lines unrelated to the protein source yielded very close to the standard Krasnodarsky 82 o_2, even when a negative correction of 10 - 12% was made in the yield of dent hybrids.

The results of the study of inheritance of protein level in F_1 crosses lead us to expect a relatively high protein level (16 - 17%) in hybrids.

The fact that the lines are related both to the high protein source and to the allele o_2 source as well prevents us from making a conclusion about the possible level of heterosis attainable if totally unrelated high protein lines, pre-selected for combining ability, had been used.

The results of this work emphasize the necessity of creating high protein lines of different origin, totally unrelated to IHP. This would be essential for a breeding program of high protein o_2 hybrids.

M. I. Hadjinov
K. I. Zima
A. A. Normov
V. Z. Pakudyn

2. A simplified procedure of backcrossing for transferring the recessive trait to the recurrent parent.

The routine procedure of developing counterparts differing from the recurrent parents in only one trait, determined by the recessive allele of a gene, may be further simplified with regard to the backcrossing and controlling the allele transfer (AT). The resulting reduction of the work needed will be about two times less.

The AT presence in BCn plants is commonly monitored by selfing or by crossing with a form homozygous for the transferred trait (TT).

We propose a procedure by which the backcrossing and control of AT may be achieved on the same ear of the plant selected for backcrossing. A tester is needed, possessing in homozygous condition, the AT and a dominant trait for kernel color. Such a tester can easily be developed in three generations by crossing the AT source with a genetic marker of the ACR type, for example, the Purple Embryo Marker.

With such a tester available, the BCn plants are pollinated with a pollen mixture derived from the parent and the tester. The ear, pollinated with such a pollen mixture, gives rise to two groups of kernels which are easily separated: 1) normal kernels, resulting from pollination by the recurrent parent (the new backcross) and 2) purple kernels, resulting from the analyzing cross. The latter class reveals whether or not the selected BCn plants provided the AT. If AT is present in the BCn plant, it must be heterozygous and 50% of the colored kernels should be homozygous for AT, that is, when the TT is expressed in the kernel stage (o_2, su, ae, du, etc.), about 50% of the kernels must show the TT pattern. Their sibs derived from the backcross are sown for the following BC.

When the TT pattern is expressed in the sporophyte (bm, lg, br, etc.), it is necessary to initiate two plots from one ear: 1) kernels from the testcross and 2) BC-kernels. Plants for the following BC are taken from the preceding BC, whose sibs derived from testcrossing segregated for TT.

This method allows a reduction in the number of pollinations by two, the crossing procedure is simplified, and the results achieved are just the same. The mixture of pollen from the recurrent parent and the tester is prepared only once for backcrossing all the plants of one line. It is not necessary to label individually and harvest separately the ears of one line. There is no need to select the paired ears from testcrossing and backcrossing.

This procedure cannot be applied to some flints because of the presence of inhibitors of genes coloring the aleurone layer.

M. I. Hadjinov
M. V. Tshumak