

Interspecific hybridization of cultivated rice, *Oryza sativa* L. with the wild rice, *O. minuta* Presl.

Abstract

Crosses were made between four varieties ('Mahsuri', 'Setanjung', 'MR84' and 'MR103') of *Oryza sativa* L. ($2n = 24$, AA) and one accession of *O. minuta* ($2n = 48$, BBCC). The seed set obtained ranged between 9.5% and 25.1% depending on the rice variety used. By rescuing 14-day-old embryos and culturing them on 25%-strength MS medium we obtained a total of 414 F1 hybrids. The F1s were vigorous, tillered profusely, were perennial and male-sterile. The hybrids were triploid (ABC) with 36 chromosomes and showed irregular meiosis. The average frequency and range of chromosome associations at metaphase I or early anaphase I pollen mother cells of F1 plants were 29.31(16-36) Is + 3.32(0-10) IIs + 0.016(0-1) IIIs + 0.002(0-1) IIIs. Upon backcrossing the original triploid hybrids and colchicine-treated hybrids to their respective recurrent parents, and further embryo rescue, 17 backcross-1 (BC₁) plants were obtained. Of all the crosses using MR84, no BC₁ plant was obtained even after pollinating 13894 spikelets of the triploid hybrid. The BC₁s were similar in appearance to the F1s and were male-sterile, their chromosome number ranged from 44 to 48. By backcrossing these BC₁s and nurturing them through embryo rescue, we obtained 32 BC₂ plants. Of these, however, only 18 plants grew vigorously. One of these plants has 24 chromosomes and the other 17 have chromosome numbers ranging between 30 and 37. The 24-chromosome plant was morphologically similar to the *O. sativa* parent and was partially fertile with a pollen and spikelet fertility of 58.8% and 12.5% respectively. All of the F1 and BC₁ plants were found to be resistant to five Malaysian isolates (XO66, XO99, XO100, XO257 and XO319) of *Xanthomonas campestris* pv *oryzae*. Amongst the BC₂s, the reaction varied from resistant to moderately susceptible. The 24-chromosome BC₂ plant was resistant to the four isolates and moderately resistant to isolate XO100 to which the *O. sativa* parent was susceptible.