INTRODUCTION

Dry beans (*Phaseolus vulgaris*) are an important food source in South Africa, and are grown by both commercial and small scale farmers. The well-adapted cultivar Teebus is the predominant small white canning bean, but is very susceptible to rust (*Uromyces appendiculatus*). Red speckled sugar beans are widely grown, and especially popular with small scale farmers, many of whom cannot afford fungicides. Older speckled sugar cultivars are very susceptible, whereas the resistance of the most popular newly released cultivars (all related to the cultivar Kranskop) is starting to fail.

METHODS

In order to establish the general nature of rust pathotypes present in South Africa, the international set of nineteen rust differential cultivars has been planted throughout the bean production areas of South Africa since 1993, supplemented since 1995 by rust resistant "Bel" lines obtained from Dr. JR Stavely of the USDA, and other promising sources of resistance. These and other cultivars were also used for the collection of rust samples for pathotype characterization of Southern African isolates, which was started in 1995. Due to the pressing need for resistant cultivars, back crossing programmes were undertaken simultaneously with pathotype characterization. Teebus and three high yielding red speckled sugar cultivars (Kranskop, Jenny and Monati) were used as recurrent parents, and "Bel" lines (BelMiDak 8 & 9, BelNeb 1, BelMiDak 1 and BelDak 2) as donor parents. These were known to contain resistance genes (3,4) which had proved promising in the field and glasshouse. Some single plant selections of the above "Bel" lines have also been made, although most do not conform to seed size, canning quality, yield, and/or local adaptation standards.

RESULTS

Results obtained from the pathotype characterization in the glasshouse, the testing of backcross material with the most virulent races and observations of the extended
differential set in the field (2) have confirmed the usefulness of the donor parents. Selections from the F₂ generation of the fourth backcrosses are presently being tested for homogeneity. In addition, numerous lines selected from earlier backcross generations are planted in the field at high disease pressure sites. These lines are performing well in yield trials, after stringent testing for canning quality and seed type. During the coming year, attempts will be made to combine rust resistance with resistance to angular leaf spot and the bacterial diseases attained in parallel backcrossing programmes.

TRIBUTE

Although no cultivars containing resistance from the "Bel" lines have as yet been released in the country, they have already made a significant contribution to broadening the genetic base of the breeding programmes in South Africa, and there are also strong indications that cultivars containing some of these genes may be released in the near future. Resistance from various "Bel" lines have also been utilized in the national as well as private breeding programmes in South Africa.

The dry bean industry of South Africa would therefore like to use this opportunity of thanking Dr. Stavely, who is due to retire shortly, for his generous contributions of bean seed, advice and support.

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REFERENCES