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DEVELOPMENT OF DWARF STRAINS OF PEARL MILLET AND AN ASSESSMENT OF THEIR YIELD POTENTIAL

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THE introduction of dwarfing genes in wheat, rice and sorghum has revolutionized the concept of yield potentials attainable in these crops. These dwarfing genes reduce plant height without affecting reproductive or any other useful plant processes and thus permit the application of fertilizer and irrigation practices conducive to maximization of grain yield.

In the bajra (*Pennisetum typhoides* S. & H.) breeding program at the I.A.R.I., major portion of efforts was devoted to the development of dwarfs. For this purpose, a large number of Indian lines were crossed with four different dwarf stocks kindly supplied by Dr. G. W. Burton of Georgia, U.S.A. Progenies from these crosses were grown at Coimbatore and Delhi over different seasons to select the lines possessing desirable morphological characters as well as a wide range of adaptability. Several

hundred stabilized dwarf inbreds ranging in height from 60 to 140 cm., having erect growth habit, upright leaves and large compact heads are now available. The most promising among these are being tested for their potentialities as breeding stocks and as commercial varieties. One of these stabilized inbreds, D. 174, was found to be particularly promising in Summer 1965 at Delhi and is now in the advanced stages of testing.

This inbred—D. 174—was developed from the cross D 2 × IP 81 and was sufficiently uniform for bulking in the F₆ generation. In Kharif season at Delhi, it grows about 1 metre tall, with 5-7 synchronous tillers per plant. Its growth habit is erect and leaves are upright. Its maturity is comparable to other varieties like Pusa Moti and HB-1. During Kharif 1965, it was grown in a demonstration plot at the I.A.R.I. in rows 75 cm. apart with 15 cm.

spacings between plants (Fig. 1). It gave grain yield of 2,171 kg./ha. although in the early vegetative stage it received a slight set-back due to heavy weed growth and late transplanting. With a spacing of 30-45 cm. between rows and 10-15 cm. between plants it may be possible

varieties. These inbreds will become the parents for further breeding as well as parents for hybrids, synthetics and other improved forms. The possibility of their direct commercial use as improved strains to reduce the seed production problems is currently being assessed.



FIG. 1. D. 174 at Delhi *Kharif* 1965.

to increase substantially the grain yield of this dwarf. Management experiments to obtain this information are under way.

Dwarfs as typified by D.174 may open up new vistas in the yield potential of baira

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