Pak. J. Bot., 17(2) 305-307, 1985.

STUDIES OF LIBYAN GRASSES IX. BREEDING SYSTEM IN *HORDEUM GLAUCUM* STEUD.

SHAMIM A. FARUQI

Department of Botany, Faculty of Science,
University of Fateh, P.O. Box 13228, Tripoli, Libya.

Abstract

Character analysis of the progenies of *Hordeum glaucum* derived from open and bagged inflorescences revealed no significant differences, pointing to autogamy. It is concluded that the reproduction mechanism of *H. glaucum* in Libya is similar to that of Europe.

Introduction

Hordeum glaucum Steud., an annual weed, is quite common in coastal Libya. This species is a diploid with 2n = 14 chromosomes and it has contributed one genome to the polyploid *H. leporinum* Link and *H. murinum* L. (Rajhathy & Morrison 1962, Rajhathy *et al.*, 1963; Richards & Booth, 1976; Booth & Richards, 1978). In Europe this group is regarded autogamous, but it is suggested by Richards & Booth (1976) and Booth & Richards (1978) that in the warmer parts of the world it could be allogamous. The breeding mechanism in *H. glaucum* from Libya is presented herein.

Material and Methods

Seeds from two plants of *H. glaucum* were collected during April 1976. Four seeds from each group were taken randomly and these were sown singly in separate pots. From each plant some of the inflorescences were bagged and others were left open. Seeds from bagged and open inflorescences of each plant were harvested separately. The seeds obtained were sown again and each plant which the seeds produced was assigned a pedigree number. At maturity each plant was uprooted on a single date and kept as herbarium specimen for study. Characters were scored from the herbarium specimens. The data of the plants of each pedigree obtained from open and bagged inflorescences were compared statistically. This was to assess if significant differences existed between the plants of the two progenies.

Results

The two seeds from the lot number 0141977, belonging to *H. glaucum*, produced a progeny of 7 plants in the second generation. Out of these, two plants were from the seeds produced inside the bag and five from open inflorescences. Seeds from lot number

Table 1. Character analysis of open and bagged progeny of *Hordeum glaucum*.

Plant accession no.	Characters scored	Open pollinated	Self pollinated	t-value
0141977	Mean height cm.	17.72	17.50	0.683
-do-	Mean tiller no.	7.0	9.50	2.621
-do-	Mean internode no.	4.25	3.64	1.190
-do-	Mean length terminal internode cm.	5.0	5.61	0.64
0241977	Mean height cm.	14.50	13.17	1.666
-do-	Mean tiller no.	6.75	4.17	2.557
-do-	Mean internode no.	4.04	3.95	0.904
-do-	Mean length terminal internode cm.	3.33	3.37	0.173

0241977, however, produced a progeny of 10 plants, out of which six were from inside the bag and four from open inflorescences.

Statistical comparison of open and bagged progeny showed highly insignificant differences in three characters at 1% level of significance. The differences in number of tillers are insignificant also but not as much as in the other three characters (Table I). These results were varified by using a valid statistical procedure. Since the results were so highly insignificant that the use of a refined technique is not likely to bring a material change.

Conclusion

A statistical comparison of the progeny of *H. glaucum* raised from the seeds produced inside and outside bags showed highly insignificant differences. These results suggest an autogamous breeding mechanism. This reproductive mechanism in *H. glaucum* in Libya, therefore, is similar to that of Europe (Richards & Booth, 1976). For a probable route of gene flow one would have to assume a break down of autogamy only under special conditions.

References

Booth, T.A. and A.J. Richards. 1978. Studies in the *Hordeum murinum* L. aggregate: Disc electrophoresis of seed proteins. *Bot. J. Linn. Soc.*, 76: 115-125.

Rajhathy, T. and J.W. Morrison. 1962. Cytogenetic studies in the genus *Hordeum*. VI. The Murinum complex. *Canad. J. Genet. & Cytol.*, 4: 240-247.

Rajhathy, T., J.W. Morrison and S. Symko. 1963. Interspecific and intergeneric hybrids in *Hordeum*. Barley Genetics I. Proc. Ist. Int. Bar. Gen. Symp. Wageningen, 195-212.

Richards, A.J. and T.A. Booth. 1976. Karyological indications of evolution in *Hordeum murinum* L. sensu lato. *In: Current Chromosome Research*. (Eds.) K. Jones and P.E. Brandham. Amsterdam. 167-174.

Acknowledgements

Thanks are extended to Arab Development Institute for financing this study. The author is also indebted to Professor M. Qamaruddin of the Dept. of Statistics for checking the statistical procedures and the statistical results.

(Received for publication 10 March 1985)