

بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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EVALUATION OF SOME DWARF SORGHUM GERMPLASM FOR AGRONOMIC CHARACTERS, HEAT AND DROUGHT TOLERANCE

By

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THESIS

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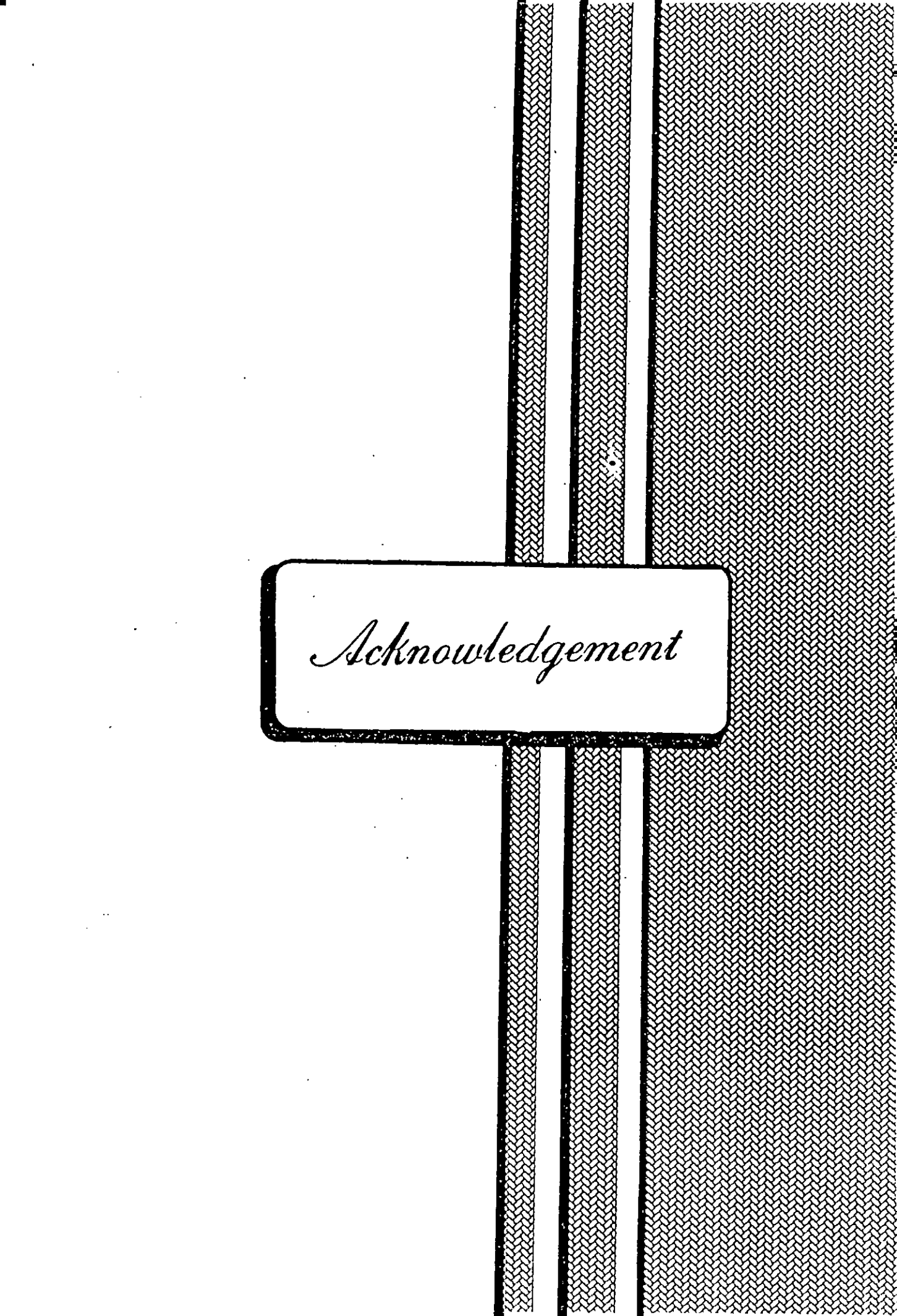
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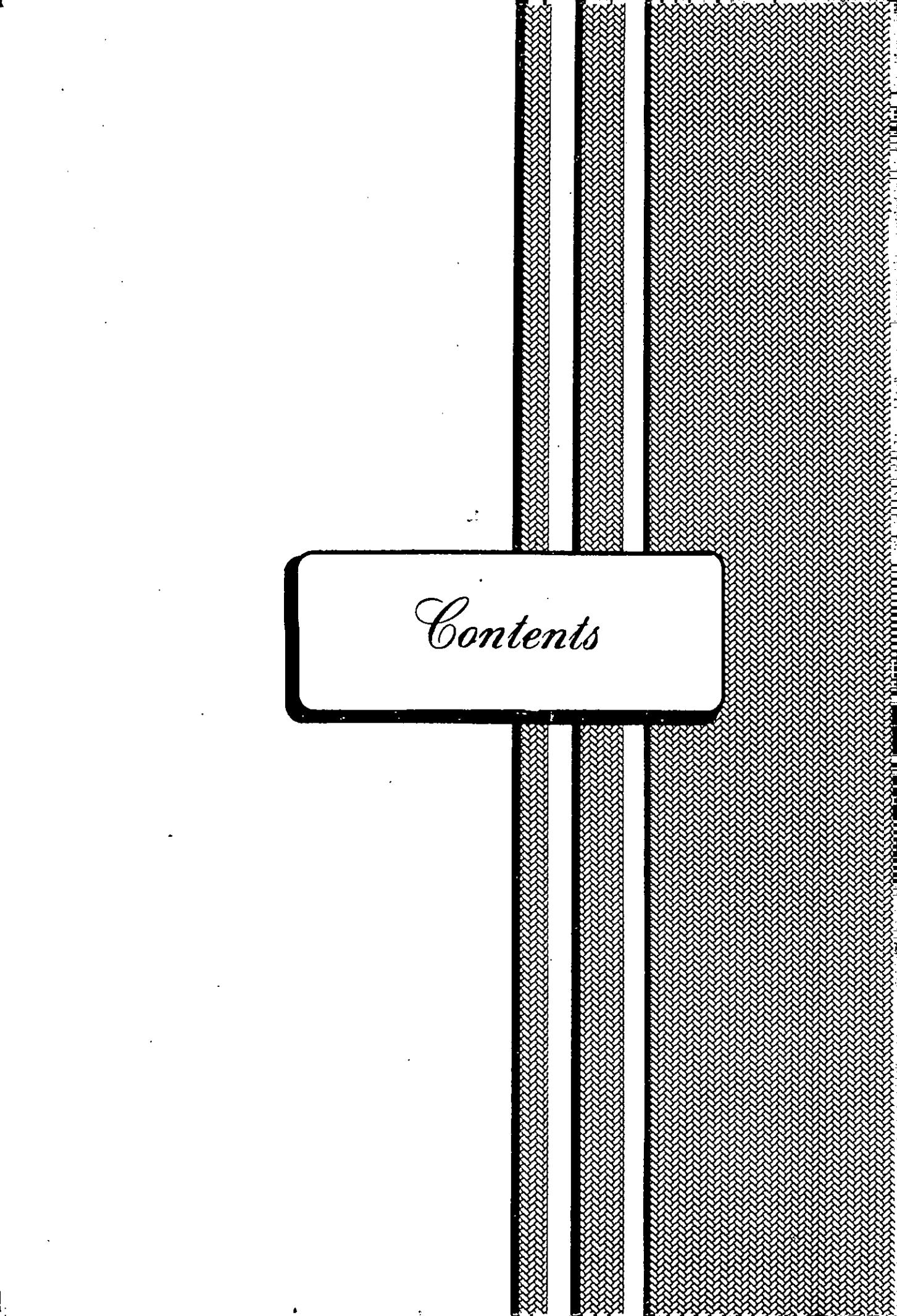
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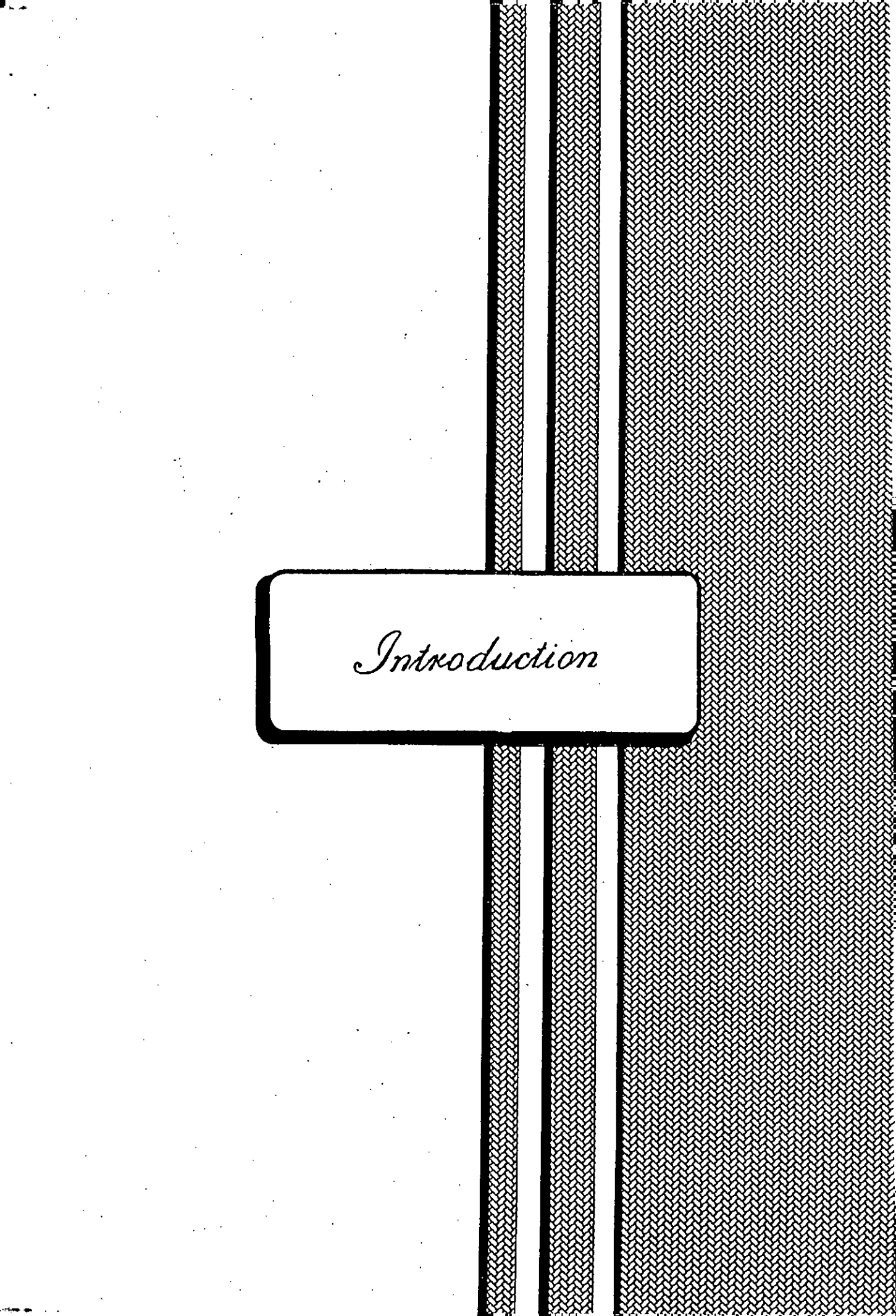
Lastly heartiness thanks to my parents, for their sacrifice and encouragement.



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Introduction

INTRODUCTION

Grain sorghum [*Sorghum bicolor* (L.) Moench] is one of the important cereal crops in the world. It is a food, feed grain and forage crop. Sorghum is grown extensively in the tropics and subtropics regions and has been adapted to and widely grown in temperate climates.

In Egypt, grain sorghum is grown primarily as a cereal crop for human consumption and to obtain higher forage production with better nutritive value for animals. It ranked the fourth among the major cereals, following wheat, maize and rice. The cultivated areas with grain sorghum were 136000, 149000 and 141000 ha and the total production were 676000, 766000 and 764000 MT for 1991, 1992 and 1993, respectively. The average yields for the same period were 7972, 5125 and 5418 kg/ha, respectively (**F.A.O. Production year Book, 1993**). Most of these areas are concentrated at Assiut, Sohage, Qena and Fayoum provinces.

The genetic variability and its utilization are among the key point for success in a crop breeding program. So, it is essential to determine the presence of genetic variability and the types of gene effects in the breeding materials for the important characters. This genetic variability would allow the breeder to select favourable genotypes to obtain new high yielding lines or hybrids of sorghum adapted to different stress conditions specially drought and heat.

High temperature is an important production constraint in many tropical and subtropical environments. Water and heat stresses are linked through the energy balance of plant organs. Selection of heat resistant genotypes is very related to ability of genotypes to maintain the duration of growth period (**OToole and Stockle, 1991**).

The objectives of this investigation were (I) to evaluate 100 dwarf grain sorghum genotypes for some agronomic characteristics, heat and drought tolerance, (II) to calculate and analyze the phenotypic and genotypic correlations among grain yield and related traits to provide the basis for planing more efficient selection programs and (III) to determine the broad sense heritability and the expecting genetic advance through selection among these genotypes.