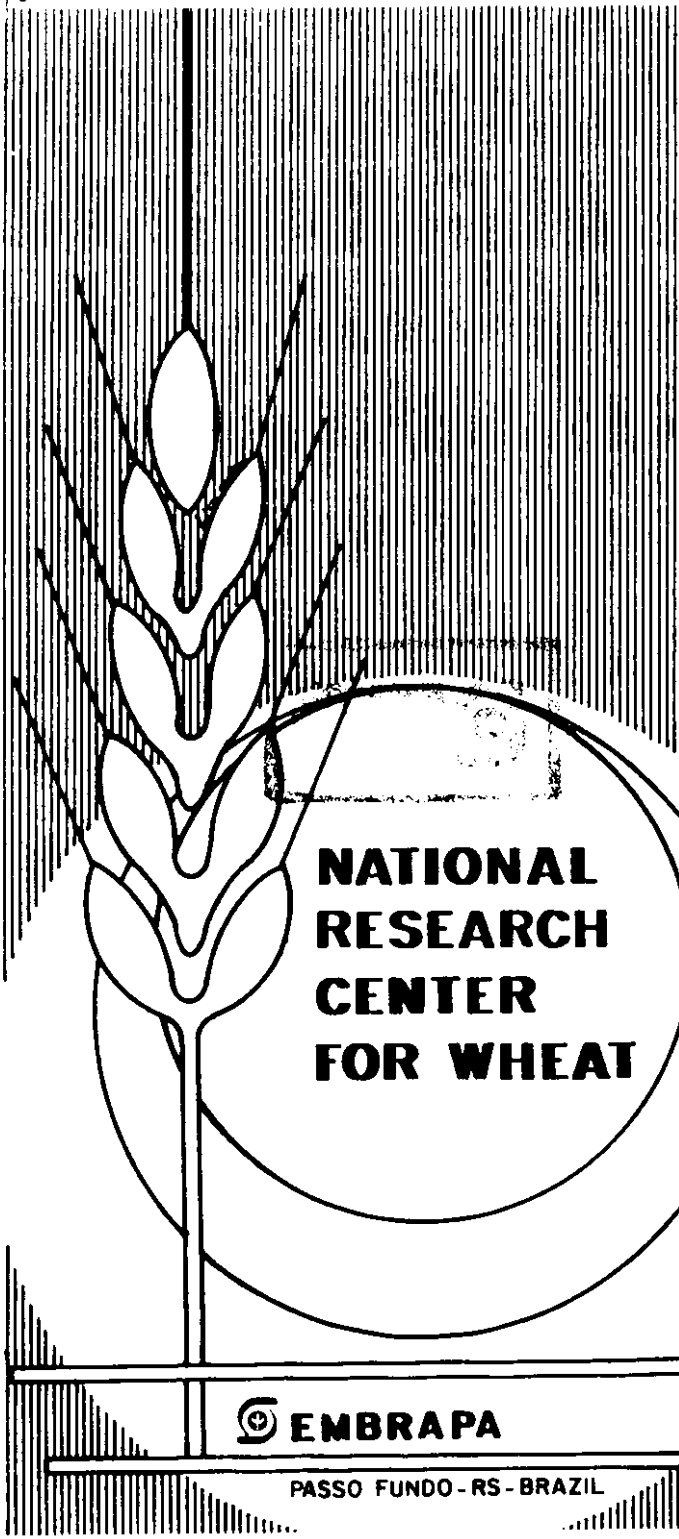
NATIONAL
RESEARCH
CENTER
FOR WHEAT
EMBRAPA
PASSO FUNDO - RS - BRAZIL

INTRODUCTION

The National Research Center for Wheat is one of the several research units of EMBRAPA, the federal organization for agricultural and livestock investigation in Brazil. EMBRAPA has a national action in terms of execution and coordination of research activities.

The National Research Center for Wheat, founded in 1974, is located near the city of Passo Fundo, in the State of Rio Grande do Sul, at the latitude 28°15'S and at the longitude 52°24'W. The climate in the region is classified as temperate (Cfa, by the Köeppen System), with an average annual temperature of 17.8°C and an average annual rainfall of 1,746 mm.

Wheat research is the primary objective of this institution, but triticale, barley, soybeans, rye, and lupines crops are also under study.

RESEARCH PROGRAM

This Center coordinates the National Wheat Research Program, composed by research projects from 11 institutions in 8 states. It also coordinates the triticale and barley research projects of the National Research Program for Agricultural

Diversification. Research with triticale and barley is carried out in the three southern States of Brazil. In terms of wheat, there are three main producing areas: the South, the South-Central region and the Central region.

In the South the main problems for wheat production are associated to soil and climate conditions. The soils are low in exchangeable cations and present high amounts of aluminum and manganese, with steep slopes. During the wheat growing season (June to November) the average rainfall is 944 mm, causing problems like several root and above-ground diseases and soil erosion.

In order to overcome the problems, the Center carries out multidisciplinary research projects to develop technologies for farmers. In the plant breeding area great efforts are in progress to develop new cultivars that are tolerant to Al^{+3}, resistant or tolerant to the main diseases and to insects (aphids), with high yielding potential. The work in the cytogenetics area is centered on studying the effects of stress conditions on chromosomal abnormalities and varietal desuniformity. Interespecific hybridization and anther cultures are done

to transfer useful genes from wild species to wheat and to accelerate the development of new cultivars, respectively. In the area of plant pathology great emphasis is placed on the identification of physiological races of pathogens and of sources of resistance for the main diseases. Epidemiological studies provide information on the biological cycle of pathogens and indicate strategies for their control. The chemical control of diseases is studied through several tests, namely: selectivity, efficiency, dosages and application methods of fungicides. Studies in the agronomy area comprise those required to establish the basic practices for cropping wheat, triticale, and barley. Crop rotations and the interactions among some factors, like cultivars x plant population x N levels, are some examples. Studies with different sources of nitrogen and phosphorus fertilizers, response of winter crops to lime and fertilizers in terms of direct and residual effects in order to improve technical recommendations, losses of nutrients and development of new methodology for soil analysis are examples of the research under way in the area of soil fertility. Biological and chemical control of wheat insects (aphids and caterpillars)

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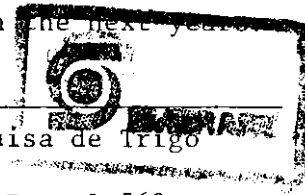
other desirable characteristics. The Center also developed 7 soybean cultivars, 3 triticale cultivars, 2 barley cultivars, and 1 rye cultivar.

Based on new technologies developed by the Center and by other research institutions, it was possible to increase wheat production and productivity in Brazil. Wheat production increased 153 % over the period 1985-1989, as compared to the period 1980-1984. The planted area increased 37 %, while the productivity increased 77.5 % during the former period. Rio Grande do Sul and Paraná, the two main wheat-producing states, increased their productivities by 81 % and 79.4 %, respectively.

In 1985, for an internal consumption of 6.1 million tons about 4.2 million tons were imported. Wheat imports dropped to 2.0 million tons in 1986, to 2.4 million tons in 1987 and to 0.9 million tons in 1988. Therefore, self-sufficiency is possible and might be achieved in the next years.



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