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Wheat Policy Options in Zimbabwe and in SADCC States

by

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I. BACKGROUND AND PROBLEM STATEMENT

SADCC states are grappling with some important food security policy questions facing the wheat industry in the region. These include the management of foreign exchange, food aid and wheat imports to deal with the rapid escalation in the demand for wheat products. Virtually every SADCC state is a net importer of wheat. For example, in 1983, the net imports of wheat were as follows: Botswana, 30,000 tons; Mozambique 117,000; Tanzania 49,000; Zambia, 100,000 and Zimbabwe 49,000 tons (CIMMYT, 1985, p.24). Since every SADCC country except Botswana is experiencing a shortage of foreign exchange, some tough questions need to be addressed.

At present there is strong pressure from commercial farmers in Zimbabwe and Zambia to increase the guaranteed producer price of wheat at a time when the world price of wheat is near an all time low. For example, because Zambia's foreign exchange auction has increased the cost of imports (tractors,

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spare parts, fertilizer), the government raised the wheat producer price by 58 percent a few days ago. In Zimbabwe, farmers are pressing for higher wheat prices at a time when the government has about three years supply of sorghum in storage. But most of this is red sorghum produced for the brewing industry and it is unsuitable for blending with wheat to make wheat bread. Preliminary research by Dr. Gomez, UZ food scientist has shown that up to 15 percent white sorghum can be blended with wheat to make bread and up to 50 percent in cakes and biscuits. But there is little research by plant breeders and agronomists on white sorghum in Zimbabwe. Hence, wheat policy options should be examined in conjunction with the sorghum industry[1/].

Zimbabwe is an exporter of white maize, the main staple and an importer of about 50,000 MT (20 percent) of its annual wheat consumption of 250,000 MT. Currently wheat is rationed to millers; it is estimated that the present annual consumption would increase to around 320,000 tonnes if the rationing were lifted. With population growth, urbanization and increasing per capita income, the demand for wheat is expected to double (from 250,000 to 500,000 tonnes) by the end of this century.

Whereas Zimbabwe produces approximately 80 percent of its annual consumption of wheat, Zambia is producing 10 to 15 percent, depending on rainfall. Botswana is producing about 500 tons of 32,000 tons annual consumption in 1985 (Gollifer,

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1/ Charles Mbwanda, newly appointed Lecturer in Agricultural Economics, is preparing a proposal to study the sorghum subsector.

1985). Wheat consumption is expected to triple in Botswana (from 32,000 to 90,000 tons) between 1985-2000.

Zimbabwe's wheat industry has grown rapidly in the past 20 years. In 1965, Zimbabwe produced only 2 percent of its annual requirements. By expansion of irrigation and the release of input-responsive varieties, yields and production of wheat have grown rapidly. For example, Zimbabwe's national average wheat yield is over 5t/ha and is surpassed only by the U.K., Egypt and Mexico.1/

Currently, wheat is grown exclusively during the cool winter period (May - September) under irrigation.2/

Over the past two decades, the wheat industry has expanded mainly on large scale commercial farms, which presently contribute 94 percent of the wheat crop. About four percent is produced on state farms. Communal farmers are producing around two percent of total output, most of which is for home consumption or local markets.

A wheat surplus was generated in 1976 to 1978 but rising input costs have made local production less competitive with imports. In recent years the area under wheat cultivation has declined. In 1986 an estimated 42,000 hectares of wheat were planted. The number of commercial wheat farmers reached a peak of 597 in 1978 and declined to 371 in 1985.

1/ A promising variety - SENGWA - yielded 10MT/HA at the Department of Research and Specialist Services research station at Harare in 1985.

2/ The Department of Research and Specialist Services of the Ministry of Agriculture and the Agricultural Research Trust (ART) are carrying out research on summer wheat. It is anticipated that many years of research will be necessary to overcome the numerous problems (rust, low yields, etc.).

II. RESEARCH QUESTIONS

The study examines the wheat sub-sector in Zimbabwe and lays the groundwork for a follow-up comparative analysis of the wheat industry in other SADCC states. It is envisioned that the follow-up study could be undertaken by research associates in SADCC states in cooperation with the University of Zimbabwe. Although CIMMYT is cooperating with Egerton College in carrying out a study in Kenya to our knowledge, there is no systematic study of the wheat industry underway in any of the nine SADCC states. Moreover, methodological modules for undertaking wheat sub-sector studies are not available for researchers in SADCC states.

This study has been jointly designed and is being carried out by a multi-disciplinary team of researchers from the University of Zimbabwe, MSU and CIMMYT. The central issue is determining the most cost effective combination of domestic wheat production, blending and imports to meet the present and long-term consumer demand for wheat bread and bread products until year 2000.

Three of the four main research questions in the MSU Food Security in Africa Cooperative Agreements will be addressed in this study:

(1) What is the interaction between technological change, institutional reform and economic policy in increasing food production?

(2) What is the most cost effective policy package (production, trade, food aid, exchange rate and blending) to achieve national food security goals.

(3) What changes in agricultural research priorities (eg. summer wheat, food science etc.) are required in light of research findings?

III. OBJECTIVES

The general objective of this study is to examine wheat policy options in Zimbabwe over the 1987-2000 time frame and to develop a methodological module for follow-up studies in other SADCC states. The specific objectives of the study are to:

(1) Trace the evolution of the wheat industry in Zimbabwe from 1965 to 1985

(2) Estimate the demand for wheat in Zimbabwe to the year 2000

(3) Compute the costs and returns to farmers producing wheat under present farming and water management systems

(4) Evaluate the potential of improved agronomic, water management and technology in increasing wheat production

(5) Calculate the domestic resource cost of wheat production at various levels of self-sufficiency

(6) Analyze food security policy options, including wheat and bread pricing policies, commercial wheat imports, food aid, wheat imports, triangular grain trade in the SADCC states and the economics of composite flour (i.e. blending white sorghum with wheat flour)

(7) Develop a methodological module to help research associates design and carry out comparative studies of the wheat industry in other SADCC states

We hypothesize that water availability is the overarching constraint on increasing winter wheat production in Zimbabwe. An important issue is the likely future cost of water for irrigation. As additional sources of water are developed, the costs could increase to the point where additional wheat is not profitable to farmers. For example, nine of every every ten

applications for water from rivers are currently being rejected because water allotments for the rivers are already committed. Hence, groundwater and dams are the main sources of irrigation water for the future. The Government of Zimbabwe has been negotiating for five years with the World Bank for a loan to expand irrigation in the Sabi Valley, but important questions are still unresolved. Improved water management and efficiency of water use can offset rising water costs. This study will examine theavailability of current and future suplies of water for wheat.

In 1985 the Government of Zimbabwe allocated $18 million to the National Irrigation Fund to underwrite subsidized loans for commercial and communal farmers as an inducement to expand the area under irrigated wheat. Virtually all of the $12 million reserved for commercial farmers has been allocated. But to date, communal farmers have been slow in drawing down on their $6 million allotment.

The dramatic increase in wheat yields over the past twenty years has been a key factor in making wheat a major winter (cool-season) crop. A potential source of additional wheat production is improved productivity of wheat in terms of varietal performance and more effcient use of inputs. Key varietal and agronomic aspects of wheat production have been discussed with breeders and agronomists at the Plant Breeding Institute and the Agronomy Institute of the Department of Research and Specialist Services (Whingwiri et al, 1984, Whingwiri, 1985) and with the Manager of the Agricultural Research Trust.

V. METHODOLOGY

This study is a follow-up to the maize subsector study being carried out by University of Zimbabwe researchers. The subsector framework allows analysts to examine economic issues involving both vertical and horizontal relationships, and the coordination of the sequential activities by which goods and services are produced and distituted (Shaffer, 1970).

This multi-disciplinary study will involve primary data collection from 60 commercial wheat farmers, as well as intensive interviews with specialists in research, extension, irrigation, farm input supplies, milling industry and food technology specialists from the University of Zimbabwe.

The economics of farm level wheat production will be examined by Peter Ngobese along the lines of the Byerlee and Longmire (1986) study in Mexico. Solomon Tembo, an agricultural engineer with experience with irrigation will examine present and alternative water management practices.

From the national perspective, the future of wheat in the economy will depend upon several factors: its potential net savings of foreign exchange, its ability to diversify production and thus reduce the risk of sudden changes in international price movements, employment generation and its ability to help redistribute income. Within the context of these factors, an assessment will be made of the profitability of wheat from the national perspective. The domestic resource cost of wheat production will be calculated in various levels of production (eg. 80, 85, 90, and 100 percent of annual

consumption)1/. Nominal protection coefficients (NPC) and effective protection coefficients (EPC) will be calculated to derive measures of producer incentives.

VI. PROGRESS - JANUARY TO JUNE, 1986

(1) The research team carried out numberous interviews during February and March with knowledgeable individuals in the wheat industry in an effort to identify and define the problem. These interviews included Peter Murphy, Chief Economist, at the Ministry of Agriculture; Dr Whingwiri and Steve Machado of the Agronomy Institute Anthony Mashuringwari, wheat breeder, R&SS; Richard Winkfield, Manager of the Agricultural Research Trust farm; Roger Mitchell of the Ministry of Water Development and Dennis Steward, Wright Rain, Harare. Two members of the research team visited Botswana, Zambia and Kenya in April and May to examine the wheat industry.

(2) A draft research proposal was prepared during the April visit of Jim Longmire, CIMMYT agricultural economist. A questionaire was devised with inputs from Jim Longmire and Allan Pilditch of Zimbabwe Cereals Producers Association. A. Pilditch supplied a list of commercial wheat farmers and the draft questionnaire was pre-tested with eight wheat farmers and revised in May.

1/ For a discussion of domestic resource cost see Pearson et al (1981) and Byerlee and Longmire (1986).

(3) Sixty commercial wheat farmers (from roughly 371 who produced wheat in 1985) were selected for interview on the basis of size of land area under wheat cultivation in order to obtain information on a cross-section of the industry. Twenty of the 60 farmers were interviewed as of June 30th.

(4) Preliminary discussions were held with Alan Low and Lovemore Madziwanzira on data entry and processing.

VII. PLAN OF WORK: JULY, 1986 - AUGUST, 1987

(1) The survey target of 60 wheat farmers is expected to be completed by the end of July.

(2) August and September will be devoted to a preliminary analysis of the survey data.

(3) Steve Machado, wheat agronomist, R&SS, will leave in September for the University of Reading to pursue his MSc degree in agronomy. It is anticipated that he will utilize the data collected in the wheat study for his thesis research.

(4) A paper "Preliminary Assessment of the Wheat Industry", will be prepared Longmire, Rukuni, Ngobese, Tembo and Eicher for the November 1986 Conference. We anticipate that Longmire will be at the University of Zimbabwe from October 20 to November 20, 1986 and that he will contribute about 4 to 5 months of his time to this study between July, 1986 and June, 1987.

(5) Dr. M.I. Gomez, Food Scientist, University of Zimbabwe will prepare a paper for the November conference on research on composite flour - ie. blending white sorghum with wheat flour.

(6) Peter Ngobese will leave in December for Virginia Tech to work on his M.S. thesis on "The Economics of Wheat Production in Commercial Farming Systems in Zimbabwe". He plans to complete his MSc thesis by April of 1987 and then spend 2 weeks at CIMMYT in Mexico working with Dr. Jim Longmire on the wheat monograph. Ngobese's travel and expenses will be paid by CIMMYT.

(7) We shall continue discussions with Professor Joe Ritchie, Crop Science Department and Institute of Water Research, MSU, and R&SS on the use of Ritchie's "CERES - wheat" model of water use/wheat yield interactions (see bibliography).

(8) We are exploring the possibility of holding a two day seminar on "Wheat Policy Research in Southern Africa" before or after the UZ/MSU June 1987 conference.

VII. RESEARCH OUTPUTS

(1) Solomon Tembo will prepare a paper on "Water Management Strategies of Commercial Wheat Farmers in Zimbabwe".

(2) Dr. M.I. Gomez will prepare a paper on "Sorghum & Wheat Blending in Zimbabwe."

(3) A draft monograph - J. Longmire, M. Rukuni, P. Ngobese, S. Tembo and C. Eicher, "Wheat Policy Options in Zimbabwe" will be prepared for the June 1987 UZ/MSU Conference. (See Annex A). A chapter based on the monograph will be prepared for the book "Food Security Policy Options in Southern Africa".

(4) Methodological Module - A 20 to 30 page methodological module will be developed by the research team for use by research associates in other SADCC states.

ANNEX A

Draft

OUTLINE FOR UZ/MSU/CIMMYT MONOGRAPH

WHEAT POLICY OPTIONS IN ZIMBABWE

by

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I. Introduction

II. Evolution of Wheat Production and Consumption Policy

III. Demand for Wheat in the Year 2000

IV. Factors Determining the Profitability of Wheat Production

Ngobese's MSc thesis at Virginia Tech.

V. Domestic Resource Cost Analysis of Wheat
(Longmire, Ngobese and Eicher).

VI. Cost of Additional Wheat Production
(Tembo, Ngobese, Longmire and Rukuni)

VII. Projections of the Viability of the Wheat Industry in the Year 2000
(Longmire, Ngobese, Tembo)

VII. Composite Flour (Gomez)

IX. Conclusions and Policy Recommendations

X. Implications for Food Security Researchers in SADCC States

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