



UNIVERSITI PUTRA MALAYSIA

**AGROFORESTRY PRACTICES AND ITS RELATIONSHIP TO
FARMERS' INCOME IN BUR'A MOUNTAIN REGION, HODAIDAH
YEMEN**

ABDUL-MOA'AMENSHOGA'A ALADEEN.

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**AGROFORESTRY PRACTICES AND ITS RELATIONSHIP TO
FARMERS' INCOME IN BURA'A MOUNTAIN REGION, HODAIDAH,
YEMEN**

By

ABDUL-MOA'AMEN SHOGA'A ALDEEN

**Thesis Submitted to the School of Graduate Studies, Universiti Putra
Malaysia, in Fulfilment of the Requirements for the
Degree of Master of Science**

May 2004



DEDICATION

***(ALLAH is the all mighty who gives us the power to fight
dishonesty and injustice)***

To

***The father of Martyrs, President Saddam Hussein
The holy spirits of the Iraqi and Palestinian Martyrs
My parents
My beloved wife Taiseer
My beloved son Ahmed
My beloved daughter Salwa
My brothers and sisters
My friends***



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in
fulfilment of the requirement for the degree of Master of Science

**AGROFORESTRY PRACTICES AND ITS RELATIONSHIP TO FARMERS'
INCOME IN BURA'A MOUNTAIN, HODAIDAH, YEMEN**

By

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May 2004

Chairman: Associate Professor Awang Noor Abd. Ghani, Ph.D.

Faculty: Forestry

Farmers in Yemen have been practicing traditional agroforestry systems for a long time. These practices provide the main source of income for the local people. The study attempted to examine the agroforestry practices in Bura'a Mountain region of Yemen. The study also examined the relationship between income of farmers and its determinants.

The study was conducted through a survey of 150 families in 11 villages at Bura'a Mountain Region, 118 as agroforestry farmers and 32 as non-agroforestry farmers, by using simple random sampling technique. The primary data were collected from personal interviews with the head of household using a structured questionnaire and some information were collected from published reports available at the FAO office at Sana'a,



General Directorate of Forestry and Desertification Control and Ministry of Agricultural and Irrigation (DGFDC).

The study described the agroforestry practices in the area and types of agroforestry systems found are agrisilvicultural, agrosilvopastoral and apiculture. Agrisilvicultural system is common in the highland of Bura'a. The main components of the systems are the perennial crops like coffee and qat with multipurpose trees. The agrosilvopastoral system is found in the plain of Bura'a and the components are the annual crops like sorghum, maize and millet with multipurpose. The apiculture system is also found but not much commonly. About 13.5 percent of the farmers have beehives in the study area.

The average income of agroforestry farmers is estimated 345,495 YR (USD 1919.4) per family per year, while the average income of non-agroforestry farmers is estimated 162,247 YR (USD 901.4) per family per year. The average income of AF is higher than the average income of NAF farmers.

The results of regression analysis indicate that the income of farmers is significantly related to the land size holding, number of livestock holding and family size. The results also show that the presence of coffee as a component of the agroforestry system increases farmers' income. Education

is also found positively related to the income of the farm household.

However, the income is not related to the age of the farmers.

The farmers of the study area in need of financial support to increase their production. Some policy recommendations are also highlighted in order to improve agroforestry practices in the region.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Master Sains

**KEGIATAN PERHUTANTANI DAN HUBUNGKAITNYA DENGAN
PENDAPATAN PETANI DI GUNUNG BURA'A, HODAIDAH, YEMEN**

Oleh

ABDULMOA'MEN H. SHOGA'A ALDEEN

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Petani di Negara Yemen telah mengusahakan sekian lama sistem Perhutnantani secara tradisional. Kegiatan ini telah menjadi satu sumber pendapatan utama kepada masyarakat tempatan di sini. Satu kajian telah dijalankan bertujuan untuk mengkaji sistem-sistem perhutnantani yang biasa diamalkan di Wilayah Gunung Bura'a, Yemen . Kajian ini juga bertujuan menentukan perkaitan antara pendapatan petani dan faktor-faktor yang mempengaruhinya.

Kajian ini dikendalikan dengan menjalankan bancian keatas 150 keluarga di dalam 11 kampung di Wilayah Gunung Bura'a seramai 118 sebagai petani perhutnantani dan 32 sebagai bukan perhutnantani dengan menggunakan teknik persampelan rawak mudah. Data primer telah diperoleh melalui temuduga secara perseorangan dengan ketua setiap keluarga menggunakan



soal selidik berstruktur dan maklumat diambil daripada laporan-laporan dahulu yang telah dicetak dari beberapa pejabat FAO di Sana'a, Ketua Pengarah Perhutanan dan kawalan "desertification" dan Kementerian Pertanian dan Saliran (DGFDC).

Kajian ini telah menghuraikan secara terperinci kegiatan perhutantani dalam kawasan ini, di mana terdapat tiga jenis sistem perhutantani yang diamalkan iaitu agrisilvikultur, agrisilvopastoral dan apikultur. Sistem-sistem agrisilvikultur adalah kegiatan yang biasa dan utama di tanah tinggi Bura'a dan komponen-komponen utamanya ialah terdiri daripada tanaman pertanian iaitu kopi dan qat berkombinasi bersama-sama pokok-pokok pelbagaiguna. Sistem yang kedua pula adalah agrisilvopastoral yang kebanyakan di dapati di kawasan tanah rata Bura'a dan komponen utama ialah tanaman kontan seperti sorghum, jagung dan Mollet berserta dengan pokok pelbagaiguna dimana ianya amat mustahak dalam melindungi haiwan ternakan. Sementara sistem apikultur juga diamalkan di kawasan Bura'a tetapi tidaklah banyak dan lebih kurang 13.5 peratus daripada petani dikawasan kajian mempunyai ternakan lebah.

Purata pendapatan petani yang terlibat dalam kegiatan perhutantani adalah sebanyak 345,495 YR (USD 1919.4) bagi setiap keluarga setahun, sementara purata pendapatan bagi petani yang tidak terlibat dalam perhutantani adalah sebanyak 162,247 YR (USD 901.4) bagi setiap keluarga

setahun. Purata pendapatan petani perhutantani adalah lebih tinggi daripada purata pendapatan petani bukan dalam perhutantani.

Keputusan analisis regresi menunjukkan dipengaruhi oleh pendapatan petani adalah dipengaruhi oleh saiz keluasan tanah, pegangan haiwan ternakan dan saiz keluarga. Keputusan juga menunjukkan tanaman kopi sebagai komponen dalam sistem perhutantani dapat meningkatkan pendapatan petani. Aspek pendidikan petani juga dipengaruhi berkaitan rapat secara positif kepada pendapatan petani. Walaubagaimanapun, pendapatan tidak menunjukkan perkaitan dengan umur petani.

Petani di kawasan kajian ini memerlukan bantuan kewangan dalam usaha meningkatkan pengeluaran mereka. Beberapa cadangan ke atas polisi telah dikemukakan untuk memperbaiki amalan perhutantani di kawasan ini.

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I certify that an Examination Committee met on 6th May 2004 to conduct the final examination of Abdul-Moa'amen Shoga'a Al-Deen on his Master of Science thesis entitled "Agroforestry Practices and Its Relationship to Farmers' Income in Bura'a Mountain Region, Hodaidah, Yemen" in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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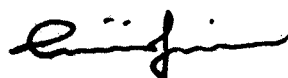


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DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or any other institutions.



ABDUL-MOA'AMEN SHOGA'A ALDEEN

Date: July 12, 2004

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LIST OF ABBREVIATIONS

AF	Agroforestry
NAF	Non-agroforestry
NIC	National Information Centre
ROY	Republic of Yemen
FAO	Food and agricultural organization for United Nation
GDP	Gross Domestic Product
YR	Yemeni Riyal
YAR	Yemen Arab Republic
ICRAF	International Centre for Research in Agroforestry
MPTS	Multipurpose Trees
MRA	Multiple regression analysis
CSO	Central Statistical Organization of Yemen
DGFDC	Directorate of Forestry and Desertification Control
ANOVA	Analysis of Variance
TDA	Tihama Development Authority
OLS	Ordinary Least Square
WLS	Weighted Least Square
MAI	Ministry of Agricultural & Irrigation of Yemen.
GTZ	(Gesellschaft fur Technische Zusammenarbeiten/ German Technical Cooperation)
RTI	Royal Tropical Institute (Netherland)



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CHAPTER 1

INTRODUCTION

1.1 General background

The Republic of Yemen, is located at the south-western edge of the Arabian Peninsular between 12° 40' and 20° 00' north of the Equator and between 42° 30' and 53° 05' east of Greenwich. The country is bordered by Saudi Arabia to the north, Oman to the east, the Arabian Sea and the Gulf of Aden to the south, and the Red Sea to the west (Figure 1.1). Apart from the broad and flat coastal plains, which border the Red Sea and the Gulf of Aden, the rest of the country reveals dissected and pronounced topography to the west and south and a more gentle, less pronounced topographic expression to the east of the country. The area of Yemen is estimated about 550,000 km² excluding the Rub'a Al-Khali and the Islands. Yemen includes more than 120 islands, the largest of which are Socotra in the Arabian Sea and Kamaran in the Red Sea.

The total population was estimated at 19.3 million in 2003 with an average population of 40 per square kilometre (World Fact Book, 2003). The average size of a Yemeni family is 7 members. The population census of 1994 reported that the rate of school joining between the ages of 6 to 15 year reaches to 56 percent.



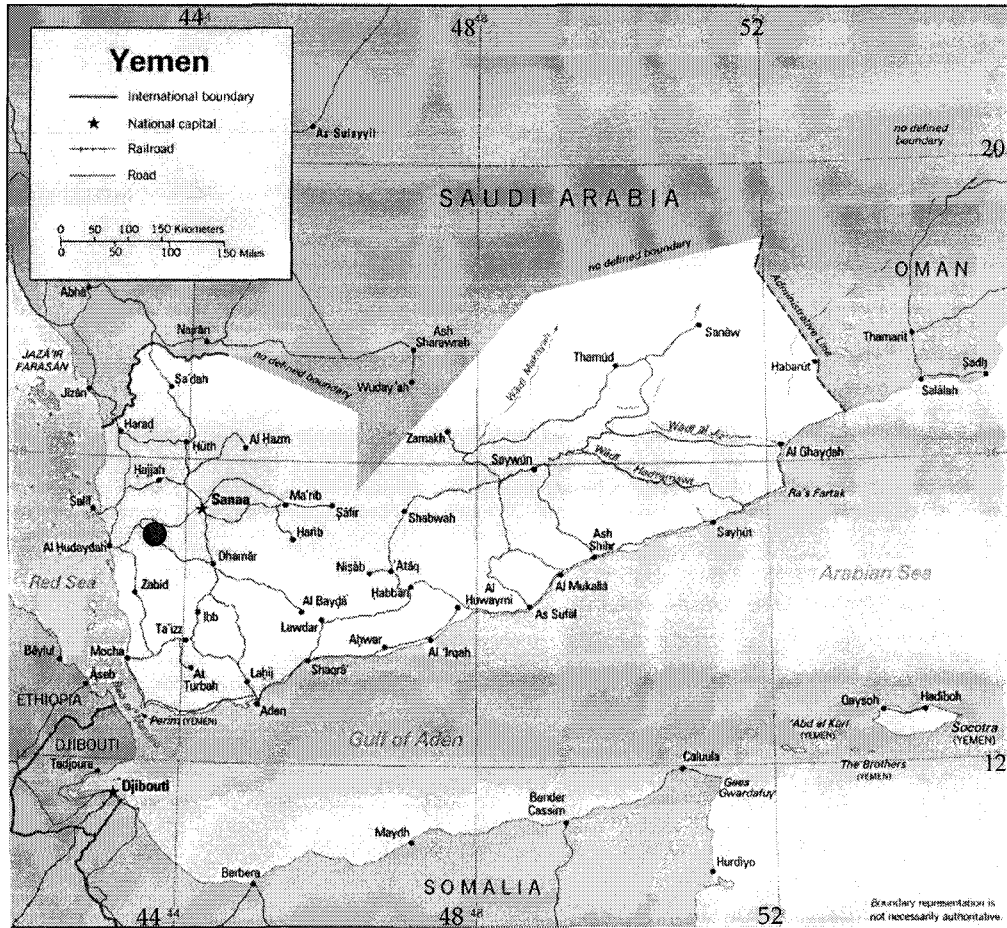


Figure 1.1 Republic of Yemen map showing the study area Bura'a Region