Viability of wild rice in Montana environments
by Mark David Reller

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Agricultural Engineering
Montana State University

Abstract:
Zizania Aquatica or Wild rice is an aquatic grass plant native to the Great Lakes region of the United States and Canada. Commercial stands have been established in this native region as well as in other parts of Canada and the United States, most notably in California and Idaho.

Montana contains regions with climates and conditions similar to those in Idaho where stands are established. The intent of this research was to determine if stands capable of supporting commercial harvest or improving wildlife habitat could be established in Montana. Research procedures included planting three varieties of wild rice seed in diverse sites and searching for existing stands.

After planting, sites were periodically observed to determine germination success, submergent growth, emergent growth and flowering. During this time interactions with wildlife and native plant competition were also noted. A commercial operation in Idaho was visited to obtain information on harvesting techniques, harvest equipment, curing, processing, storage, and marketing. Previously established stands were visited to observe plant growth, wildlife usage and site conditions.

All five planted sites produced plants through the submergent growth stage, but only two sites flowered and produced seed. Two sites with previously established stands provided limited yield data and information on wildlife usage.

The research indicated that wild rice stands can be established in limited areas of Montana and that yields similar to those obtained by commercial growers elsewhere can be obtained. In addition wildlife such as ducks and muskrats used stands for food and cover.

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APPROVAL

of a thesis submitted by

Mark David Reller

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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ABSTRACT

Zizania Aquatica or Wild rice is an aquatic grass plant native to the Great Lakes region of the United States and Canada. Commercial stands have been established in this native region as well as in other parts of Canada and the United States, most notably in California and Idaho.

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CHAPTER 1

INTRODUCTION

Alternative crops are gaining acceptance in Montana. Among the list of potential benefits alternative crops bring are profit and economic diversity. Wild rice (Zizania Aquatica) is one such crop. This "gourmet crop" brings a premium market price and utilizes lands not previously perceived as agriculturally valuable.

Wild rice can provide forage and cover sites for migratory waterfowl, fur-bearers, and even big game. Thus, the addition of wild rice to an ecosystem can also improve wildlife habitat.

Problem Statement

The primary goal of this research is to plant wild rice at several diverse Montana sites and observe first-season growth and subsequent stand establishment. The secondary goals are to investigate the plant's potential for commercial exploitation by reviewing commercial operations in other regions, and to investigate its potential for improving wildlife habitat.

Since wild rice is not native to Montana, numerous questions arise which cannot be fully answered given the scope and time frame of this research project. However, information gathered from planting test plots of wild rice and similar observations made in a Montana stand planted ten years ago, provide a starting point for accessing the potential viability of wild rice in Montana climates.

Objectives

The objectives of this study are to:

1.) Provide a review of important literature addressing the commercial production and processing of wild rice and to outline the process of commercial wild rice production and processing;

2.) Document the procedures and results of test plantings of wild rice in a diversity of Montana sites, and compare those results with locations in which wild rice has previously been established or is native;

3.) Provide general guidelines for individuals interested in stand establishment in Montana.

CHAPTER 2

LITERATURE REVIEW

Introduction

Native North American Indians of the Great Lakes region called wild rice "Manomin," which means "good berry." This grain was regarded as "food from the gods" and was used in religious ceremonies (Weir and Dale, 1960, p. 719). Such reverence is not surprising given the grain was a staple in their diet. Today, wild rice is popular among gourmet chefs because of its dark color and unique flavor.

Although many wild rice stands gleaned by Indians in centuries past are still producing grain today, the bulk of present-day production is from commercial paddies.

The Plant

Official Description

Through the centuries, wild rice has been called Mamonin, Indian rice, Canadian rice, squaw rice, water oats, blackbird oats, and marsh oats. Wild rice is the name most widely used today. (Oelke, 1982, p. 4). Wild rice is a member of the grass family and belongs to the genus Ziza-