



Marketing of malting and feed barley in Montana and in the United States
by Edward Dean Vaughan

A thesis submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY in Agricultural Economics
Montana State University
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Abstract:

The apparent need for this study arose in about 1957 when the barley variety Betzes was released in Montana as a potential malting barley. Following designation by the Malting Barley Improvement Association of Betzes as an approved malting variety, there immediately arose many problems of marketing.

Purpose of this study was to examine the market for barley and malting barley in the context of the opportunities and problems in the marketing of malting barley produced in Montana. Objectives were to attempt to determine whether, and if so, what form of marketing improvements might be made and to examine the market in terms of needed research aimed toward the solution of marketing problems. The study was conducted largely as a library type analysis utilizing secondary sources of data. The purpose, objectives, methods' and progress of the study were discussed and approved in a meeting of the thesis committee at Montana State College on December 11, 1962. At that time the study was visualized as a panoramic view of the market structure and as a basic reference piece on malting barley marketing. A companion study of the nature of the market for malting barley specifically in Montana was initiated by the Montana Experiment Station in 1960 and, at this writing, was in progress.

This study included a description of United States and Montana production, distribution, and marketing of barley and malting barley. The malting and brewing processes were reviewed in terms of the market requirements for malting barley. The brewing industry was examined from the point of view of consumption of beer, the major end product of malting barley. Pricing and price relationships were analyzed and related to governmental price and production policy. As an important market outlet, the export market was considered in terms of future prospects for the maintenance and possible expansion of overseas sales' of barley.

The writing of this dissertation was considered by the author as an anti-climax in that the chief contribution of the study and its related efforts has been to the development of Extension Service educational programs concerned with the marketing! and production of malting barley. It is hoped that this writing will further contribute to those programs and to future research studies dealing with more limited and specific marketing problems.

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IN MONTANA AND IN THE UNITED STATES

BY

^{EDWARD}
E. DEAN VAUGHAN

A thesis submitted to the Graduate Faculty in partial
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of

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in

Agricultural Economics

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ABSTRACT

The apparent need for this study arose in about 1957 when the barley variety Betzes was released in Montana as a potential malting barley. Following designation by the Malting Barley Improvement Association of Betzes as an approved malting variety, there immediately arose many problems of marketing.

Purpose of this study was to examine the market for barley and malting barley in the context of the opportunities and problems in the marketing of malting barley produced in Montana. Objectives were to attempt to determine whether, and if so, what form of marketing improvements might be made and to examine the market in terms of needed research aimed toward the solution of marketing problems. The study was conducted largely as a library type analysis utilizing secondary sources of data. The purpose, objectives, methods and progress of the study were discussed and approved in a meeting of the thesis committee at Montana State College on December 11, 1962. At that time the study was visualized as a panoramic view of the market structure and as a basic reference piece on malting barley marketing. A companion study of the nature of the market for malting barley specifically in Montana was initiated by the Montana Experiment Station in 1960 and, at this writing, was in progress.

This study included a description of United States and Montana production, distribution, and marketing of barley and malting barley. The malting and brewing processes were reviewed in terms of the market requirements for malting barley. The brewing industry was examined from the point of view of consumption of beer, the major end product of malting barley. Pricing and price relationships were analyzed and related to governmental price and production policy. As an important market outlet, the export market was considered in terms of future prospects for the maintenance and possible expansion of overseas sales of barley.

The writing of this dissertation was considered by the author as an anti-climax in that the chief contribution of the study and its related efforts has been to the development of Extension Service educational programs concerned with the marketing and production of malting barley. It is hoped that this writing will further contribute to those programs and to future research studies dealing with more limited and specific marketing problems.

CHAPTER I

BARLEY MARKETING IN MONTANA

Until 1954, when wheat acreage restriction went into effect, barley was a relatively minor crop in Montana. Since then, production has increased to the point where Montana ranks among the leading states in barley production. For all practical purposes, barley is the only significant alternative on much of the diverted wheat acres. During the late 1950's, annual production of barley in Montana varied from 41 to over 52 million bushels.

Historically, grain trade channels in Montana have been geared to the handling of wheat. The trade found it difficult to segregate barley from other grains during the processes of marketing. With increasing production of barley, there arose problems of harvest, storage, transportation, pricing, quality, variability of supply, interregional competition and market outlets. Foreign markets became an important, but unstable, market factor. Barley producers also discovered that Montana's livestock feeding industry was not keeping pace with increasing feed grain production.

The release of Betzes barley by the Montana Experiment Station (in 1957) and its approval by the trade as a malting variety (in 1958) provided an opportunity for Montana producers to take advantage of price premiums associated with the sale of malting barley.

The malting industry annually uses approximately 100 million bushels of barley. About 10 percent of the total usage or 10 million bushels is two-row malting barley. Until 1957 this market, largely in the Midwest and East, was satisfied by Idaho, Oregon, and northern California. With

the approval of Betzes as a malting variety by the Malting Barley Improvement Association, Montana began to compete with other two-row barley producers in the Pacific Northwest.

In the meantime, freight rates on Washington and Oregon malting barley were reduced, offsetting Montana's advantage in shipping barley to midwest malting centers. Colorado, Idaho and Alberta, Canada, began producing Betzes barley. Agronomic research for improved malting varieties continued in all barley producing areas. Within a period of two or three years the question changed from "Can Montana produce an acceptable malting barley?" to "Can Montana successfully compete in the marketing of malting barley?"

Malting barley is produced in Montana in the Gallatin Valley and in Teton, Pondera, and Glacier Counties. The principal markets are the malt houses located in Minnesota and Wisconsin. The problems associated with its marketing are found at all levels.

Little previous work dealing with the economics of marketing malting barley has been done. In Montana research and extension work has been concerned primarily with problems of production and the technological problems of harvesting and handling by farmers.

Some time after this dissertation was started, a research project was initiated by the Agricultural Economics Department of Montana State College, entitled Marketing Two-Row Malting Barley in Montana. ^{1/} The objectives of

^{1/} Ewasiuk, W. J., Project Statement, Montana AES, September 27, 1960.

the project were to:

- (1) Examine the market potential and specific outlets for Montana malting barley.
- (2) Determine the buying and selling practices of elevators and maltsters.
- (3) Recommend changes in marketing procedures.

The project was designed as a study of the specific nature of the marketing of two-row malting barley in Montana and as a complementary study to this dissertation which was designed as a "panoramic view of the market structure and problems of the United States malting barley marketing." 2/

The Problems

By the mid-1950's, Montana's barley marketing problem had become serious. In a 1957 Master's degree thesis, Fedje 3/ hypothesized that even though the Montana market for barley was undeveloped, the market could be expanded through increased livestock feeding, increased production of malting barley, and through new and expanded market outlets such as the export market for pearled barley. At the time of Fedje's study, Montana had no approved malting variety of barley. Hence his analysis and conclusions were directed mainly toward expanded livestock feeding as a market for barley.

2/ From notes taken during a meeting of the dissertation committee at Montana State College, December 11, 1962, attended by Clive R. Harston, Chairman; John L. Fischer; William J. Ewasiuk; and the author.

3/ Fedje, D. L., An Analysis of the Market Structure for Montana Barley and Potential Outlets, Montana AES Agricultural Economics Research Report, No. 1, Bozeman, Montana, May, 1957.

During the period 1954-1958, plant breeders at Montana State College were being pressed to develop an acceptable malting barley. Compana, the variety in greatest production, was not recognized either by the United States Department of Agriculture or by the malting industry as a malting variety. 4/ The variety Betzes, which was brought to the United States from Poland, was first tested in Montana as a possible malting variety in 1953. It was released in 1957 for commercial production and recommended for irrigated land or for areas of above normal rainfall east of the Continental Divide in Montana. 5/ Betzes yields satisfactorily on dry land but cannot be expected to consistently produce a malting quality barley. It compares favorably with other varieties as a feed barley. It is also recommended as a pearling barley.

Agronomically, Betzes is a two-row, medium-early variety of moderate yield. It is white seeded, midtall, moderately stiff strawed, rough awned, has medium to small seeds, and has a tendency to shatter when mature. 6/ Montana's climate is favorable for the production of bright, disease-free barley. But the climate also results in high protein barley which is

4/ Small quantities of Compana were being used for malting by the Great Falls Brewing Company.

5/ Montana Cooperative Extension Service mimeo folder, Betzes Barley in Montana, Bozeman, Montana, March, 1958.

6/ Montana AES Cereal Quality Control Laboratory Second Annual Report, released as The Malting Quality of Montana Barleys in Agron. and Soils Department, Mimeo Leaflet No. 30, Bozeman, Montana, October, 1959.

undesirable in malting. 7/ Thus the future for malting barley in Montana appears to be on irrigated land or in areas of high rainfall - conditions favoring the production of a lower protein content barley.

Just as all barley is not necessarily acceptable for malting, neither is Betzes necessarily acceptable for malting even though an approved variety. 8/ Thus, ideally, barley must be segregated from other grains; Betzes must be segregated from other barley until tested; portions of Betzes meeting malting requirements must be segregated from that which does not meet the requirements; and malting quality portions of the Betzes crop may need to be further segregated into lots which are relatively uniform in such malting quality factors as protein content; test weight; color, size, and plumpness of kernel; rate of germination; and kernel damage. Few, if any,

7/ Protein is a nitrogenous compound. If there is too much protein--hence too much nitrogen--in barley, chemical reactions result in a malt which may cause instability in the finished brew. Some nitrogen is necessary in the malt to furnish nutrient for the yeast during fermentation. Nitrogen also acts as a carbonic gas carrier in the finished brew. Thus too much nitrogen causes a "hazy" beer, but too little slows fermentation. See: Banasik, O. J., "Evaluation of Barley Quality," North Dakota Agricultural College, Bimonthly Bulletin, Fargo, North Dakota, July-August, 1957.

8/ In a paper presented to the Western Barley Conference at Spokane, Washington, in 1955, John H. Parker of the MBIA said: "Malt for brewing may be made from nearly any kind of barley. However, it is only reasonable that brewers and maltsters prefer the higher quality barleys for their particular purposes. Thus total barley production is not a necessary indicator of the quality of the malting barley available. Frost, diseases, etc., may not significantly reduce total barley production but may seriously reduce the supply of high quality barley for malting."

individual producers or grain handlers have had sufficient storage facilities to handle the relatively small quantities produced or received according to the above described ideal quality segregation.

Pricing problems have also been evident. Even though a particular lot of Betzes may meet malting standards, it does not necessarily follow that a malting price will be paid. In some cases producers have felt that premiums should be paid for all Betzes. In other instances grain handlers have purchased Betzes from farmers at malting prices and later found that they had to resell it at feed prices--or vice versa.

The handling, storing, and pricing problems in the marketing of Betzes were additionally complicated by a lack of understanding of the malting and brewing industries by both producers and local grain handlers.

These and other problems were recognized by producers and the grain trade. The Director of the Malting Barley Improvement Association said:

"If Montana is eventually in the position of marketing large quantities of malting barley, it must be recognized that this barley will very likely have to be marketed through the recognized grain marketing channels and be sold on the Minneapolis market as is other malting barley produced in the Midwest." 9/

Proposed Producer Marketing Associations:

Betzes barley producers, generally, were sympathetic with the storage and handling problems of the grain trade but were not content with an inadequate marketing system for a new crop which, though small relative to wheat, held the potential of significant additional annual farm income. In

9/ Letter by A. J. Lejeune, Director, MBIA, Addressed to E. D. Vaughan, Montana Extension Service, March 7, 1958.

the summer of 1958, there occurred an incident illustrative of Montana's malting barley marketing problems. That incident is summarized in the following paragraphs.

Members of the Gallatin County Grain Growers Association, who were producers of Betzes barley, were dissatisfied with the marketing of their crops. Their reasons were that local grain marketing facilities apparently could not adequately handle the problems of testing, segregation, and pricing of Betzes as a malting barley. Their proposed alternative was to form a producers marketing and/or bargaining association to sell their barley direct to maltsters. The Montana Cooperative Extension Service Marketing Economist, E. D. Vaughan, 10/ and the Gallatin County Agent, Owen Wirak, 11/ were requested to assist in determining the feasibility of the proposal. It was decided that the Extension Marketing Economist would visit the Minneapolis Grain Exchange and interview commission firms, maltsters, and others interested in the malting barley market concerning the proposed bargaining association. Grain trade representatives interviewed were cordial, interested, alarmed, and unanimous in their reactions

10/ Now Assistant Director, Marketing Division, Federal Extension Service, USDA, Washington, D. C.

11/ Now Marketing Specialist, Cooperative Extension Service, Washington State University, Pullman, Washington.

to the proposal. Their opinions were summarized as follows: 12/

- (1) The malting industry is actively interested in seeking out new areas of malting barley production.
- (2) Local elevator problems in the handling of Betzes as a malting barley are recognized and efforts are being made to overcome those problems.
- (3) It is recommended that producers store their barley on the farm at harvest time, have samples tested, submit test results to local elevators, who may then act as agent for producers in seeking malt house buyers directly or through grain exchange commission firms. Barley shipped to Minneapolis may be sold either "on track" or "to arrive", depending on market conditions at the time.
- (4) It is considered unethical for maltsters to send buyers into the producing area for direct purchase from producers.
- (5) If and when Betzes is produced in commercial quantities, local grain handlers will be active in the market.
- (6) Any attempt by a producer's marketing organization to sell direct to maltsters or to otherwise bypass regular grain trade channels will be opposed.

With a crop of barley ready for harvest, the producers, feeling more helpless than mollified, accepted the general recommendation in No. (3) above. Local elevators then made an apparently sincere effort to cooperate with producers in handling and marketing their malting barley. This compromise solution was generally adopted in all major Betzes-producing

12/ From a letter by E. D. Vaughan in the form of a Malting Barley Marketing Report, addressed to the Gallatin County Grain Growers Association, c/o Owen Wirak, County Agent, July 21, 1958.

areas in the state. It did alleviate--but it did not necessarily solve-- problems of segregated storage, sample testing, handling and pricing.

Some time later (in 1960) there was an attempt on the part of a group of farmers to combine the original proposal for a malting barley marketing bargaining association in the Gallatin Valley with the recommendations of the grain trade as given above. The following outline summarizes the proposal:

Proposed

Gallatin Valley Malting Barley Marketing Association

I. Background

1. Gallatin Valley wheat acreage allotments have been severely reduced. Malting barley appears as a profitable alternative crop.
2. Production conditions indicate the Gallatin Valley as a potentially reliable source of supply of high quality malting barley in relatively large total quantities.

II. Existing Marketing System

1. Same as traditional farmer to local elevator grain marketing methods with one exception: Barley stored on the farm until purchaser calls for delivery. Reason: Local elevators, geared to handling wheat, cannot properly bin and store relatively small quantities of malting barley.

III. Need

1. Producers market malting barley individually at different times, and in varying quantities and qualities.

2. Feel they aren't receiving full value for barley of malting quality and are not utilizing their potential bargaining power.

IV. Purposes

1. Educational--advice and assistance to farmers in methods of planting, harvesting, sampling, storing, testing, handling, marketing.
2. Profit--through emphasis on quality and concentration of volume under the marketing control of a bargaining association, producers may realize greater returns.
3. Reduced costs--buying costs to the grain trade should be reduced by having the output of many producers available through a single marketing agency.

V. Methods

1. Full utilization of established grain trade channels. Barley to be sold in the same manner as individual producers normally market their crops. Difference--selling the combined output of members by a sales committee of the association.
2. Producers to sign long-term, enforceable contracts naming the association as sales agent.
3. Association to specify malting quality standards and accept for sale only barley meeting those standards.
4. Producers required to have adequate farm storage facilities for maintenance of quality of grain stored.
5. Producers sample each load as binned. Association's representative samples each bin. Bin sealed. Producer's and association's representatives samples tested for quality simultaneously in State Grain Laboratory. 13/

13/ See quality report form on page 12.

6. Entire quantity under association control advertised for sale on the basis of quality as tested. (Buyer may re-test if desired.)
7. Buyer required to purchase the entire stock of the association. Delivery could be at one time or spaced within reasonable limits.
8. Proceeds, after costs, would be prorated to members according to quantity and quality.

The new or revised proposal was never carried out. Presumably, the producers involved could not agree on the details, and the grain trade remained cool to the proposal.

Although different in some respects from "regular" trade practices, the Gallatin Valley proposal for cooperative marketing of malting barley represented no drastic departure from regular grain marketing channels. For purposes of comparison, it may be noted that in the Pacific Northwest cooperative malting barley marketing is not an uncommon practice. In the state of Washington, for example, there have been at least two recent attempts to develop integrated organizations for marketing malting barley. One of these is concerned with the production of Atlas and Traill barleys in Columbia and Walla Walla Counties in southeast Washington. Extension agents in the two counties, local Crop Improvement Associations, and the Columbia County Grain Growers' Association worked together to supply malting barley on a contract basis to the Great Western Malting Company at Vancouver. The Western Farmers' Association of Seattle contracted directly with farmers to produce Hannchen for the Schlitz Brewery. Apparently, for

Betzes Barley Quality Report

Grower _____

Address _____

Lab. No. _____ Other identification _____

Weight per bushel _____ lbs. per bu.

Dockage _____ %

Sound barley _____ %

Moisture _____ %

Skinned and broken kernels _____ %

Other grains _____ %

Foreign material _____ %

Other barley _____ %

Damaged kernels _____ %

Type of damage _____ %

Protein (over-dry basis) _____ %

Kernel size assortment

on top 7/64 sieve _____ %

on top 6/64 sieve _____ %

on top 5/64 sieve _____ %

thru 5/64 sieve _____ %

Remarks:

Montana Grain Inspection Laboratory
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reasons unknown to the author, these two attempts have not been entirely satisfactory even though cooperatives dominate the Pacific Northwest grain trade.

CHAPTER II

BARLEY IN THE GRAIN MARKETING SYSTEM

Basically the need for studies of grain markets stems from the fact that the flow of grain through marketing channels is affected by ever changing kinds and amounts of production, technological advances, adjustments in farming operations, population and consumption patterns, domestic and international markets and competitive advantages. This is a study of the market for malting barley. The physical channels of marketing and the institutions involved are essentially the same for all grains, including barley and malting barley. Thus it would seem desirable to examine the grain marketing system to determine what changes have taken place in grain marketing and to determine how barley, as compared to wheat, is marketed. The changes and differences are important in possible recommendations for future changes in barley marketing procedures.

Grain Marketing Channels

The so-called "regular grain marketing channels" include the organizations and agencies which handle grain and perform the services of storage, delivery, processing, etc., from farmer to consumer. Typically, the channel includes:

Country elevators, handlers, and truckers constituting the farmers' primary market;

Brokers, agents, and dealers;

Secondary outlets including terminals, sub-terminals, and port elevators;

