Michigan is the leading producer of white pea beans for commercial canning. The crop is harvested and stored at a moisture content higher than ordinarily considered practicable in order to avoid slow, uneven soaking and cooking, and to avoid split beans, which are worthless for canning.

As a result of the necessary and accepted practice of storing the crop at moisture contents of approximately 17 or 18%, considerable difficulty is encountered in storage, particularly when the beans cannot be moved in bulk from bin to bin. When beans are stored in 100 pound sacks, excessive rancidity, heating, and molding occur.

The present study was initiated in an attempt to learn certain fundamental facts in regard to the behavior of beans when stored in air at various relative humidities and temperatures.

1 Contribution from Michigan Agr. Exp. Station, E. Lansing, Mich. Journal Article No. 1703. This study was carried on under a grant of funds from the Michigan Bean Shippers Association and the Commodity Credit Corporation, U.S.D.A. Rec. for publication Dec. 24, 1954.

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LITERATURE REVIEW

Numerous articles have been published concerning the conditions necessary for safe storage of farm products. A recent monograph (1) by the American Association of Cereal Chemists lists hundreds of papers, that are pertinent to the problem. For example, there is more or less standard approach has been that of storing the product in question at a constant relative humidity and temperature until an essentially constant weight is reached. Analysis for moisture content then gives the equilibrium moisture content (and temperature) and indirectly the vapor pressure of the sample. Further examination of the sample for molds (10, 11), rate of respiration (6), temperature changes in chemical composition (1), discoloration (3), etc., gives a clear indication of how such a sample will behave when stored at any vapor pressure and temperature at any given moisture content. In general, mycelial growth of molds will occur at a somewhat lower moisture content than sporulation (1). Molds vary considerably (1, 11) in their requirements for growth. However, little molding may be expected at relative humidities less than 75% in moderately long storage (1, 11). Some materials will support mold growth in much drier atmospheres than will other materials (1). During the preparation of this manuscript, a paper has appeared characteristic of white pea beans (12).

EXPERIMENTAL PROCEDURE

Two lots of beans, one "dry" (about 14% moisture) and one "wet" (about 20% moisture), were used to assure uniform sub-