

SEASONAL

PRICE

VARIATIONS

**FOR
MISSOURI
CROPS**

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Seasonal Price Variations

For Missouri Crops

JOHN P. DOLL AND JOHN E. AMBROSIUS

Farm managers must know how to grow crops and when to sell them. Largest possible returns from a bumper crop may not be realized if the product is marketed at the wrong time. Timely marketing is one essential ingredient of good farm management.

Crop prices received by Missouri farmers are determined by the interaction of supply and demand which, in turn, is affected by business cycles, bumper crops, government programs, wars, disease, drouth at home or overseas and many other factors. Many of these factors occur only once and cannot be predicted much in advance; the farmer can best protect himself or take advantage of such occurrences by keeping informed on current market developments. However, in the case of crops, certain economic factors are present each year. For example, supplies are plentiful each year at harvest time—crops must be stored and storage costs increase prices.

Seasonal price variations, defined as price variations which repeat themselves regularly each year, are described herein. The purpose is to acquaint producers with seasonal variations that have occurred in the recent past. No at-

tempt will be made to explain the many economic factors that cause price variations; perhaps the descriptions presented will stimulate readers to investigate further on their own.

A knowledge of seasonal price variations is useful in formulating production and marketing plans. Past seasonal variations should not be relied upon completely, however, for in any particular year the economic situation may dictate large deviations from usual seasonal patterns. These unusual conditions may be the very ones the farmer seeks to avoid or capitalize upon.

Even in the absence of extenuating circumstances, such as war or famine overseas, seasonal variations in prices are never identical for any two years. Thus, a description of seasonal variations that have occurred in the recent past is useful but should be used in conjunction with current economic information such as the outlook information available from the University Extension Division.

Method of Analysis

Seasonal price indexes show the price received in a month as a percentage of the annual average price.* For

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Professors David N. Harrington and Jerry G. West made helpful suggestions on the preparation and presentation of data. This bulletin is a report on research project 428 of the Department of Agricultural Economics.

*The indexes are based on "centered moving averages." A centered moving average for a particular month is an average computed by using monthly prices for the six month period immediately before the month and the six month period immediately following the month. It represents a type of annual average price centered on that month—hence the name "centered moving average." Computations are explained in R. J. Foote and Karl A. Fox, "Seasonal Variation: Methods of Measurement and Tests of Significance," Agriculture Handbook 48, United States Department of Agriculture. September, 1952.

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example, the seasonal index for December corn is 93 percent; therefore during the time period considered, December prices were seven percent below the annual average corn price. (See the corn price index in the table.) The highest seasonal corn prices during the same period occurred in June and July, when prices were nine percent above the annual average price.

Seasonal indexes were computed for each crop for monthly prices of the 1956 to 1961 period. The seasonal patterns represent the average pattern or "normal" year for that period. Although the seasonal price pattern in some cases may be quite regular, actual prices seldom follow the "normal" pattern exactly. Users should be aware of how much the actual prices for the period deviated from the "normal" prices.

"Standard Deviation"

A "standard deviation," computed for each month's index, measures the deviation of actual prices from the "normal" price represented by the seasonal index. As the deviation of the actual price from the "normal" price increases, the magnitude of the standard deviation also increases. When the actual prices are close to the "normal" price, the standard deviation is small. Where the actual prices vary widely from the "normal" price, the standard deviation is large.

Examination of the standard deviations in the table reveals the time of year when the price of a crop was most variable and also indicates which crops had the most variable prices. For example, the month in which

actual soybean prices varied most widely from the "normal" value was May, when the standard deviation reached a high of 4.2 percent. A comparison of the standard deviations for grain sorghum and barley shows that grain sorghum prices are more variable throughout the year than are barley prices.

Two common sources of large standard deviations exist. One is when the seasonal trend remains the same each year but large variations in the prices in a given month occur from year-to-year. The other is when the seasonal pattern changes from year-to-year. Therefore, seasonal indexes should be carefully interpreted. The data presented here show what has happened in the recent past but do not necessarily indicate what will happen in the future. Recent changes in the government programs related to some of the crops may cause a significant shift from the seasonal variations presented here.

Source of Data

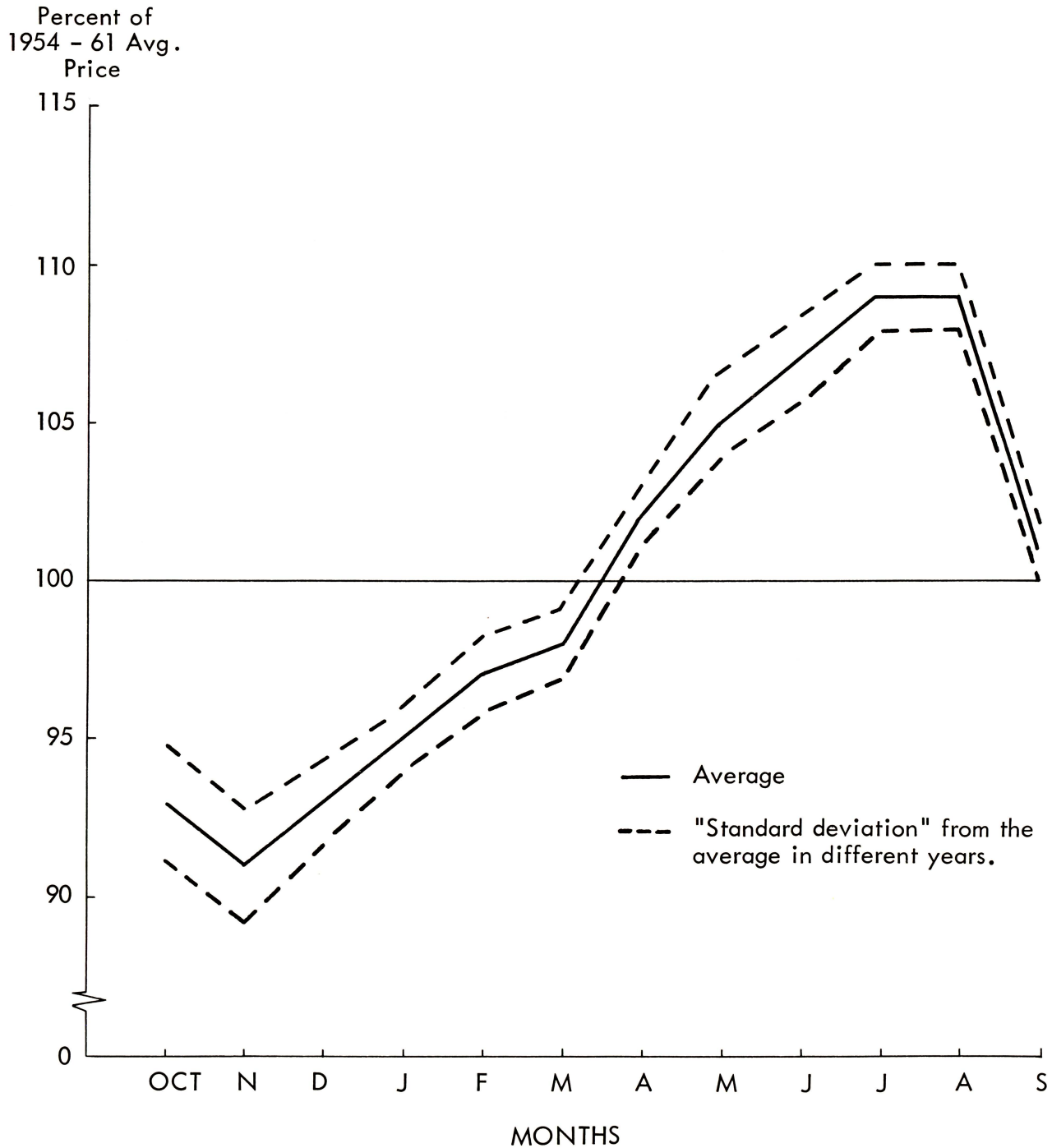
All prices were those received by Missouri producers as reported for the middle of each month by the Office of the Agricultural Statistician, Columbia, Mo. Hay prices were weighted prices of different kinds. Cotton prices for June, July and August have not been reported consistently in recent years so no index on cotton for these months was computed.

Interpreting

The solid lines on the graphs connect the monthly crop values, expressed as percentage of the average price for the 1956-61 period. These "indexes" are plotted for

crop years rather than calendar years. The dashed lines on the figures are located one "standard deviation" above and below the average index. The vertical distance be-

Seasonal Index for Corn Prices, 1956-1961

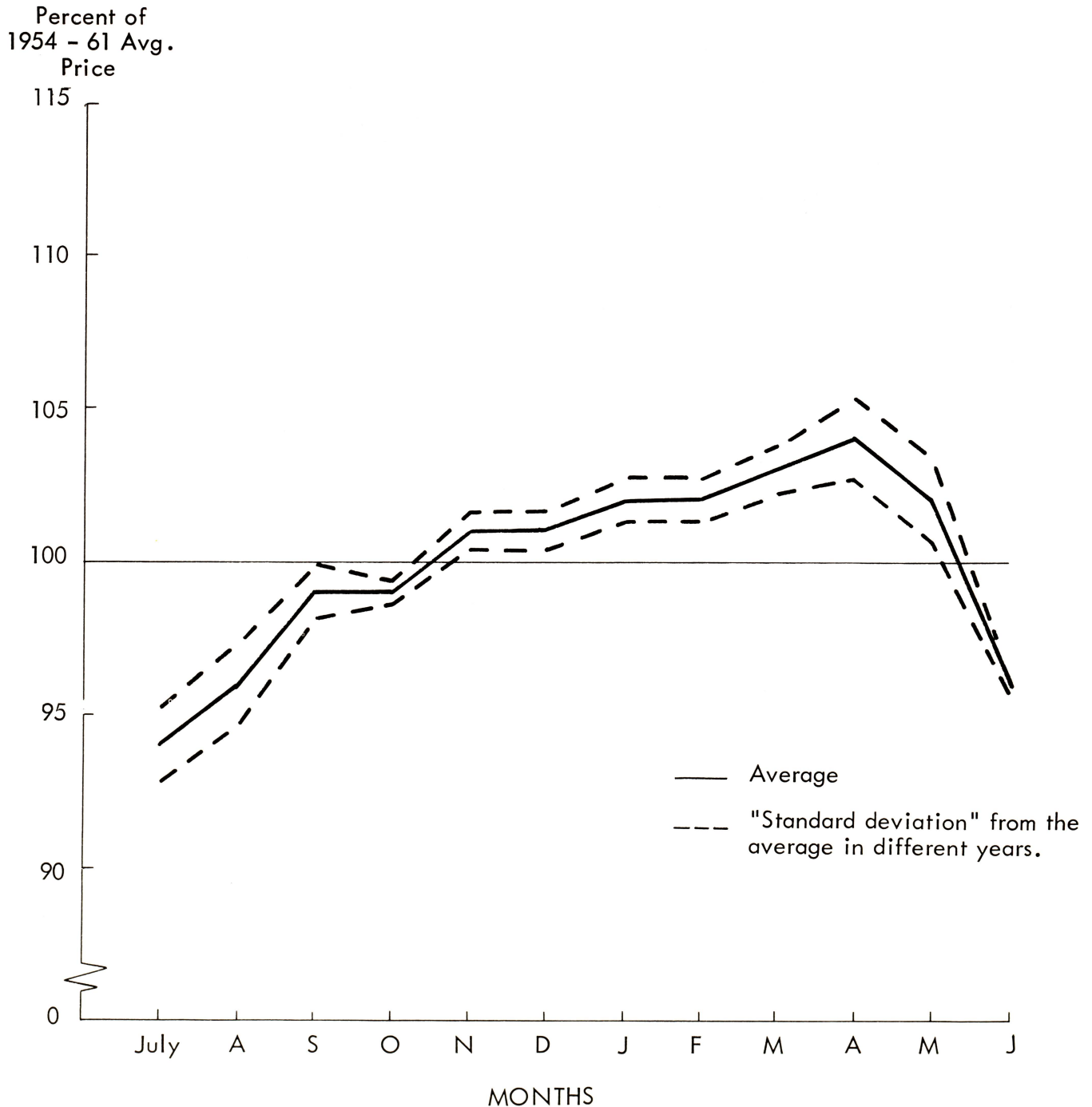


the Figures

tween the dashed "standard deviation" lines indicates the degree of price variability that occurred in each month. The greater the vertical distance between the dashed

lines, the greater was the price variability for that month. Indexes and their standard deviations are also presented in the table.

Seasonal Index for Wheat Prices, 1956-1961



Seasonal Index for Soybean Prices, 1956-1961

Percent of
1954 - 61 Avg.
Price

115

110

105

100

95

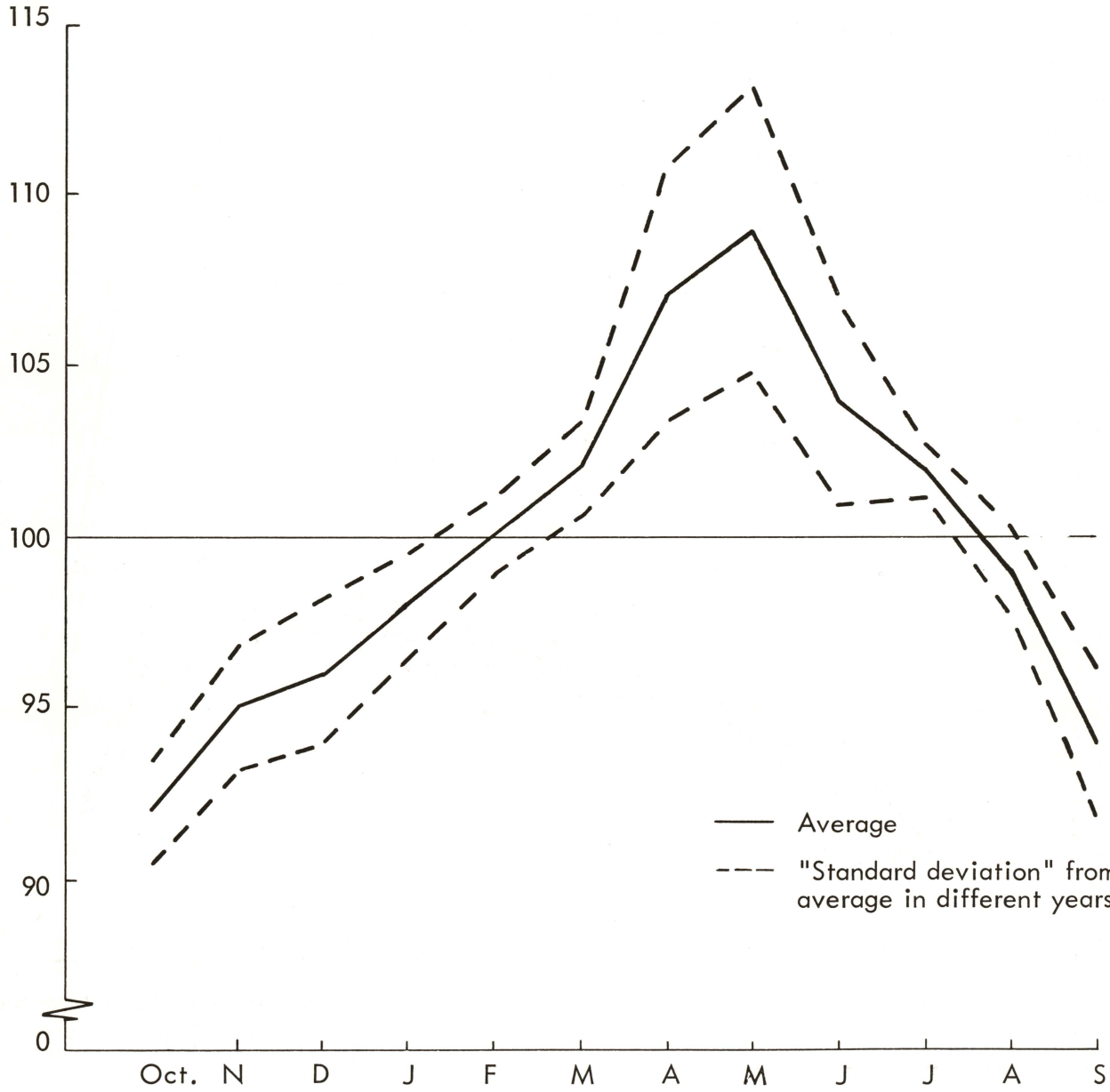
90

0

Oct. N D J F M A M J J A S

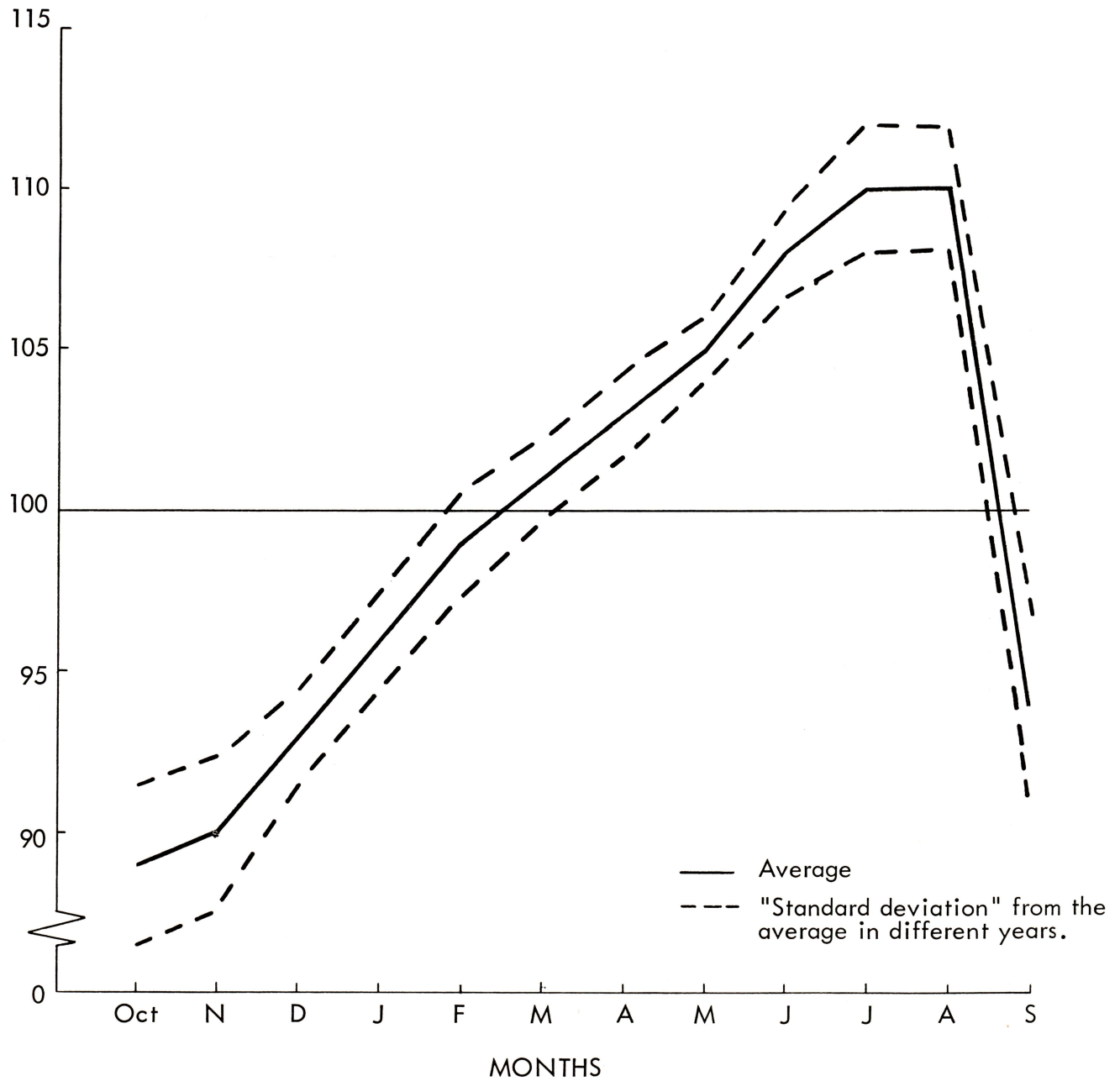
MONTHS

— Average
- - - "Standard deviation" from the average in different years.

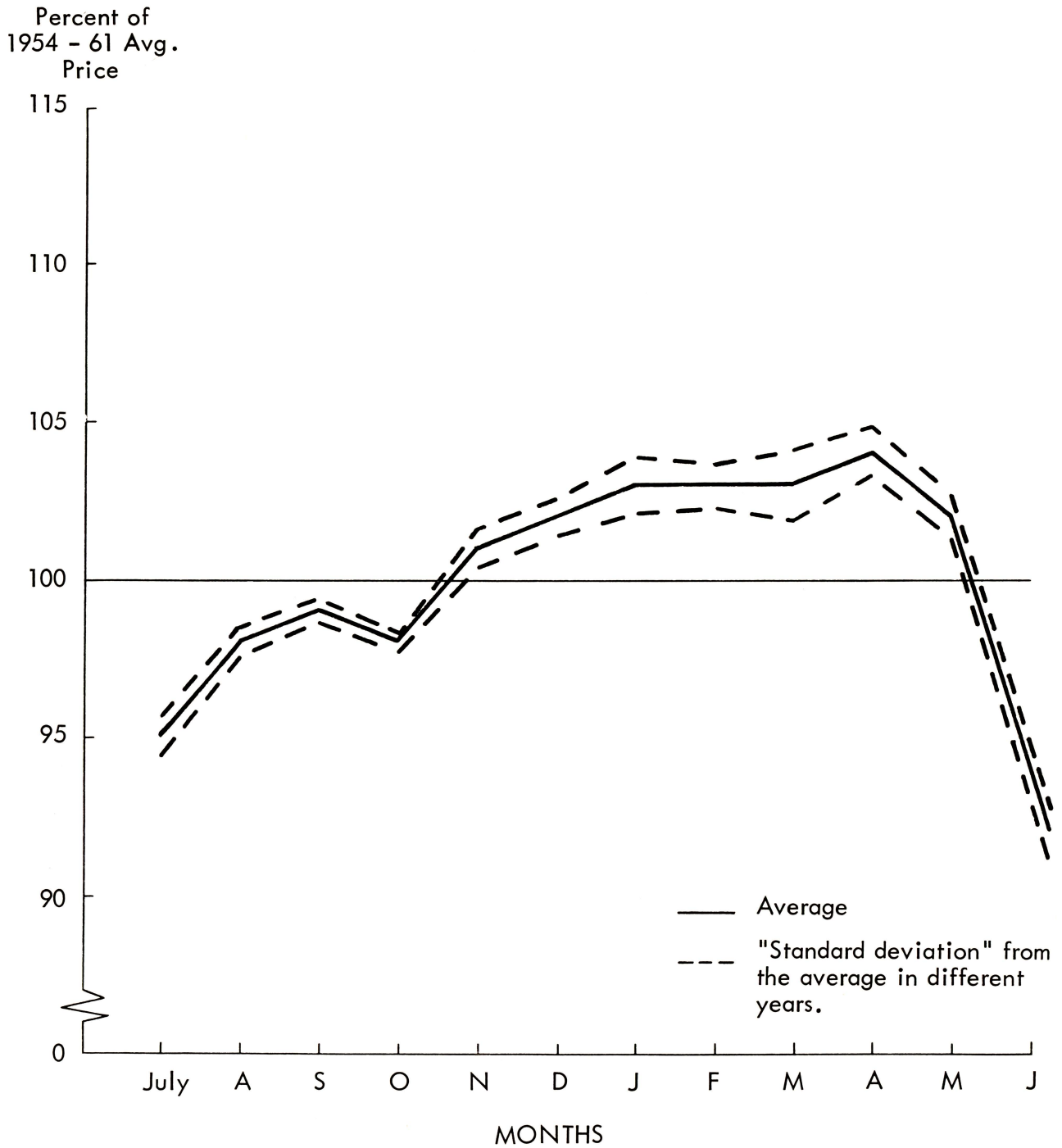


Seasonal Index for Sorghum, 1956-1961

Percent of
1954 - 61 Avg.
Price



Seasonal index for Barley Prices, 1956-1961



Seasonal Index for Oat Prices, 1956-1961

Percent of
1954 - 61 Avg.
Price

115

110

105

100

95

90

0

July

A

S

O

N

D

J

F

M

A

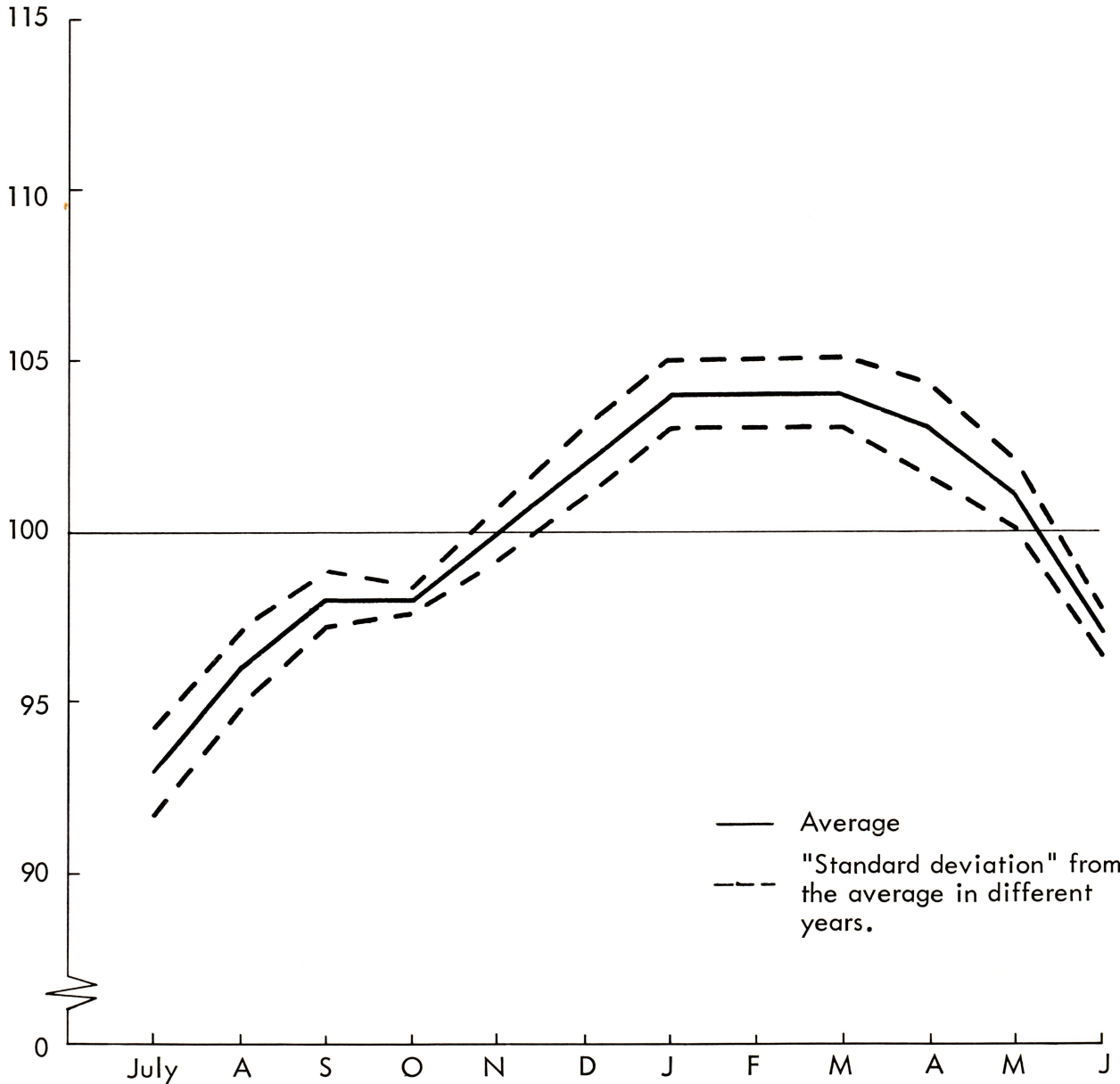
M

J

MONTHS

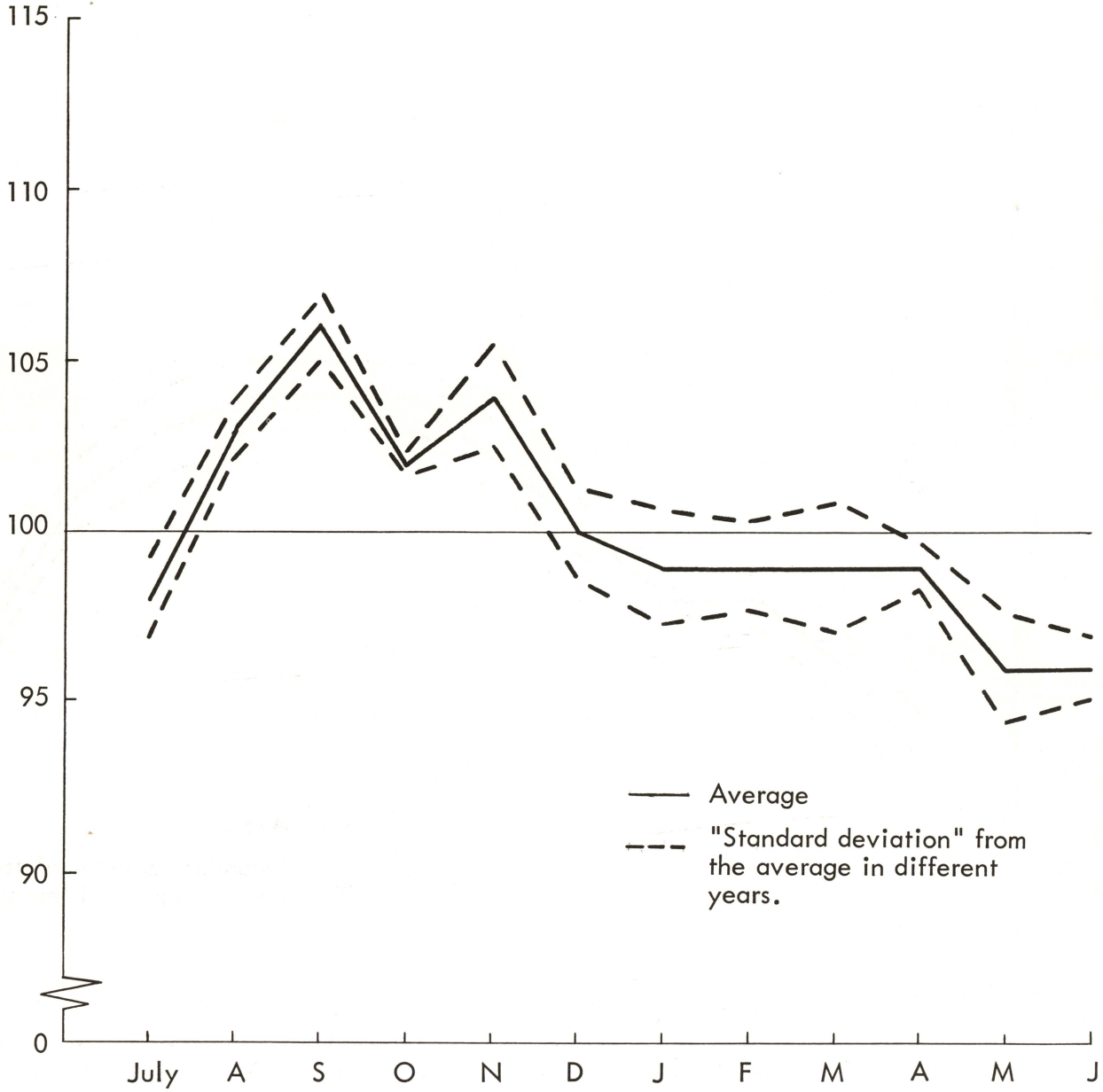
— Average

- - - "Standard deviation" from
the average in different
years.



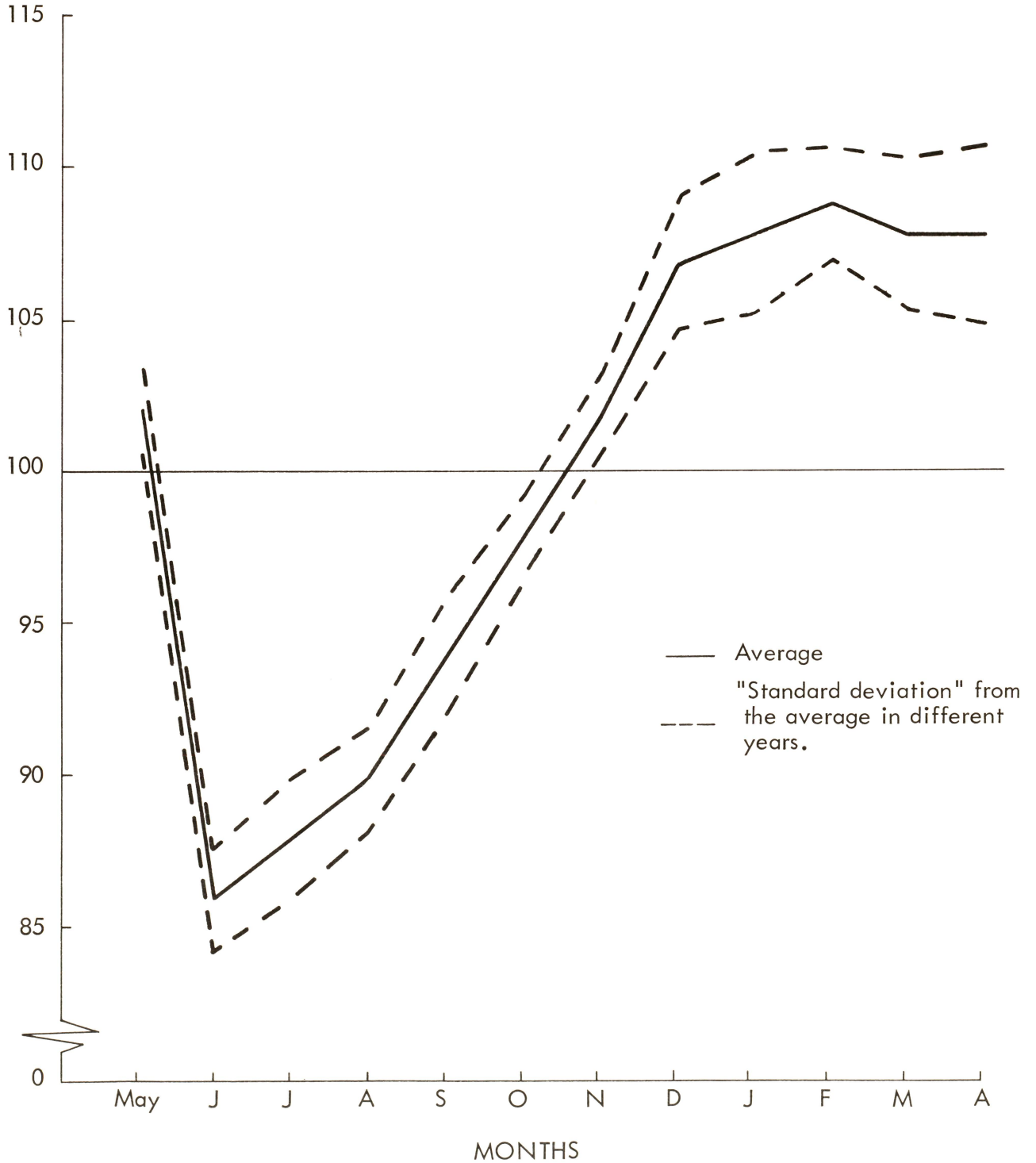
Seasonal Index for Rye Prices, 1956-1961

Percent of
1954 - 61 Avg.
Price

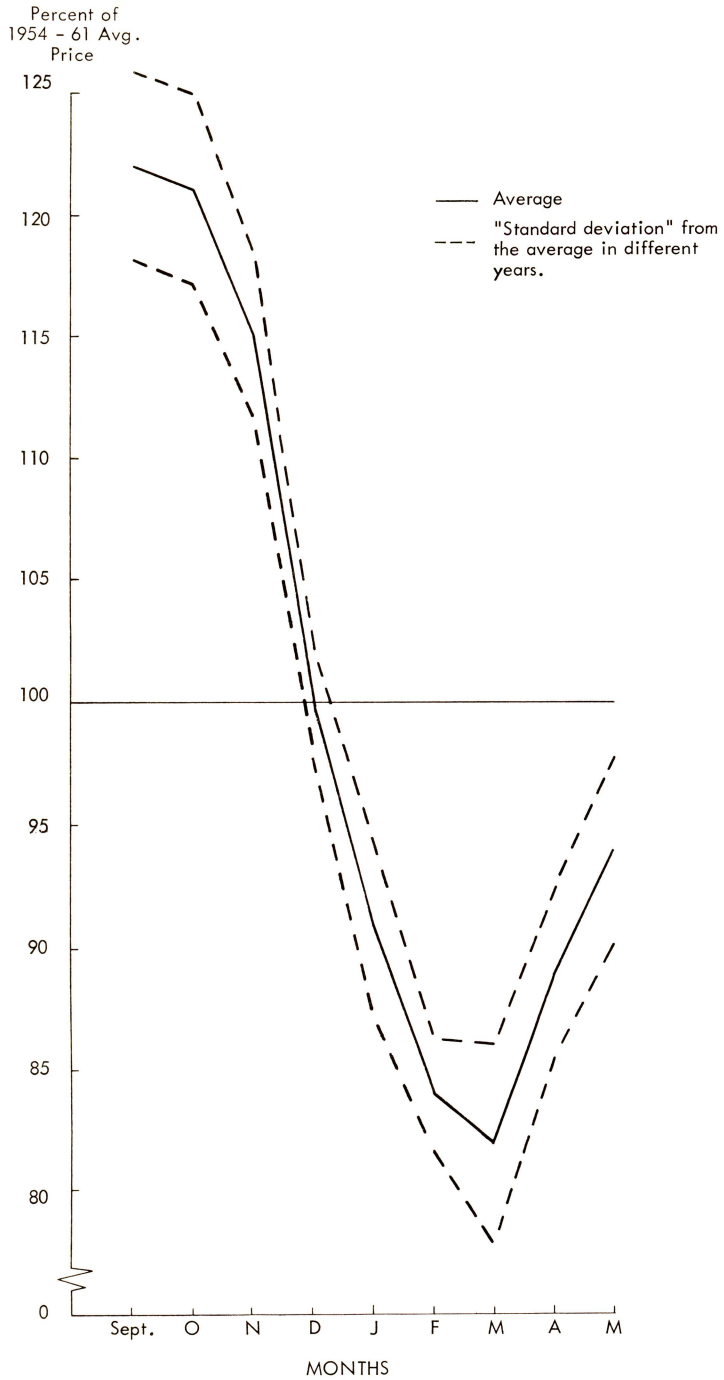


Seasonal Index for Hay Prices, 1956-1961

Percent of
1954 - 61 Avg.
Price



Seasonal Index for Cotton, 1956-1961



Seasonal Price Indexes and Their Standard Deviations for Nine Missouri Crops, 1956-1961

Month	Corn		Soybeans		Wheat		Oats	
	Index ^a	Standard Deviation	Index	Standard Deviation	Index	Standard Deviation	Index	Standard Deviation
January	95	1.0	98	1.5	102	0.7	104	1.0
February	97	1.2	100	1.1	102	0.7	104	1.0
March	98	1.1	102	1.4	103	0.8	104	1.1
April	102	1.0	107	3.7	104	1.4	103	1.3
May	105	1.6	109	4.2	102	1.4	101	1.0
June	107	1.4	104	3.0	96	0.3	97	0.7
July	109	1.1	102	0.8	94	1.2	93	1.3
August	109	1.0	99	1.3	96	1.3	96	1.2
September	101	0.8	94	2.1	99	0.9	98	0.8
October	93	1.8	92	1.5	99	0.4	98	0.4
November	91	1.8	95	1.8	101	9.6	100	0.8
December	93	1.3	96	2.1	101	0.6	102	1.0

Month	Barley		Grain Sorghum		Rye		Hay		Cotton	
	Index	Standard Deviation	Index	Standard Deviation	Index	Standard Deviation	Index	Standard Deviation	Index	Standard Deviation
January	103	0.9	96	1.5	99	1.7	108	2.6	91	3.5
February	103	0.7	99	1.6	99	1.3	109	1.8	84	2.3
March	103	1.1	101	1.3	99	1.9	108	2.5	82	4.1
April	104	0.8	103	1.3	99	0.7	108	2.9	89	3.5
May	103	0.7	105	1.0	96	1.6	102	1.4	94	3.8
June	92	0.8	108	1.4	96	0.9	86	1.7	--	---
July	95	0.6	110	2.0	98	1.2	88	2.0	--	---
August	98	0.5	110	1.9	103	0.9	90	1.7	--	---
September	99	0.4	94	2.8	106	1.0	94	1.9	122	3.8
October	98	0.3	89	2.5	102	0.3	98	1.4	121	3.9
November	101	0.6	90	2.4	104	1.5	102	1.4	115	3.3
December	102	0.6	93	1.5	100	1.3	107	2.2	100	2.2

^aThe average percentage for 1956-1961 period.

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