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Indiana Corn and Soybean Basis Patterns (Southern Counties)

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Purdue University, Cooperative Extension Service, West Lafayette, Indiana

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January 1979

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INDIANA CORN AND SOYBEAN BASIS PATTERNS

by J. William Uhrig and Gary Van Hoozer Department of Agricultural Economics

Margins in the grain industry are relatively narrow because the grain can be hedged. Much of the risk of price change can be transferred to the speculator. Since this is done through hedging, the futures markets play a major role in pricing grain. The futures prices represent the general price level, and the prices at other markets are often quoted in relation to the futures. This does not mean that futures prices determine cash prices. In fact, the casual relationship is the other way around. There is a demand for futures and a demand for the cash commodity. However, both are influenced by many of the same factors.

"The essence of hedging, then, becomes a study of the relationship of cash and futures prices. This difference is called the basis. Basis is variable. It changes over time and space. The essence of hedging is speculation in basis. If changes are accurately forecast, hedging profits are realized. The analysis of basis is a field of its own, quite separate from the field of price analysis.

"There is a body of theory of the basis. The first part of the theory relates to basis change over time. The cost of carrying a futures contract is quite small. The only investment is the modest margin requirement. We can argue that a risk premium in the form of a discount from the expected price must be offered to get speculators to assume risks. However, attempts to measure such discounts tend to be unsuccessful, and we are forced to conclude that such discounts are, at most, quite small.

"There are substantial costs of storing inventories of cash grains. These include an investment cost of the grain, investment in the storage structure, operating costs, etc. Thus, in broad outline, we can expect the price of cash grain to increase in relation to the future by the cost of storing from harvest until the end of the season. "However, on examining the behavior of basis over time, we find that it is not as regular as the cost theory would indicate. The price of storage offered at harvest varies from year to year. Typically, there is a sharp increase in cash in relation to the future immediately following harvest, followed by a slower increase during the balance of the season.

"Thus, it appears that the size of the basis and its change over time are functions of the supply of and the demand for storage space. Since the stocks of grain tend to be at a maximum at harvest, the basis also tends to be at a maximum discount from the tutures at harvest. As the crop is put away and part of it is used, the supply of space increases in relation to the demand for its use, and the basis narrows rapidly.

"Over space, there is an equilibrium set of price relationships that will result in an optimum flow of grain from place to place. But this set of relationships is not constant over time; it varies substantially. One cause of variation in price relationships over time is change in the supply and use of grain by areas. In different years, specific regions have different surpluses of supplies over use, and others have different excesses of demand over local supplies. Some regions shift from surplus to deficit between years; and some regions are surplus at some seasons of the crop year and deficit at others.

"A second reason for variation in price differences over space is imperfection in the process of establishing the equilibrium set of differences. The price contour may be likened to the surface of a lake that has continuous waves and other disturbances. The contour levels out when the transportation cost is taken into account; but, is never at rest. Any given point goes up and down, often traveling a substantial vertical distance without finally getting anywhere.

1

"Basis is a market price that is a function of the supply of space and the demand for its use. In broadest context, four factors determine the price of storage in a particular year: carryover, crop size, amount of storage space, and off-farm movement at harvest. When carryover stocks are large, the price of storage is high." *

Technically, basis is futures minus cash prices. Since both of these prices fluctuate, it is easier to visualize if you construct a basis chart. There are two ways of constructing these charts. One is to set the cash price equal to zero and plot the futures price in relation to it. In this case, more than one futures price may be plotted on the same chart. This allows for reading the spreads between the various months directly from the chart. However, the various futures are often close together and become difficult to read with the scale used on the basis chart.

The method used in this publication is to set the particular futures contract at zero and plot the cash price in relation to it. This will show the cash price below the futures price and is easier to see that the cash price gains in relation to the futures price as time progresses from harvest. In this case, you must have a separate chart for each option. Spreads can be kept in table form or charted separately. The two methods are mirror images of each other.

Basis = Cash Grain Price - Future Price

As an example, if July corn futures are \$2.40 per bushel and corn at the local grain elevator is \$2.00 per bushel, then the basis at that elevator at the time is -\$0.40 per bushel. Often, the cash basis is described as being "over" or "under" a selected futures contract month -- in this case "40¢ under the July."

Basis patterns form a fairly predictable pattern with wider or larger basis levels during the harvest period and a narrowing of the basis over the crop storage year. The charts which make up the bulk of this book are graphical presentations of basis changes over the year in various locations.

Factors Affecting Basis

Basis is "location specific," and the pattern at a particular location is determined by a combination of factors, some of which are given here.

1. Size of Crop. With a larger crop in the local area, elevator bids will weaken as storage facilities are filled. A large national crop will also weaken the overall cash price structure. A large carryover from the previous year will have a similar effect.

2. Amount of Storage. Higher storage capacity in relation to a given size of crop will result in more aggressive cash bids by owners of storage in an attempt to better utilize that storage. This will usually result in a narrower basis.

3. Local Demand for Grain. A strong area livestock feed demand will generally strengthen cash basis, especially during the winter period when livestock maintenance levels are higher. The presence of local corn and soybean processors heightens the competition for cash grain and often lends strength to the basis.

4. Exporter Need for Grain. Strong foreign demand for grain will be transmitted back to country elevators through the merchandizing system. Developments in pricing fundamentals at the Gulf, East Coast, or Great Lakes make themselves felt at the country level in a very short time.

5. Farmer Selling Pattern. Liberal cash sales of grain from farmer holdings will tend to depress (widen) the basis in a day to day manner. Of course, a tight holding pattern of grain by farmers will often cause buyers to be stronger bidders to fill their cash grain requirements. Property and income tax dates usually result in increased grain sales by farmers to meet these obligations or to avoid having grain on hand at a certain date.

2

6. Type of Harvest Season. If the crop is extra large or if soybean and corn harvests come close together, basis quickly widens to greater levels than in years when the harvest season is longer.

7. Value of Crop and Rate of Interest. Higher values of the crop and high interest rates will tend to make storage more expensive because of foregone income from grain that could be sold. Thus, cash bids will weaken because of higher costs of holding grain.

8. Capacity and Cost for Handling and Conditioning Grain. Inability of buyers to keep up with the handling and drying of grain during harvest will result in depressed cash bids as a signal that the system is overloaded. Higher fuel and conditioning equipment costs will also result in a wider basis (cash bids depressed relative to futures prices).

9. Cost of Transporation. As the costs for trucks, railroad cars and fuel increase, the basis will generally be widened over the whole year to reflect these costs. Barge rates are also bid up and have a similar effect.

10. Federal Government Loan and Storage Programs. When farmers are participating in Government loan programs because of low cash grain price levels, a general increase in prices will result in some widening of the basis. This is caused by increased farmer selling. The opposite is true when cash prices go down because of farmers electing to keep corn stored under a Government loan. As the season progresses, the presence of a federal loan program may tend to increase the aggressiveness of buyers who need to buy farmer-held grain to cover their hedged grain commitments.

11. Dock and Other Labor Strikes. Such strikes slow cash grain movement in general -- particularly grain bound for export markets. Demand for cash grain is slowed, and [basis levels generally widen because of such interruptions.

Basis, though fairly complex, is basically determined by a supply of and a demand for storage space as well as availability and cost of transportation, and interest charges.

It is recommended that individual charts be constructed for the location where you normally sell grain. When constructing your own basis charts, use the best bid at your elevator. If you have access to one of the teletype machines, you will have the settlement prices each day. If not, choose a consistent system of taking the average (or high or low) when futures prices close in a range as published in the major newspapers.

You must have your own charts - for your location. There are many factors that cause your cash prices to be different from your neighbors'. Historical data on the futures prices are available from Commodity Yearbooks published by Commodity Research Bureau and the Statistical Yearbooks published by the Board of Trade. The Purdue Agricultural Economics Library has back issues of both of these yearbooks. Also, the Agricultural Economics Department has a computer program developed to assist in drawing basis charts like those in this publication.

Cash prices paid to farmers were collected for corn and soybeans for Wednesdays for 1974-76, at more than 200 elevators throughout Indiana. The elevator managers were very cooperative in supplying this data. Data came from a wide variety of elevators -large and small, cooperative and independent. Data from terminal markets was not used in this analysis.

The dates across the bottom of the chart represent the week of a particular month, i.e., 1 through 4 or 5. Data for the 2 years, for both cash and futures prices were averaged together. The futures prices were subtracted from the cash prices and plotted on the chart. The futures month was set at 0 on the chart and the difference in the cash price plotted below the zero mark for each week.

New crop futures months are represented by November soybeans and December corn. The old crop futures are the July contract for both corn and soybeans. The state was arbitrarily divided into 30 different areas, of about three counties each where grain bids were very similar. With a basis contract for both old and new crop corn and soybeans, results in 116 different charts. Each chart has a schematic state map which shows the location of the area and the counties included in the area.

Most people are interested in basis data only for their county or area. The basis data for the state is published in three publications. EC-487 contains basis data for the northern third of Indiana, areas 1 through 9. EC-493 contains basis data for central Indiana, areas 10 through 18. EC-494 contains basis data for southern Indiana, areas 19 through 30. No data were available from Monroe, Brown and Lawrence counties (area 20). Vermillion County data were included in both areas 10 and 14.

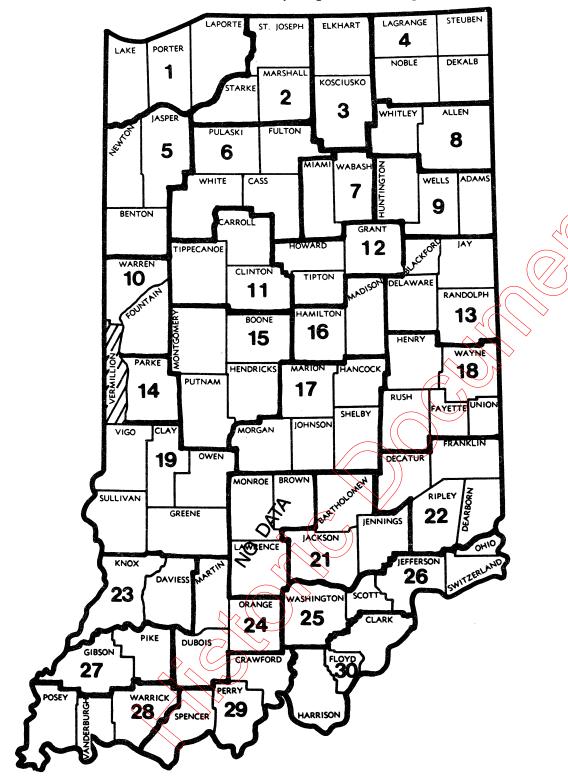
Data in these charts are useful in determining:

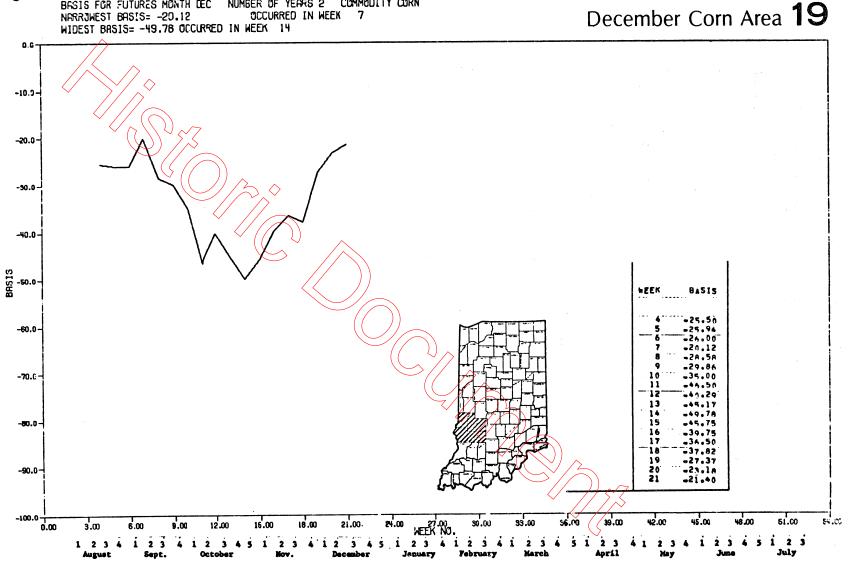
- 1. An average change in basis, which reflects the gross income from storage when hedging.
- 2. The expected basis at a harvest time, when trying to decide whether to forward price through hedging.
- 3. The quality of a bid.
- 4. Appropriate minimum storage charges and/or service charges for delayed pricing.

* Hieronymus, P.A., 1974. "Getting into the Swing of Things," Grain and Farm Service Centers.

MARKETING AREAS FOR BASIS CHARTS

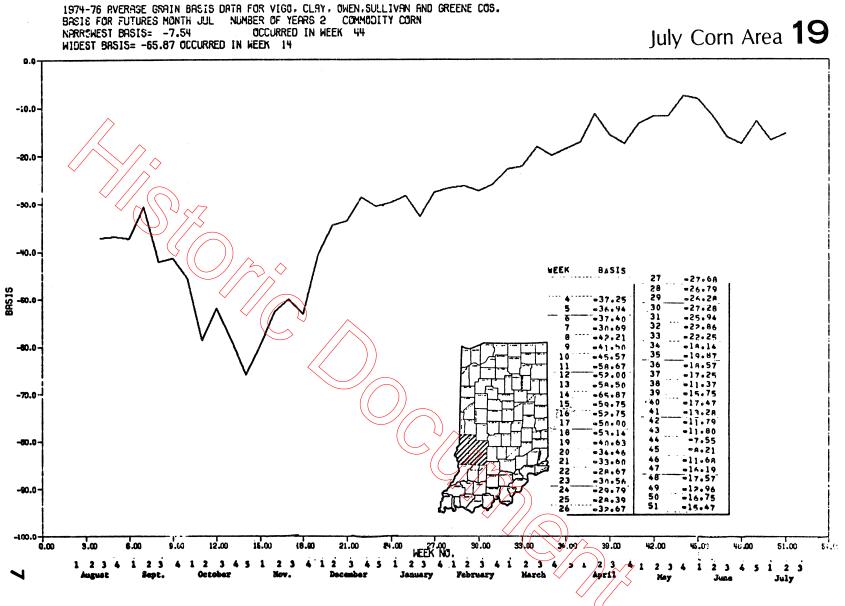
- 1. Find the number of your grain marketing area.
- 2. Select the charts for your grain marketing area.

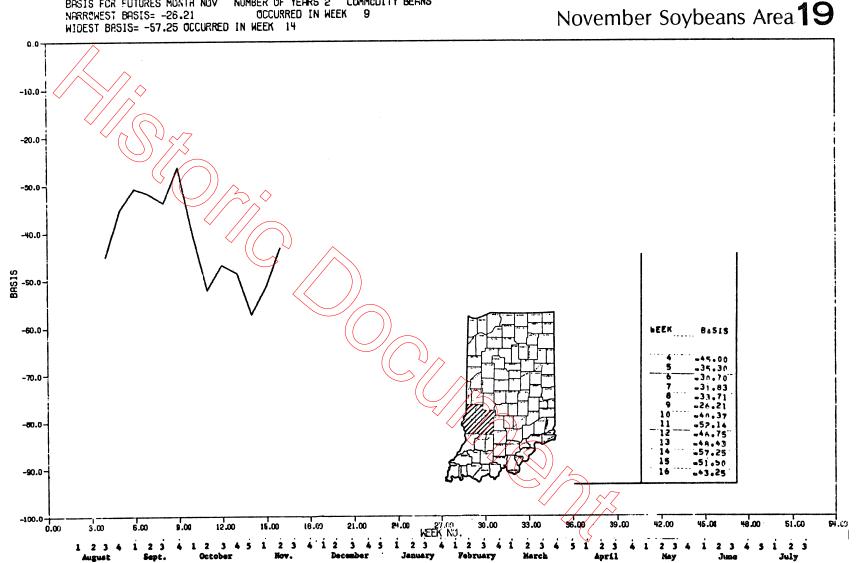




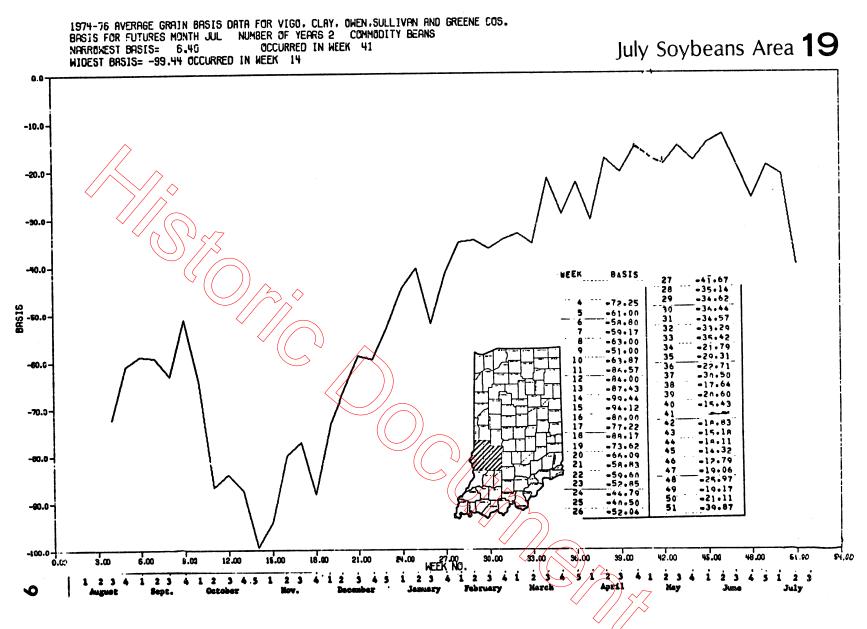
1974-76 AVERAGE GRAIN BASIS DATA FOR VIGO, CLAY, OWEN, SULLIVAN AND GREENE COS. BASIS FOR FUTURES MONTH DEC NUMBER OF YEARS 2 COMMODITY CORN

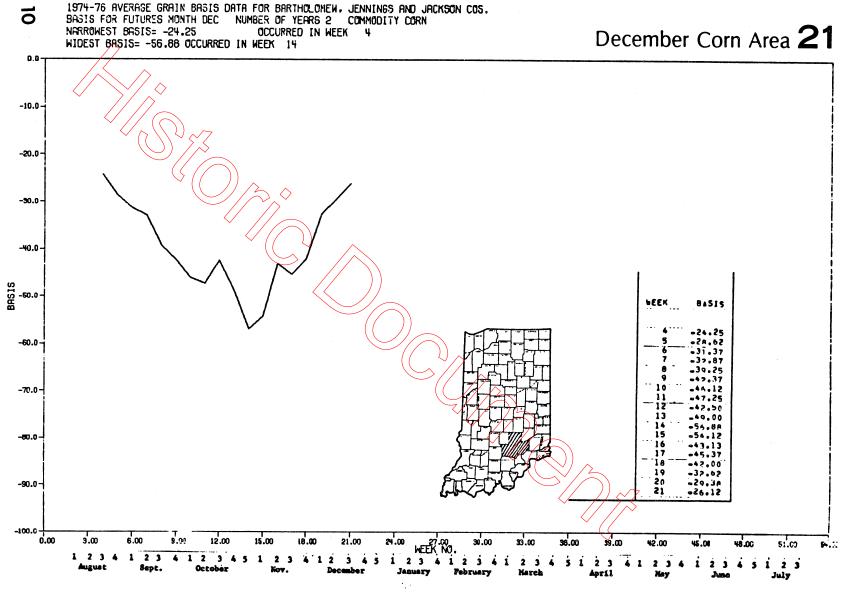
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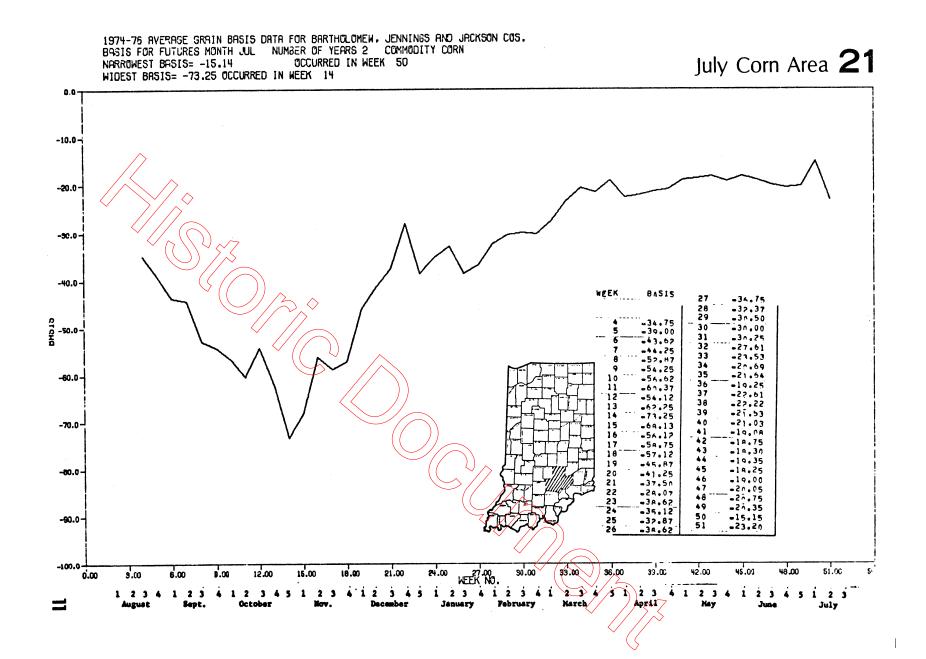


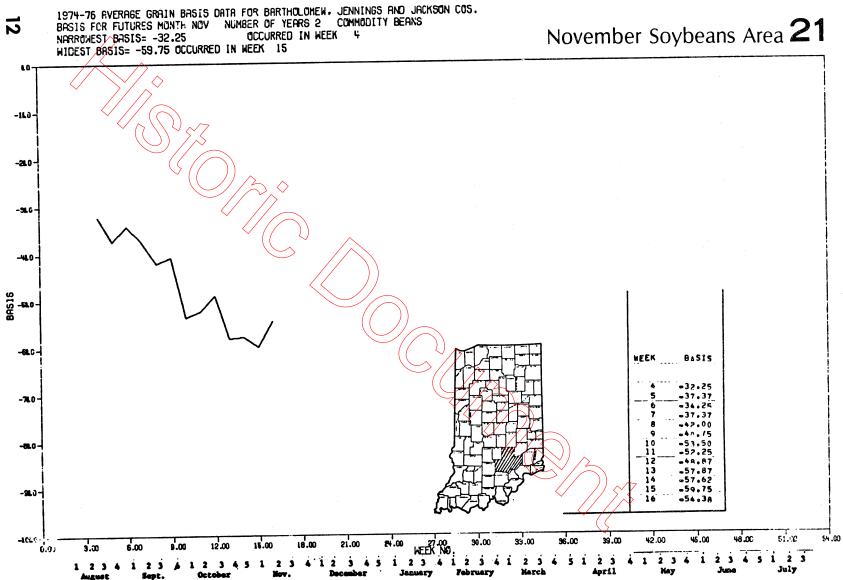


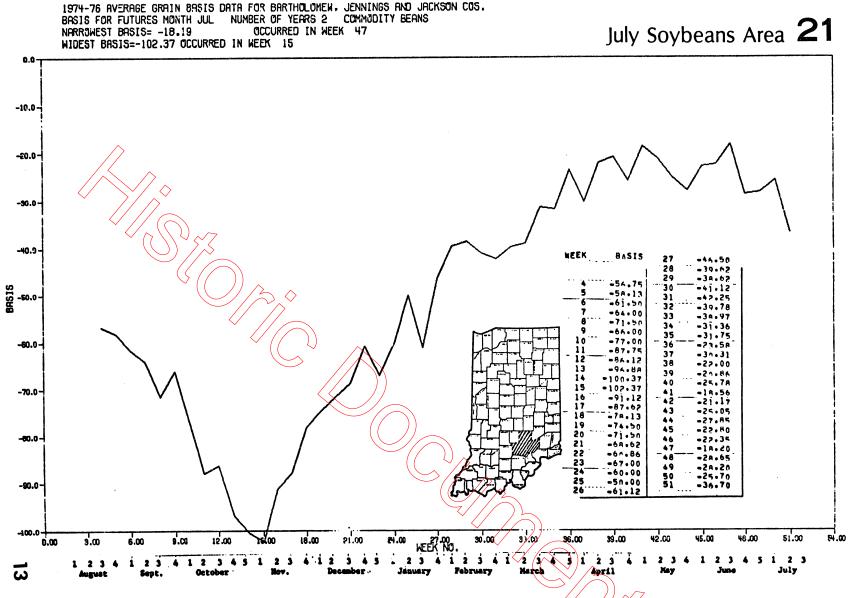
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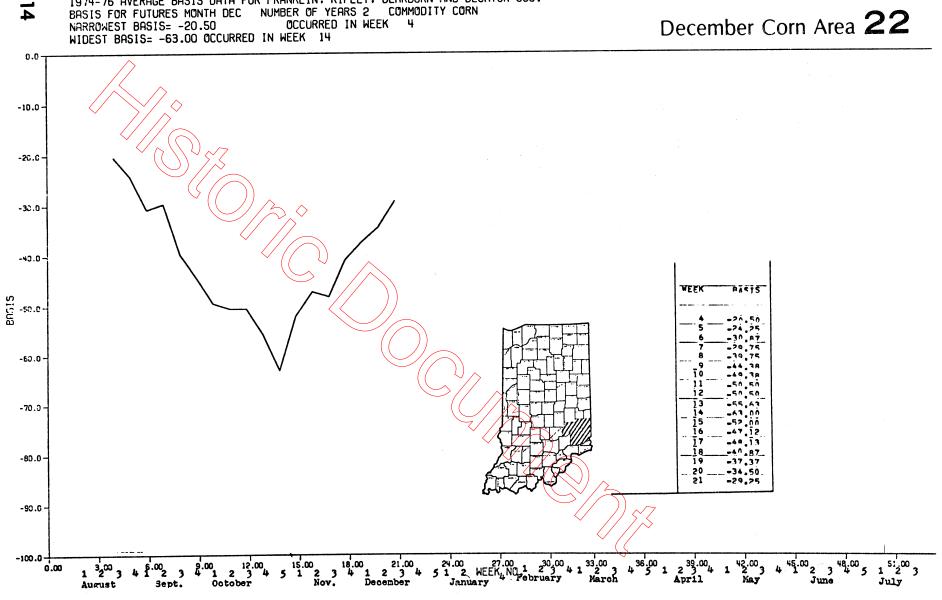






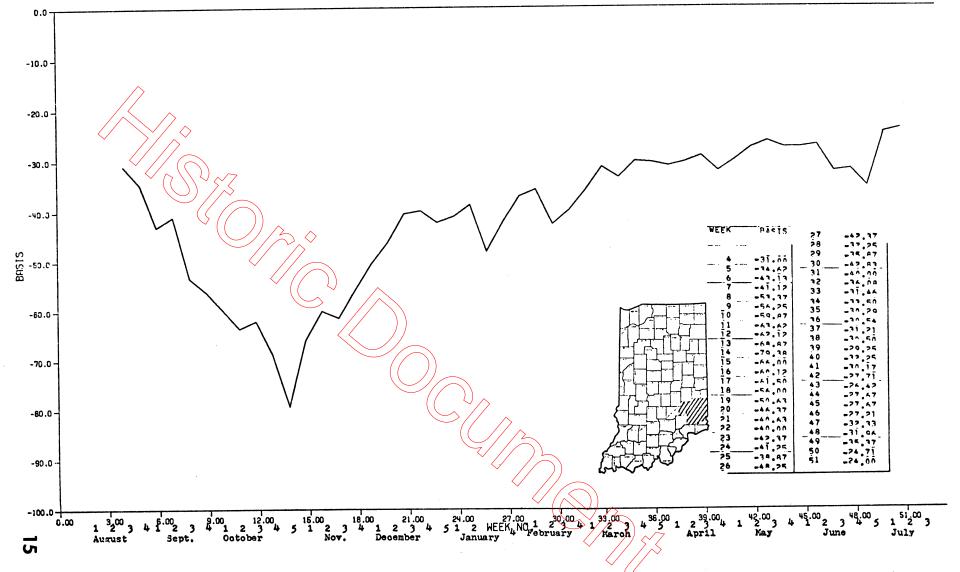




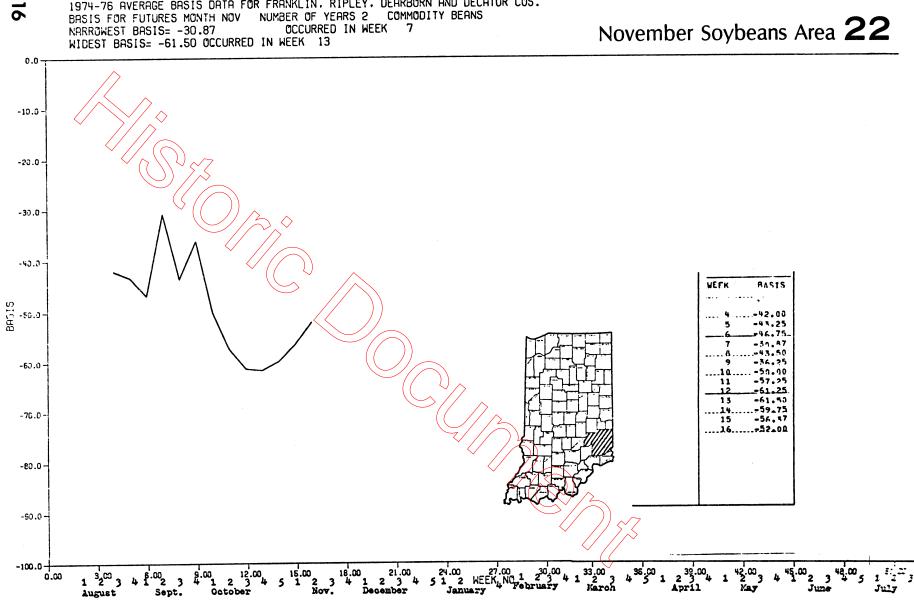


1974-76 AVERAGE BASIS DATA FOR FRANKLIN, RIPLEY, DEARBORN AND DECATUR COS.

1974-76 AVERAGE BASIS DATA FOR FRANKLIN, RIPLEY, DEARBORN AND DECATUR COS. BASIS FOR FUTURES MONTH JUL NUMBER OF YEARS 2 COMMODITY CORN NARROWEST BASIS= -24. 0 OCCURRED IN WEEK 51 WIDEST BASIS= -79.38 OCCURRED IN WEEK 14

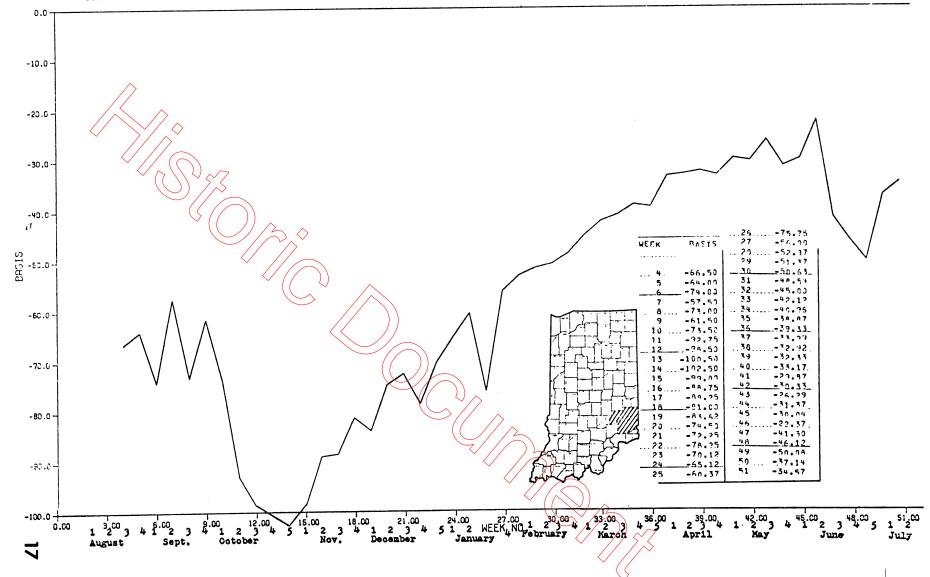


July Corn Area **22**



1974-76 AVERAGE BASIS DATA FOR FRANKLIN, RIPLEY, DEARBORN AND DECATUR COS. BASIS FOR FUTURES MONTH NOV NUMBER OF YEARS 2 COMMODITY BEANS

1974-76 AVERAGE BASIS DATA FOR FRANKLIN, RIPLEY, DEARBORN AND DECATUR COS. BASIS FOR FUTURES MONTH JUL NUMBER OF YEARS 2 COMMODITY BEANS NARROWEST BASIS= -22.37 OCCURRED IN WEEK 46 WIDEST BASIS=-102.50 OCCURRED IN WEEK 14



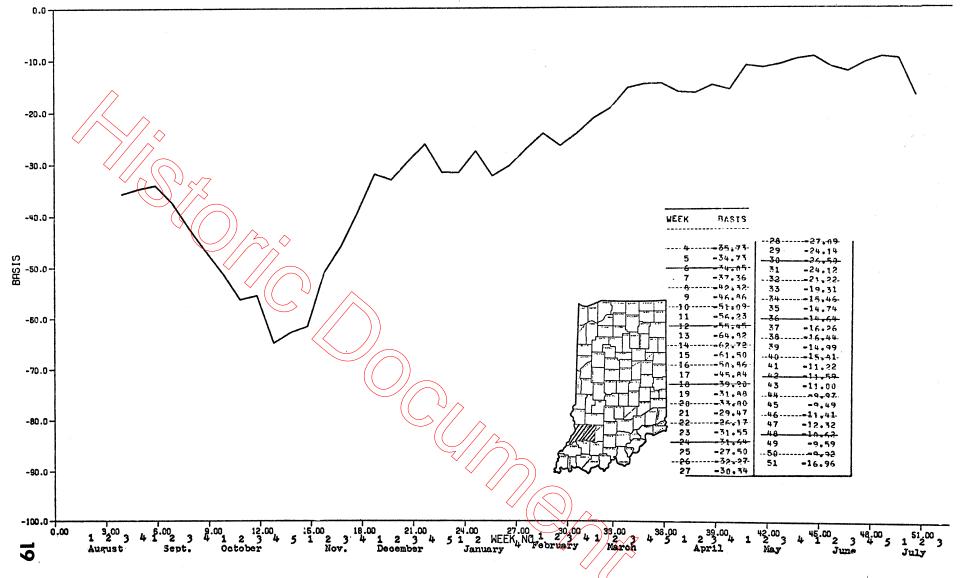
July Soybeans Area **22**



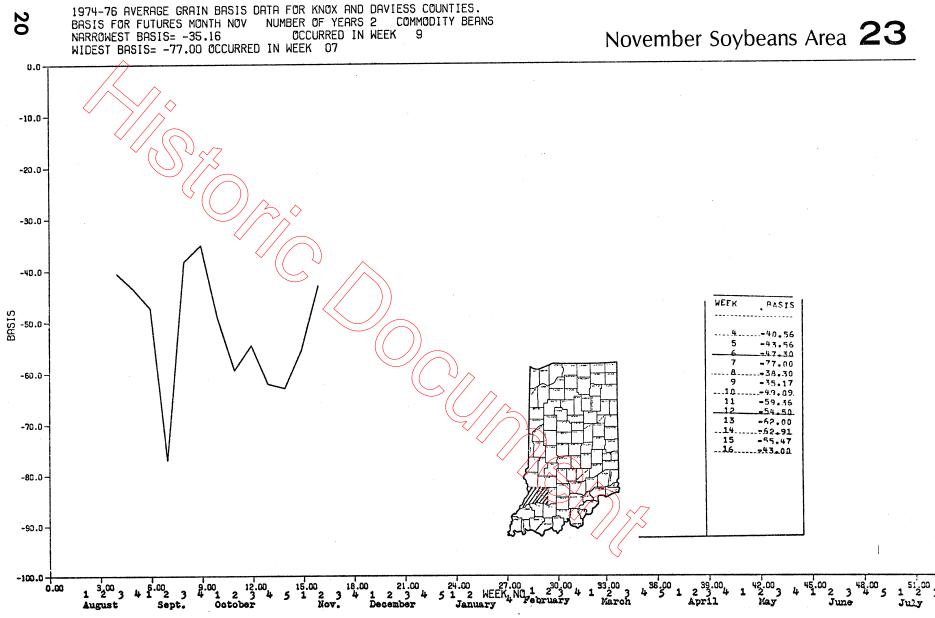
18 BASIS FOR FUTURES MONTH DEC NUMBER OF YEARS 2 COMMODITY CORN December Corn Area 23 OCCURRED IN WEEK 21 NARROWEST BASIS= -14.77 WIDEST BASIS= -51.45 OCCURRED IN WEEK 13 0.0~ -10.0 -20.0 -50.0 -40.0 BAS1ភ ទំ -BASIS WEEK -24.09 -60.0 23.95 26.73 \$5.68 -70.0 10 40.59 11 44.41 12 55 13 47.00 14 15 47,98 -80.0-38.09 16 17 32.86 24.90 18 19 _1A.32 19,25 -90.0-20 21 -14.77 51.00 54.0. 39.00 48.00 42.00 15.00 -100.0 33.00 35.00 30.00 12.00 18.00 21.00 24.00 8.00 15.00 0.00 6.00 ອ.ເຕ 4 5 1 2 3 KLik 4 5 1 2 3 1 2 3 1 2 3 4 4 23 4 1 2 3 4 1 23 4 1 1 1 2 3 1 2 3 4 5 2 3 4 5 July 1 2 3 4 1 2 3 4 June May April March February January Nov. December October Sept. August

1974-76 AVERAGE GRAIN BASIS DATA FOR KNOX AND DAVIESS COUNTIES.

1974–76 AVERAGE GRAIN BASIS DATA FOR KNOX AND DAVIESS COUNTIES. BASIS FOR FUTURES MONTH JUL NUMBER OF YEARS 2 COMMODITY CORN NARROWEST BASIS= -9.48 OCCURRED IN WEEK 45 WIDEST BASIS= -64.82 OCCURRED IN WEEK 13

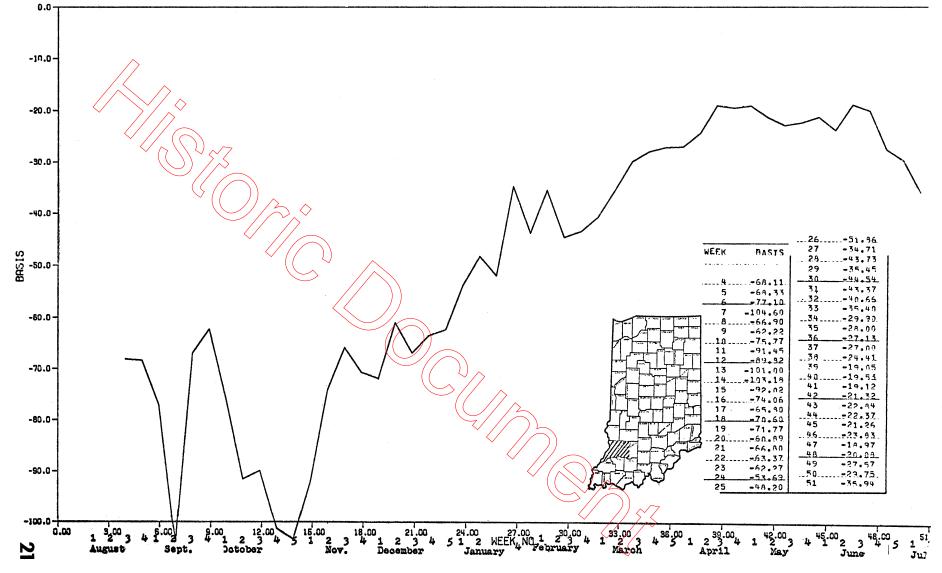


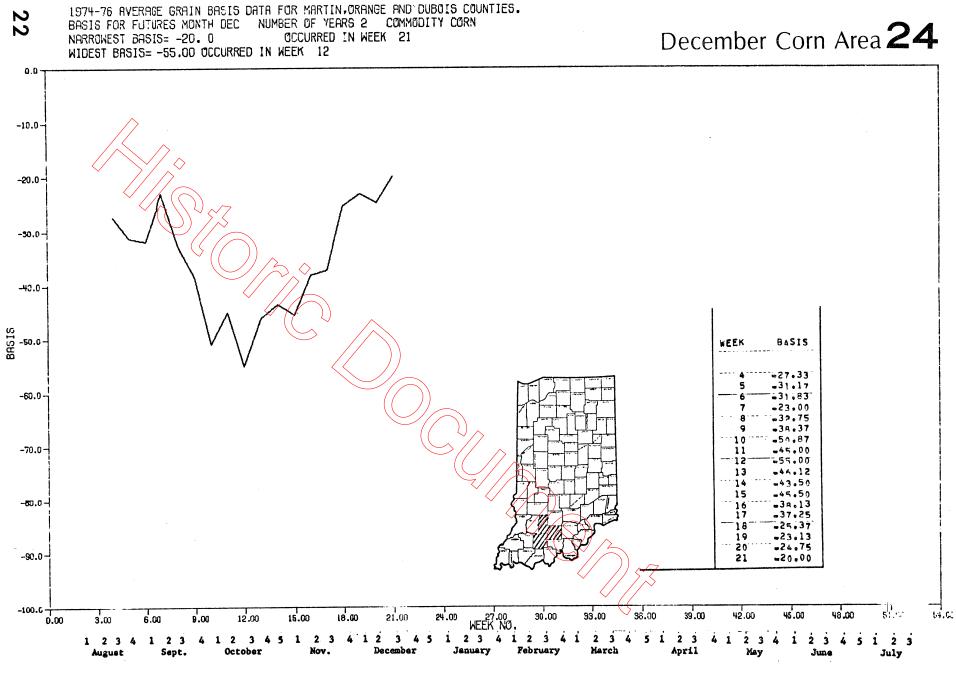
July Corn Area 23



1974-76 AVERAGE GRAIN BASIS DATA FOR KNOX AND DAVIESS COUNTIES. BASIS FOR FUTURES MONTH JUL NUMBER OF YEARS 2 COMMODITY BEANS NARROWEST BASIS= -18.96 OCCURRED IN WEEK 47 WIDEST BASIS=-104.60 OCCURRED IN WEEK 07

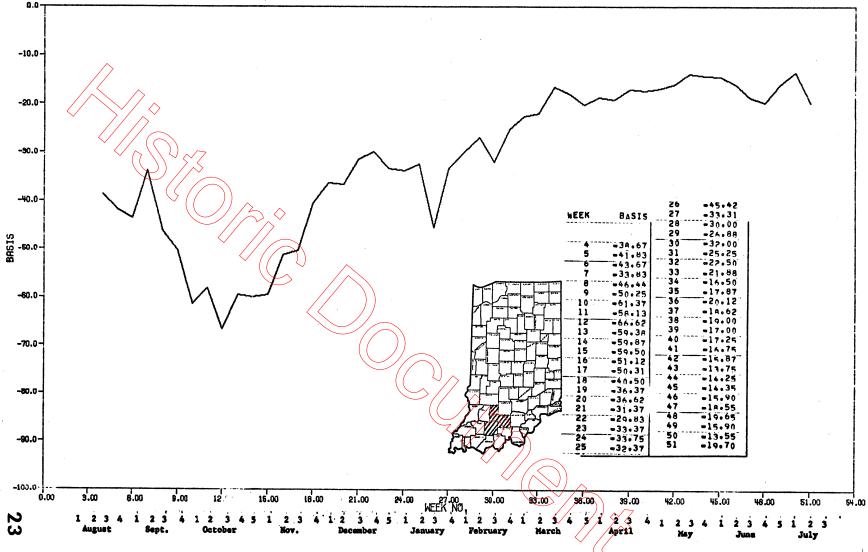


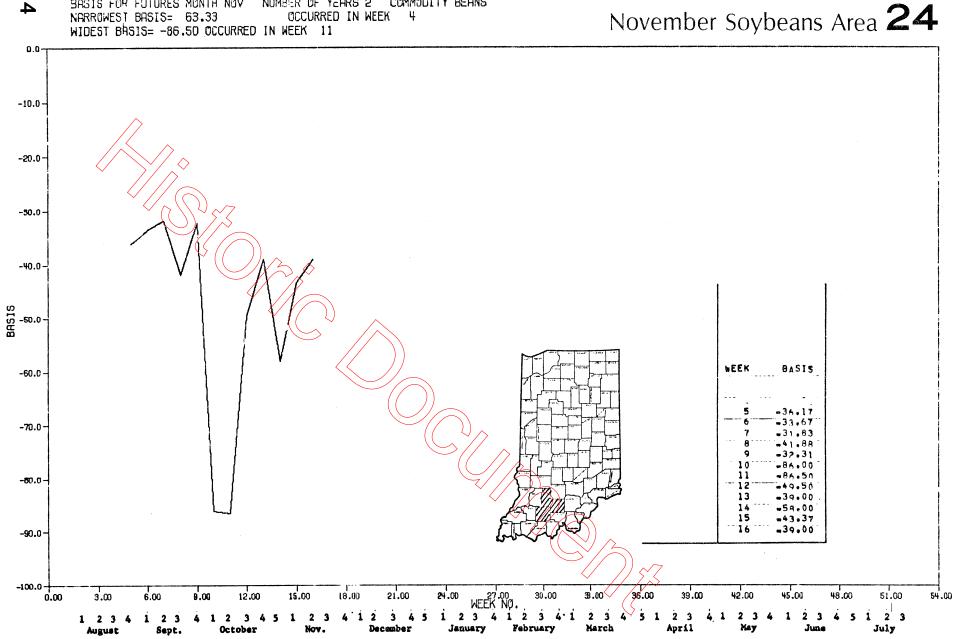




1974-76 AVERAGE GRAIN BASIS DATA FOR MARTIN. ORANGE AND DUBOIS COUNTIES. BASIS FOR FUTURES MONTH JUL NUMBER OF YEARS 2 COMMODITY CORN NARROWEST BASIS= -13.54 OCCURRED WIDEST BASIS= -66.62 OCCURRED IN WEEK 12 OCCURRED IN WEEK 50



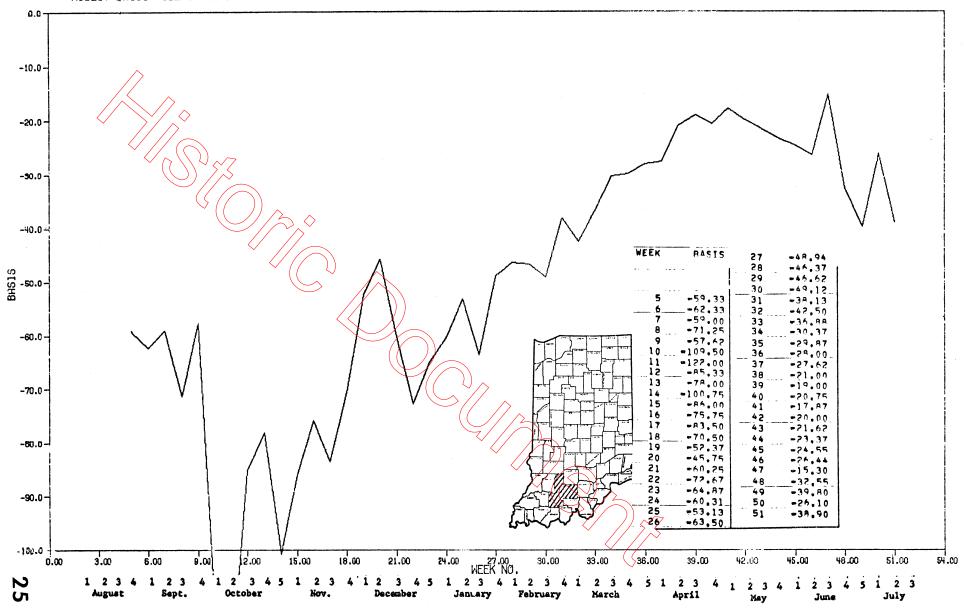


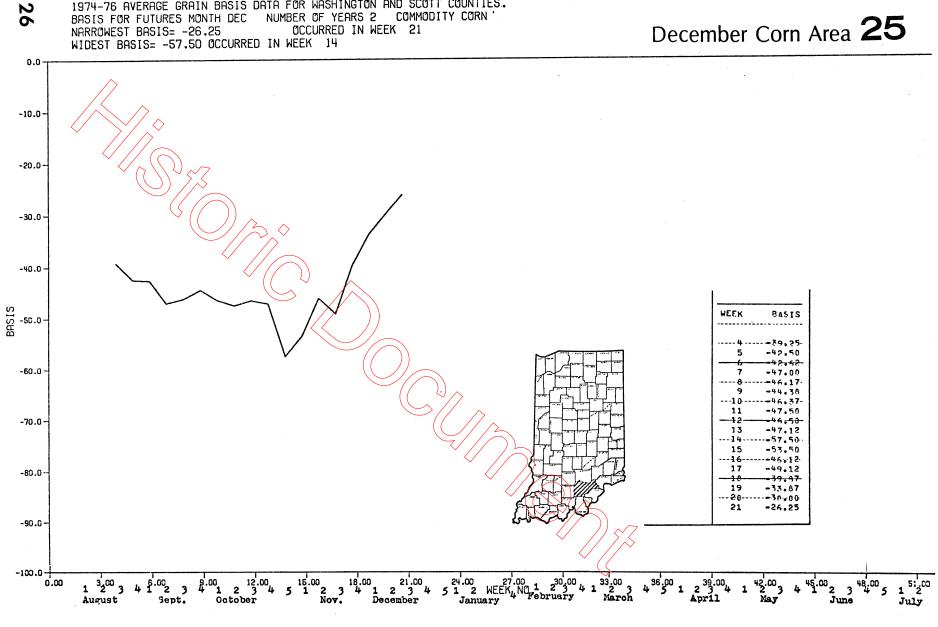


1974-76 AVERAGE GRAIN BASIS DATA FOR MARTIN, ORANGE AND DUBOIS COUNTIES. N BASIS FOR FUTURES MONTH NOV NUMBER OF YEARS 2 COMMODITY BEANS

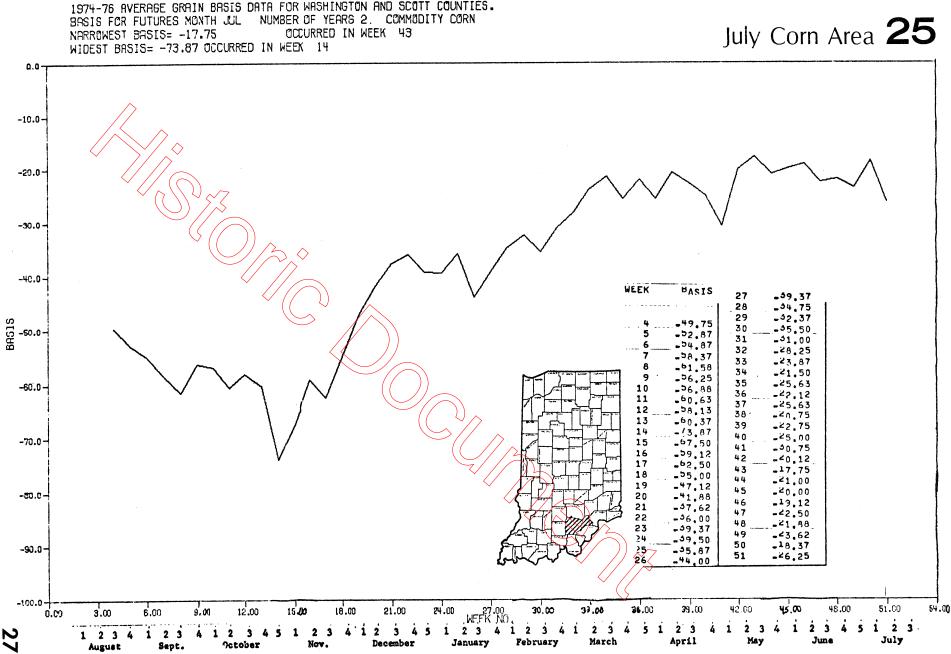
1974-76 AVERAGE GRAIN BASIS DATA FOR MARTIN, ORANGE AND DUBOIS COUNTIES. BASIS FOR FUTURES MONTH JUL NUMBER OF YEARS 2 COMMODITY BEANS NARROWEST BASIS= 37.0 OCCURRED IN WEEK 4 WIDEST BASIS=-122.00 OCCURRED IN WEEK 11

July Soybeans Area **24**

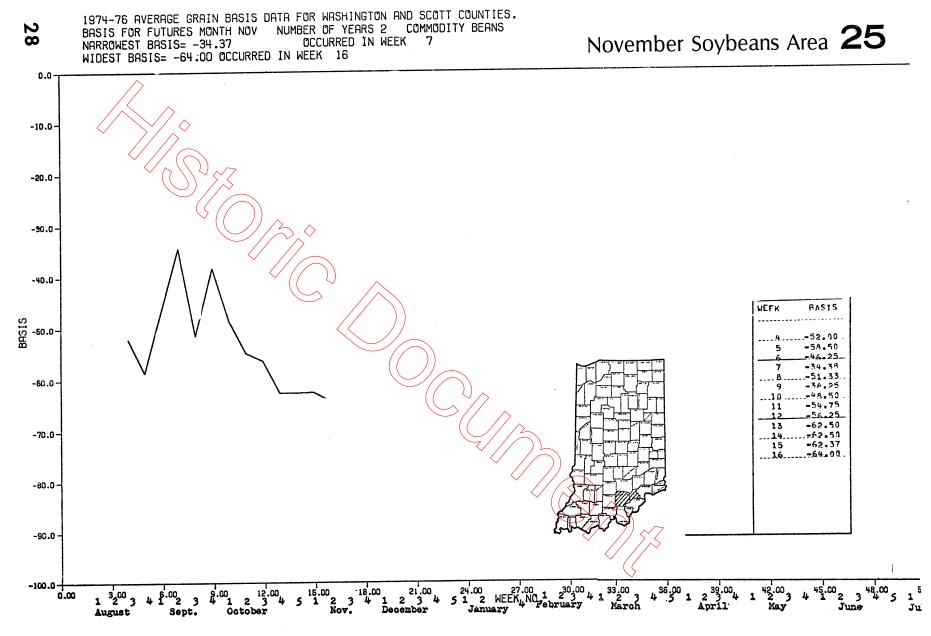




1974-76 AVERAGE GRAIN BASIS DATA FOR WASHINGTON AND SCOTT COUNTIES.

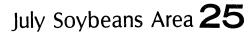


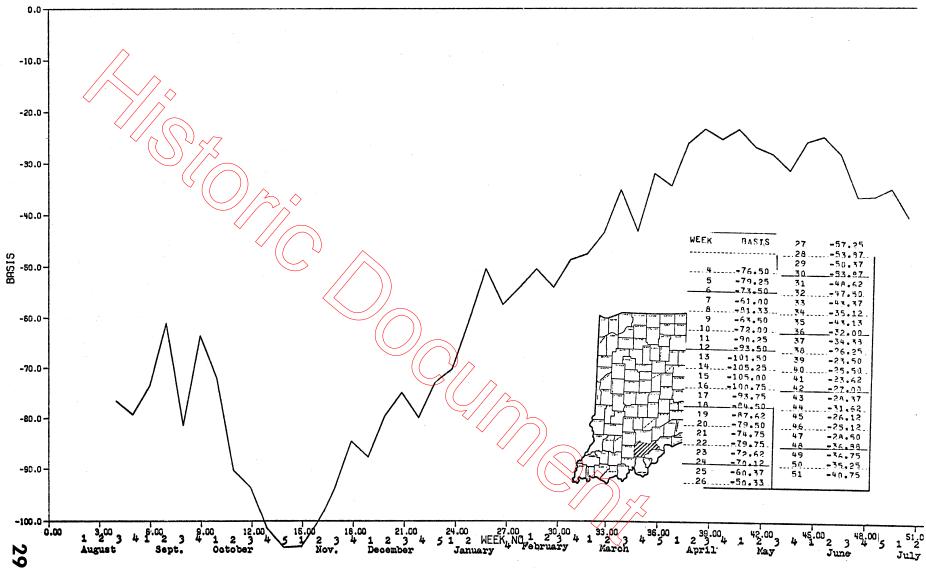
1974-76 AVERAGE GRAIN BASIS DATA FOR WASHINGTON AND SCOTT COUNTIES.

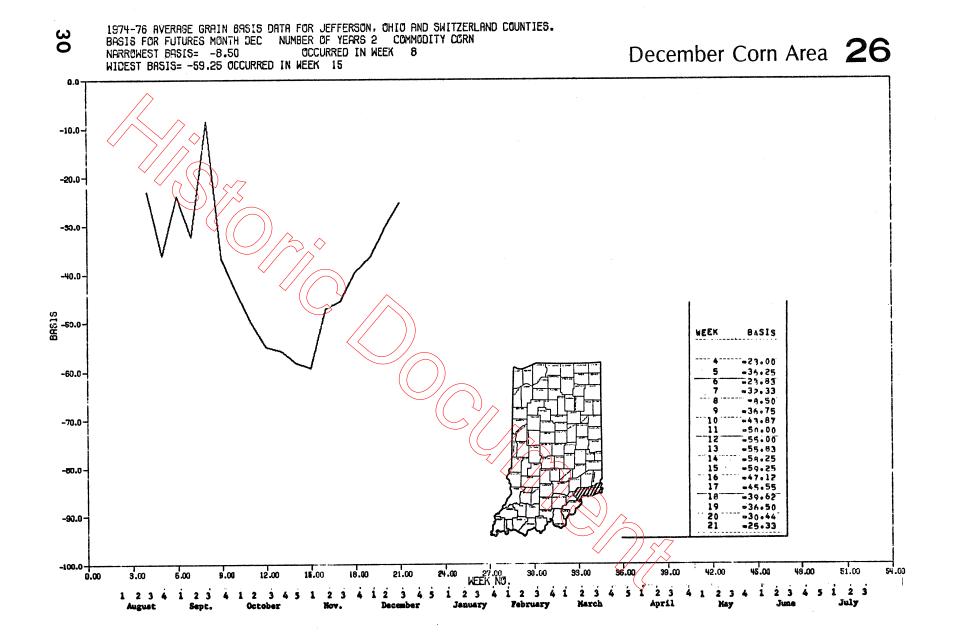


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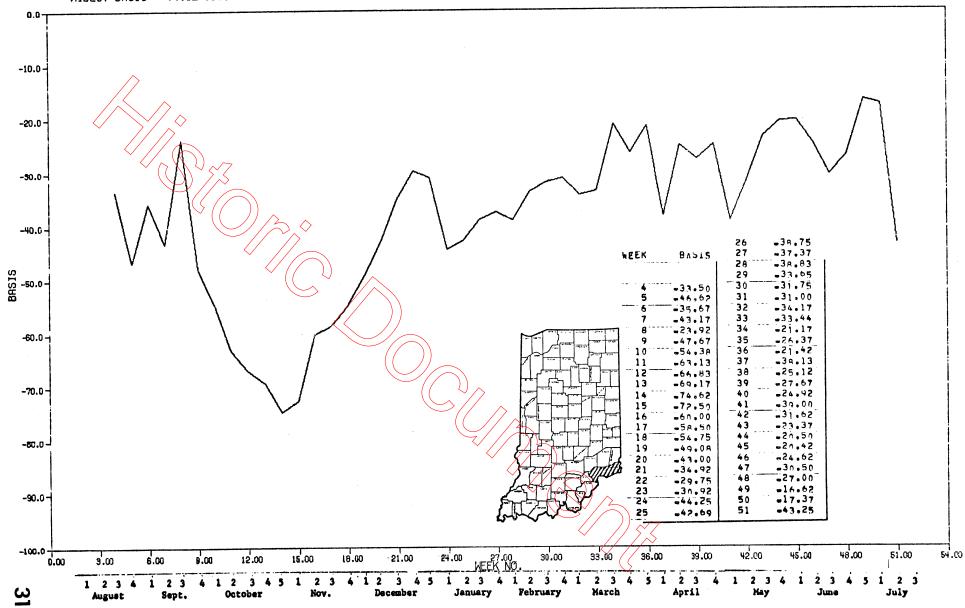
1974-76 AVERAGE GRAIN BASIS DATA FOR WASHINGTON AND SCOTT COUNTIES. BASIS FOR FUTURES MONTH JUL NUMBER OF YEARS 2 COMMODITY BEANS NARROWEST BASIS= -23.50 OCCURRED IN WEEK 39 WIDEST BASIS=-105.25 OCCURRED IN WEEK 14



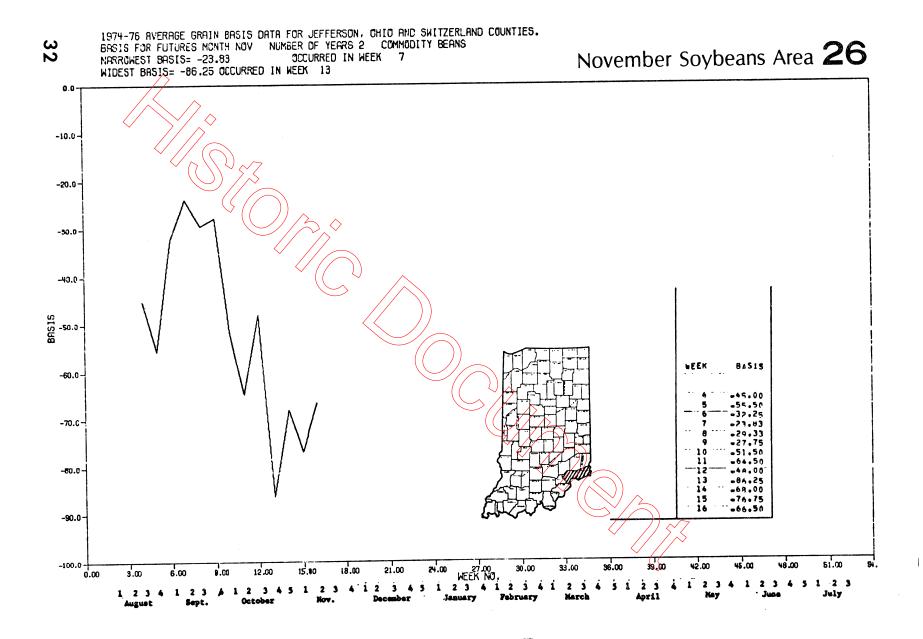


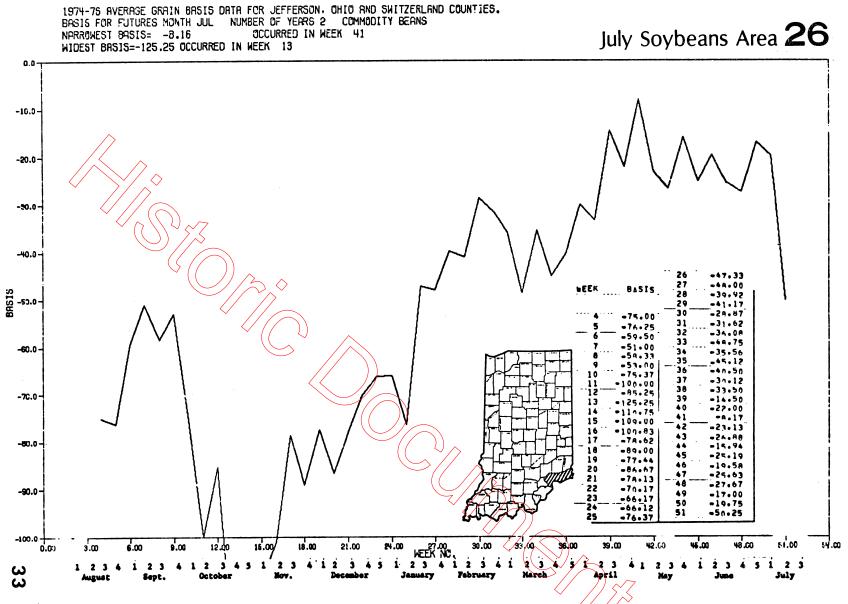


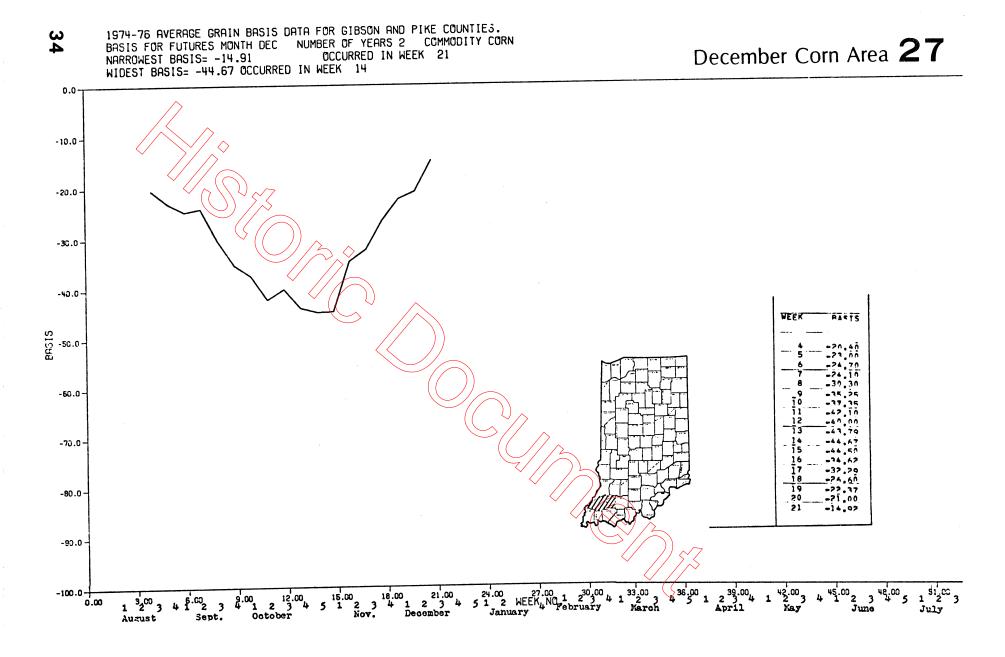
1974-76 AVERAGE GRAIN BASIS DATA FOR JEFFERSON, OHIO AND SWITZERLAND COUNTIES. BASIS FOR FUTURES MONTH JUL NUMBER OF YEARS 2 COMMODITY CORN NARROWEST BASIS= -16.62 OCCURRED IN WEEK 49 WIDEST BASIS= -74.62 OCCURRED IN WEEK 14



July Corn Area **26**



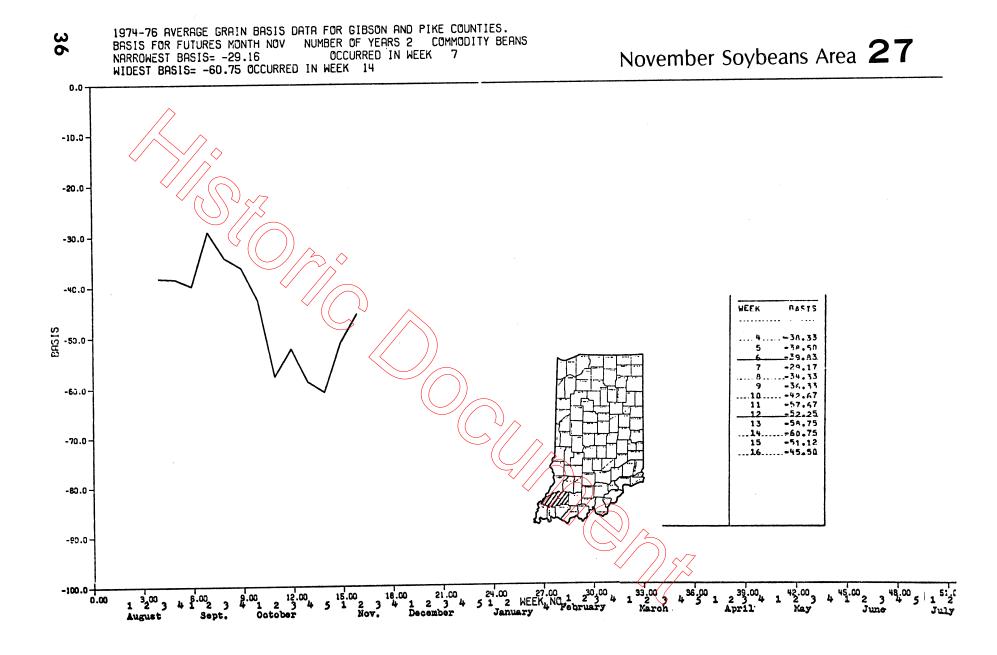




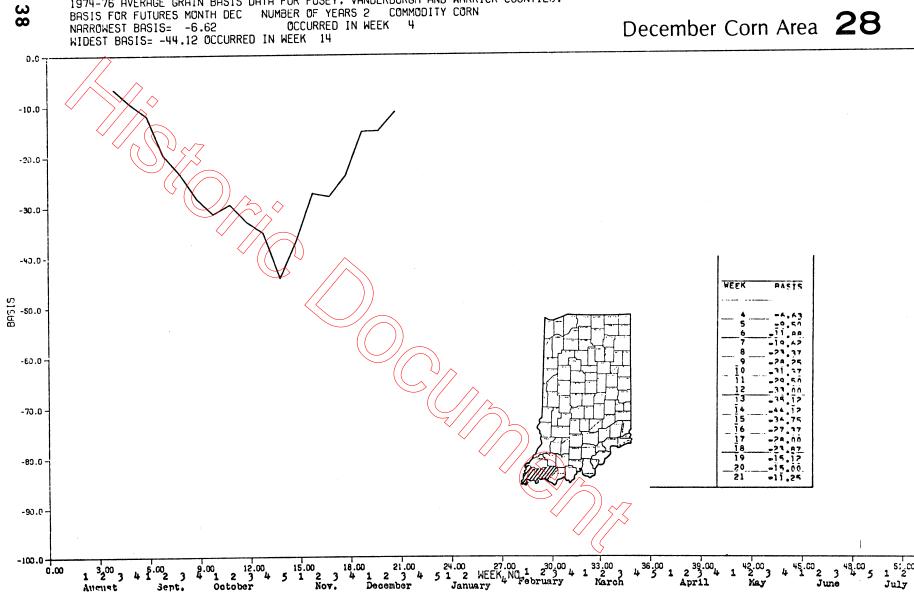
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BASIS FOR FUTURES MONTH JUL NUMBER OF YEARS 2 COMMODITY CORN NARROWEST BASIS= -7.87 OCCURRED IN WEEK 50 July Corn Area **27** WIDEST BASIS= -61.04 OCCURRED IN WEEK 14 0.0 -10.0 -20.0 -30.0 WEEK AASIS -40.0-28 -24.42 -31.40 -33.55 29 -22 17 - 0.63 BHSTS ٦0 -24 47 31 -22.50 -35.16 32 -47,A5 -19 42 33 -44 RA -13.47 34 -47, AS -12,33 35 -54,65 ĩ -19,54 -60.0-36 -51.42 1.42 37 -57.04 -14.62 38 -15.00 ĩ4 -61.04 39 15 -54.33 -19.5A 40 -12 58 -47.47 16 **4**1 -70.0-17 -45.47 -11.00 42 -10.46 - 1 A -42.00 43 19 -75,54 -9 54 20 21 -32,A7 44 -10 A1 **4**5 -24,29 -10,33 -22.83 46 -10 70 -60.0-\$S 47 -12 A3 23 -27.50 -29.25 4 8 -10.97 49 -11.04 -25.04 50 -7 AA -15 92 -32.75 <u>\$</u>1 -29,3A -90.0--100.0 + (45.00 1 2) June 24.00 27.00 1 230,00 4 133,00 5 1 2 WEEK, NO 1 230,00 4 23,00 January February March ۰.00 2 .00 1 . 18.00 3 4 1 2 3 4 12.00 3 4 15.00 1 2 35.00 5 1 2 3 4 April 1 2 3 3 2 42.00 2 May 4 2 48.00 3 4 1 51.00 2 4 3 5 1 35 Sept. October - 3 August Nov. December July 1

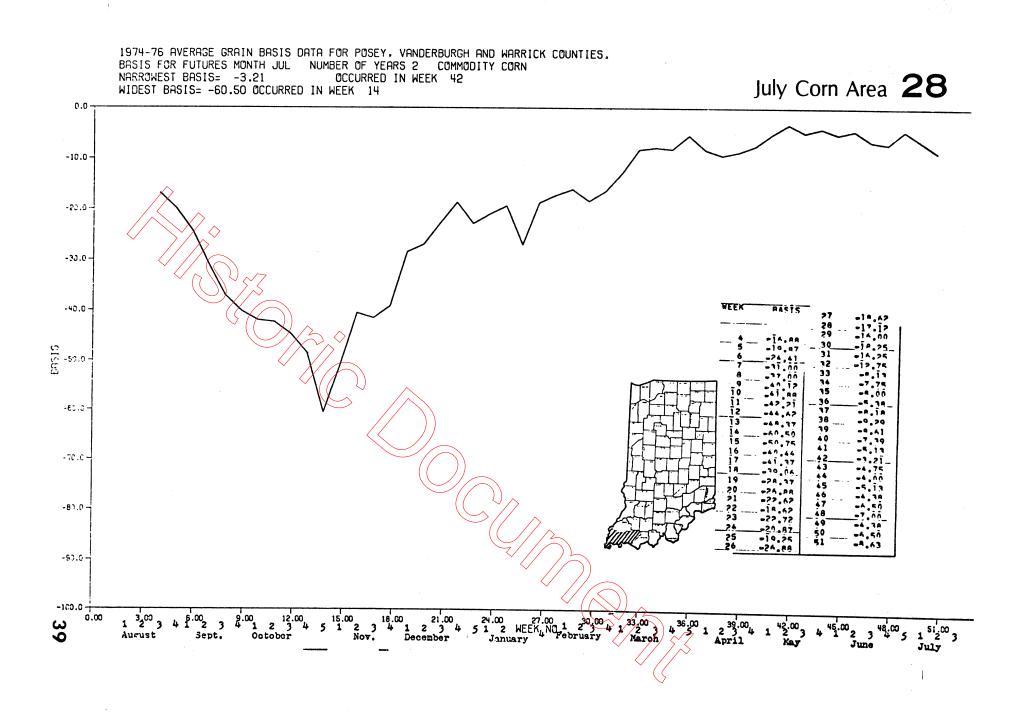
1974-76 AVERAGE GRAIN BASIS DATA FOR GIBSON AND PIKE COUNTIES.

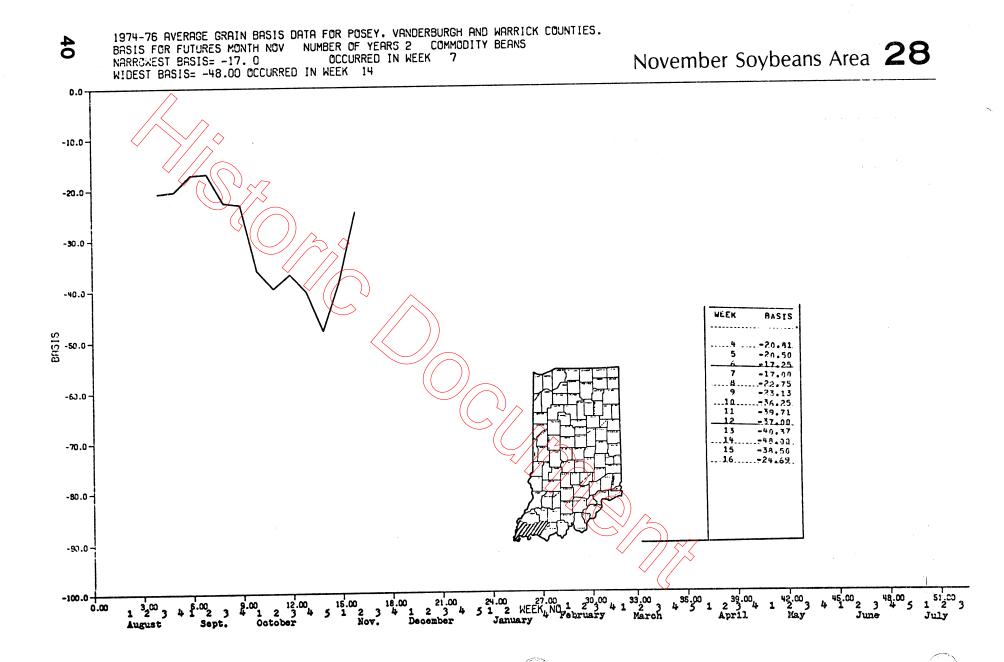


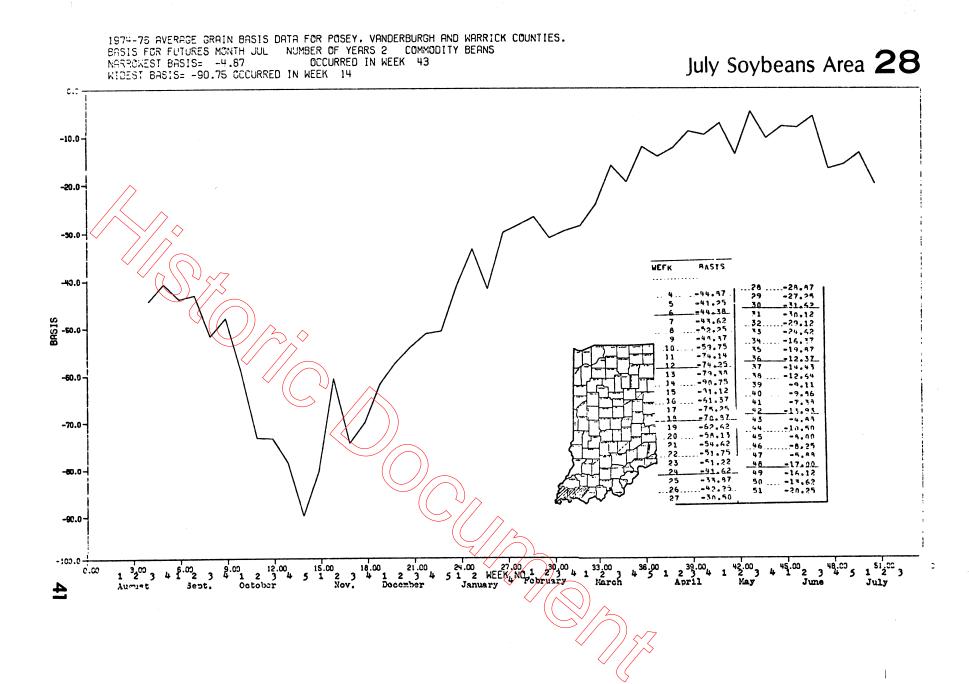
1974-76 AVERAGE GRAIN BASIS DATA FOR GIBSON AND PIKE COUNTIES. BASIS FOR FUTURES MONTH JUL NUMBER OF YEARS 2 COMMODITY BEANS NARROWEST BASIS= -18.62 OCCURRED IN WEEK 41 WIDEST BASIS=-103.50 OCCURRED IN WEEK 14 July Soybeans Area **27** 0.0 -10.0 -20.0 -30.0 -52.12 -42.2 -F1.50 -49.51 WEEK RASIS 28 -45.37 29 -42.12 45.52 ٦1 -64.23 -64.67 "2 - \$2.25 -61.67 33 -16.37 -38.67 34 -27.53 -56.33 35 -27.52 -61.34 .6.... -62.47 24.41 37 11 -69.50 -25-63 34 -90.67 -22.51 11 39 - 99.50 -14.7 40 -27.50 13 -97.7 -70.0 41 -14.57 14 -103.5 -93.00 15 75 43 -21.63 16 -12.20 17 44 -21.12 -41.25 45 -10.42 .74.33 46 - 12 . 12 -83.0 19 -79.7 47 -22.00 20 -71.75 -29.62 21 -66.50 -59,50 49 -24.00 55 **5**0. .-31.00 23 -61.05 =1 -31.00 -59.97 -90.0 ົ⁵¹.00 1 2 July 1.00 1 5 1 2 WEEK, NO 1 20,00 4 January February 133.00 1 23 March 18.00 12.00 3 4 15.00 21.00 36.00 2 39 \$2.00 48.00 1 ³2⁶⁰ 3 4 1 2 1 3 4 ž 3 4 2 2 2 3 4 3 5 3 4 1 April October May Nov. December June Sept. 37 August

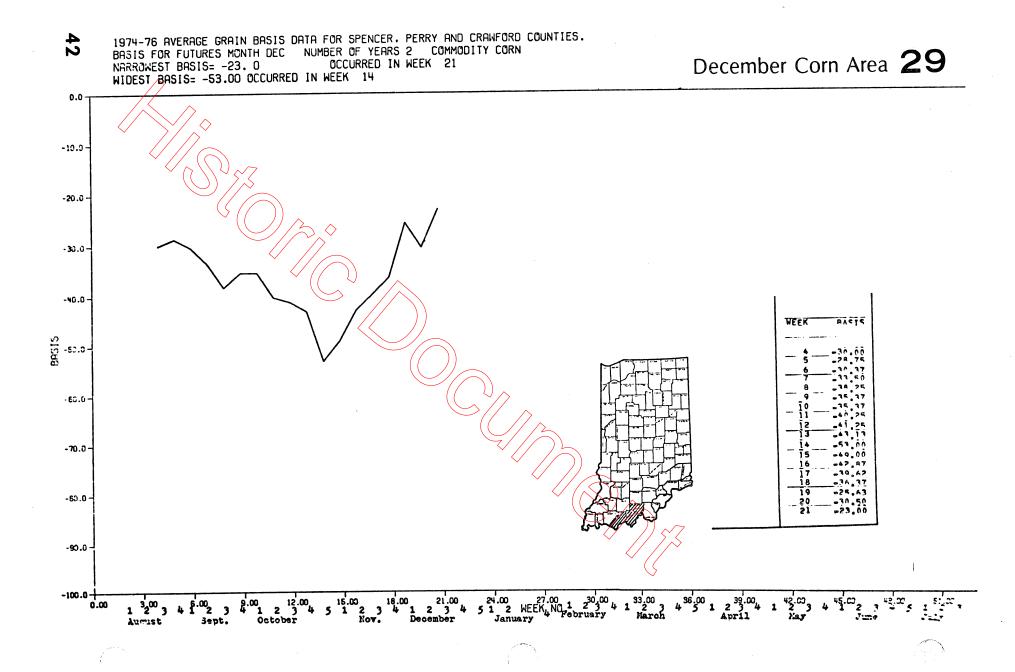


1974-76 AVERAGE GRAIN BASIS DATA FOR POSEY, VANDERBURGH AND WARRICK COUNTIES.

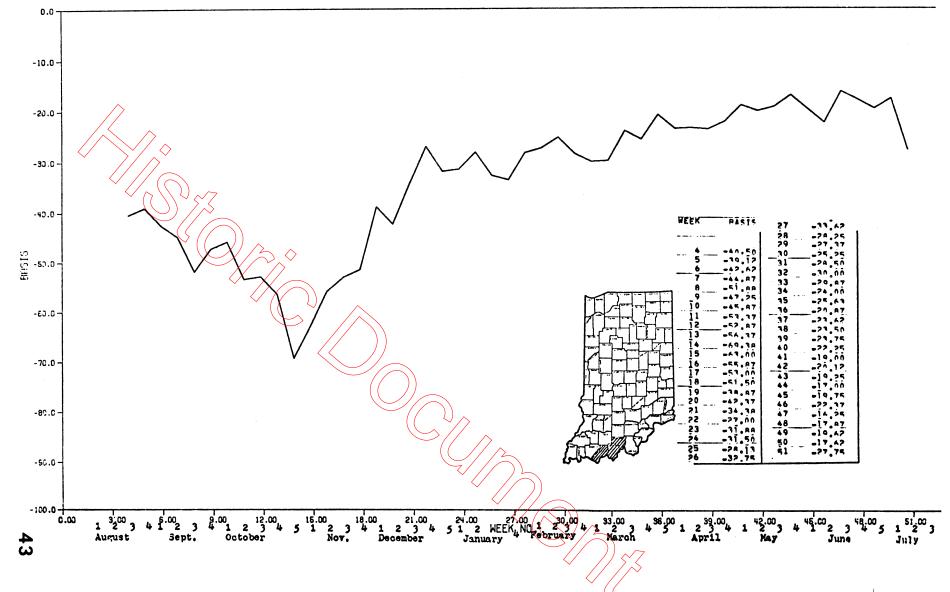




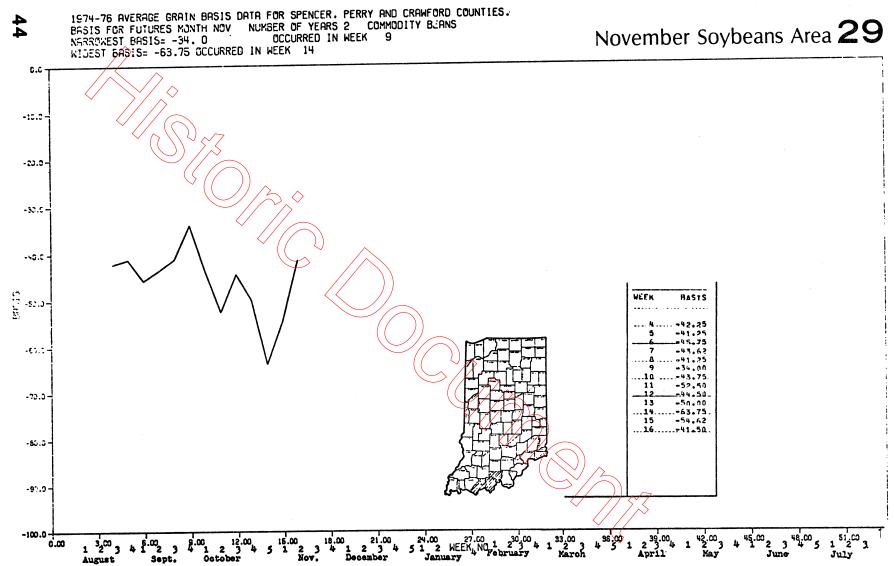




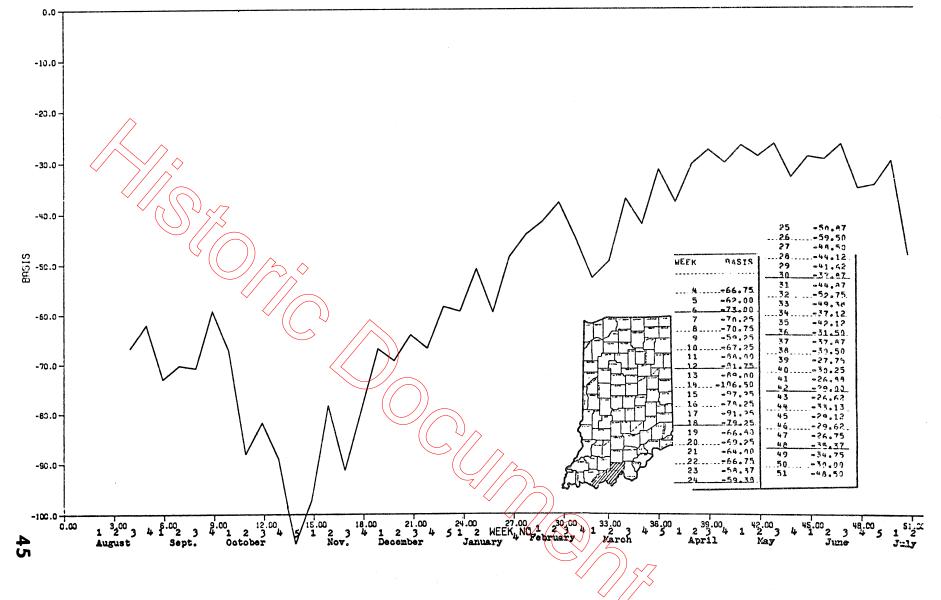
1974-76 AVERAGE GRAIN BASIS DATA FOR SPENCER, PERRY AND CRAWFORD COUNTIES. BASIS FOR FUTURES MONTH JUL NUMBER OF YEARS 2 COMMODITY CORN NARROWEST BASIS= -16.25 OCCURRED IN WEEK 47 WIDEST BASIS= -69.38 OCCURRED IN WEEK 14



July Corn Area 29

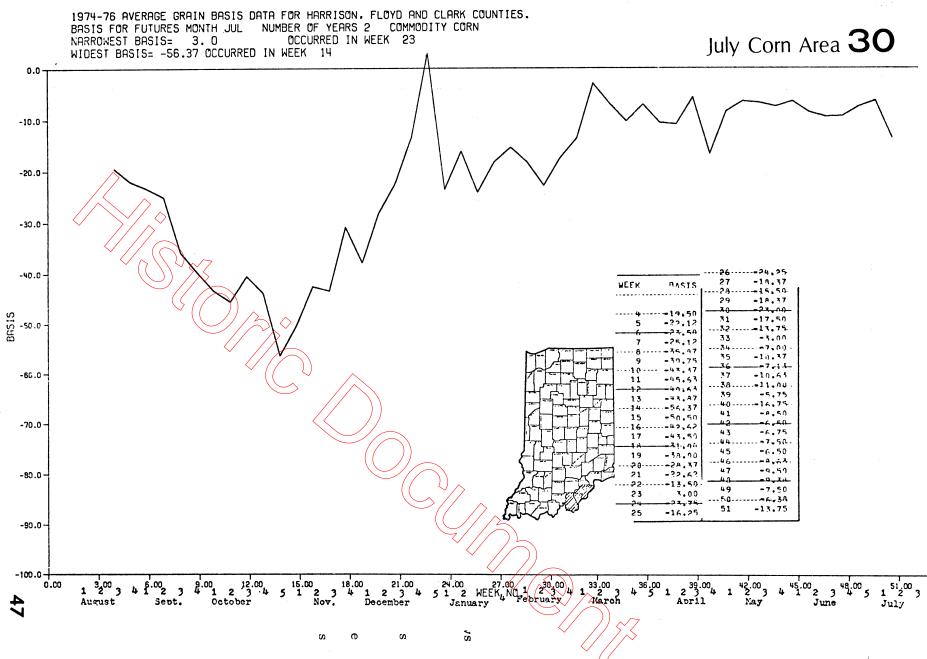


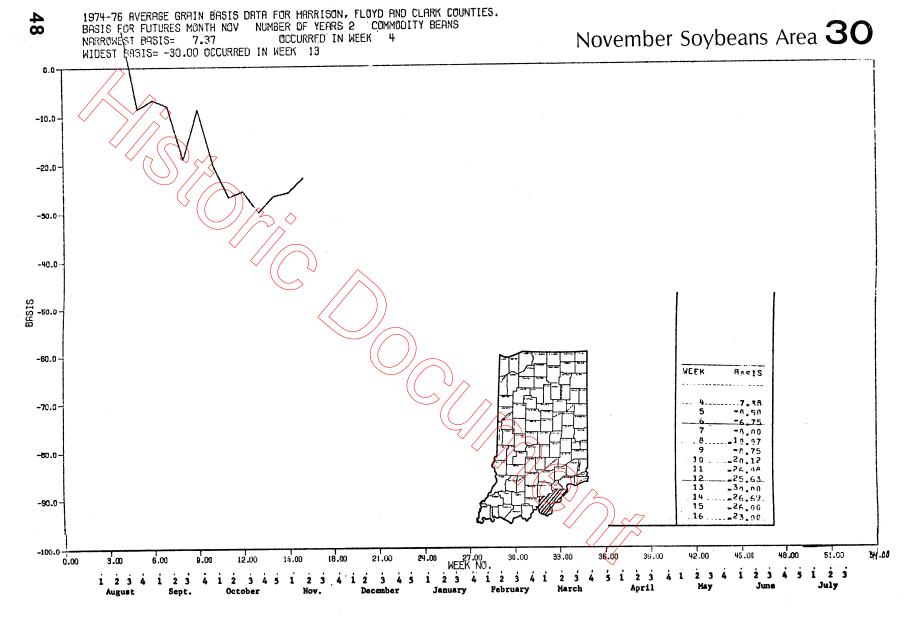
1974-76 AVERAGE GRAIN BASIS DATA FOR SPENCER. PERRY AND CRAWFORD COUNTIES. BASIS FOR FUTURES MONTH JUL NUMBER OF YEARS 2 COMMODITY BEANS NARROWEST BASIS= -26.62 OCCURRED IN WEEK 43 WIDEST BASIS=-106.50 OCCURRED IN WEEK 14



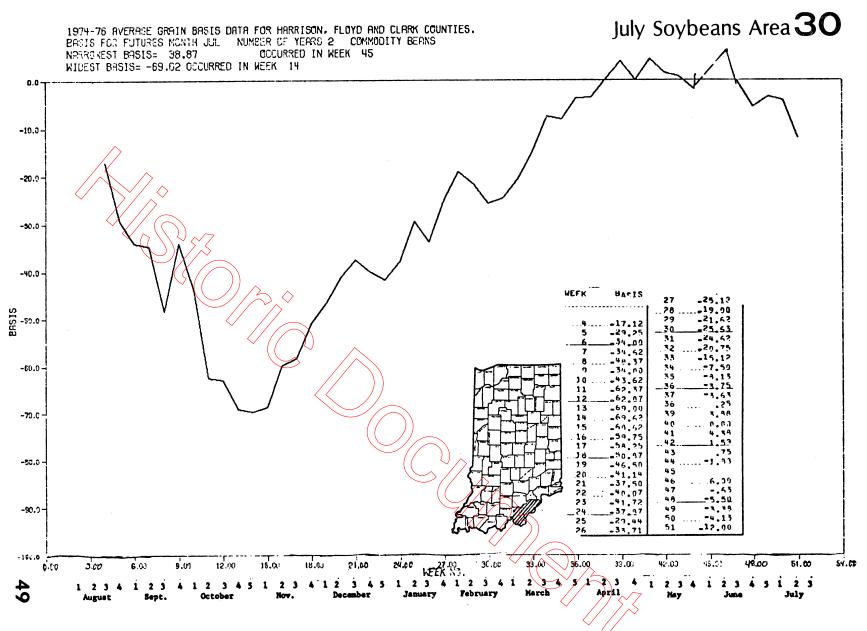
July Soybeans Area 29

1974-76 AVERAGE GRAIN BASIS DATA FOR HARRISON, FLOYD AND CLARK COUNTIES. 46 BASIS FOR FUTURES MONTH DEC NUMBER OF YEARS 2 COMMODITY CORN NARROWEST BASIS= -9.0 OCCURRED IN WEEK 4 WIDEST BASIS= -40.00 OCCURRED IN WEEK 14 December Corn Area **30** 0.0 -10.0 -20.0 -30.0 -40.0 WEEK BASIS -----. 8451S -2010----9.00--11.75 5 10.00 -13.75 -22.25 -27.87 -60.0 -32.A7 ---የ ው -32.50 11 -29.00 -12 -30.63 13 --- 14--70.0 -36.50 15 --29.62 --- 1-6-17 -30.12 -15.47 -10 19 -25.50 -80.0 .---20---21 -11.25 -90.0-15.00 17 5 1 2 3 Nov. 48,00 51.00 24.00 27.00 29.00 5 1 2 WEEK 4 NO 1 23 January February 42.00 2 May 45.00 -100.0 33.00 2 3 March 36.00 5 18.00 21.00 3 4 1 2 3 4 December 4 23 June 5 1 1 Т ٦3 3 9.00 i2.00 4 1 2 3 4 2 3 April 4 1 2 41 0.00 1³2⁰⁰3 July 3 October Sept. Aurust





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