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# Prices Paid Surveys

## Interviewer's Manual



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## Chapter 1 – Prices Paid Survey Overview

### Survey Purpose

The Prices Paid by Farmers Survey provides price data for the construction of Prices Paid indexes, which measure the change in the average price of agricultural inputs purchased by farmers and ranchers.

Prices are indexed and compared to specific base periods, so that changes in the cost of agricultural inputs can be measured over time. The base periods that are currently used are 1910-1914 and 2011. The index of prices paid by farmers is known as the Index of Prices Paid for Commodities and Services, Interest, Taxes and Wage Rates (PPITW).

The PPITW index provides a measure of change in average prices paid by farmers for goods and services used in family living and agricultural production. The PPITW index measures the rate of change in input costs for agriculture similar to how the Consumer Price Index (CPI) measures the change in general living costs for the average U.S. citizen.

When referenced to the 1910-1914 base period, the Prices Paid Index (PPITW), is called the Parity Index, and is used as a component in the computation of commodity Parity Prices. The intent of Parity Prices is to define a price level which will maintain the 1910-1914 purchasing power of farm commodities. Many calculations of agricultural support programs are based on the Parity Index and other information collected in the Prices Paid survey.

### Prices Paid Program History

**Beginning:** In 1911, the Department of Agriculture conducted an inquiry to determine prices paid by farmers in 1909 and 1910 for 86 items used in production and family living. The purpose of this inquiry was to compare the price of items purchased relative to the value of the commodities farmers produced and sold.

**Early Years:** Thereafter, price surveys were conducted annually and later monthly, quarterly, or semiannually, depending on the particular commodities surveyed. These price estimates enabled comparisons of purchasing power, such as number of dozens of eggs it took to buy a new dress. However, these simple comparisons did not provide a broad comparison of purchasing power of farm products as a group.

**1928:** The former Bureau of Agricultural Economics incorporated Prices Paid data into an index and published the first Index of Prices Paid by Farmers. These index numbers provided a measure of general changes in prices of commodities purchased by farmers.

A critical decision in the development of the index was the choice of the base period. The period of 1905-1915 was selected as the base after an analysis of historical wholesale price data indicated that this was a period of relatively stable prices.

**1933:** With the passage of the Agricultural Adjustment Act of 1933, a new index was established. This index, called the Parity Index, was based on a new time period – the years 1910 – 1914.

**1938:** Title III, Subtitle A, Section 301 (A) of the Agricultural Adjustment Act of 1938 (as amended) established The Parity Index for use in the computation of parity prices.

**1948:** The Agricultural Adjustment Act of 1948, which is still in effect, defines the “parity index” as: the ratio of (i) the general level of prices for articles and services that farmers buy, wages paid for hired farm labor, interest on farm indebtedness secured by farm real estate, and taxes on farm real estate, for the calendar month ending last before such date to (ii) the general level of such prices, wages, rates, and taxes during the period January 1910 to December 1914, inclusive.

**2014:** In January 2014, a new index, based on the year 2011, was established. The 1910- 14 and the 2011 indexes are linked, so that comparisons can be made between them and with current prices. Current Prices Paid and Prices Received indexes are constructed by comparing current prices to the 2011 base price and multiplying this price ratio by a 5-year moving average weight (adjusted for seasonal marketing's).

In 2019, the Prices Paid Survey questionnaire, Blaise, and IDAS were modified to collect total quantity sold, total value of sales, and average price for line-items on all five Prices Paid Surveys for the previous calendar year. The primary goal for this modification is to derive survey weighted average price indications, and progress towards a full probability survey. Extensive cognitive testing was done to make sure reporting was acceptable for respondents with differing record keeping practices.

## Indexes of Prices Paid by Farmers

**The Prices Paid Index is composed of five major sub-indexes:**

1. Prices paid for items used in FARM PRODUCTION (Production Items Index).
2. INTEREST paid per acre on farm real estate and the interest rate on farm non-real estate debt
3. TAXES payable per acre on farm real estate including land and buildings
4. WAGES RATES paid to hired farm labor
5. Prices paid for items used in FAMILY LIVING (CPI Index)

**Production Items Index:**

The index of production items is the largest of the Prices Paid indexes (accounting for more than 70 percent) and is itself divided into 12 production component indexes. Six of the twelve production component indexes are benchmarked using annual price data from the Prices Paid Surveys. These six production indexes are:

Feed	Chemicals
Seed	Fuels
Fertilizer	Machinery

Other components, including Farm Services, Rent, and Livestock & Poultry components are constructed using data NASS collects during other surveys, including Agricultural Resource Management Survey (ARMS) expense data, quarterly Labor data, and data obtained in livestock and poultry surveys (along with Agricultural Market Service (AMS) data). The remaining component indexes are estimated using Bureau of Labor Statistics (BLS) index data.

**5 - Year Moving Weights:**

The Prices Paid Index is based on a 5-year moving average of farm expenditures reported on the Agricultural Resource Management Survey (ARMS). Indexes are calculated for both 1910-1914 = 100 and 2011 = 100 base reference periods and are published monthly in the Agricultural Prices Release.

## Survey Scope

There are five Prices Paid surveys conducted beginning in March of each year. Each of these surveys reflects a separate component of the Prices Paid Index of Production, including fuels, feed, seed, machinery, fertilizer and chemicals.

All regions and states, except Alaska and Hawaii, participate in the Prices Paid survey. However, not all states participate in all five Prices Paid surveys. The following table shows the specific surveys and questionnaire versions enumerated by each state.

Prices Paid Survey  
Interviewer's Manual

State	FIPS	854- Machinery	856- Feed	858- Chem./Fert.	860- Fuel	864- Seed
AL	1	X	X	X	X	X
AZ	4		X	X		X
AR	5	X	X	X	X	X
CA	6	X	X	X	X	X
CO	8	X	X	X	X	X
CT	9		X		X	X
DE	10		X			X
FL	12		X	X	X	X
GA	13	X	X	X	X	X
ID	16	X	X	X	X	X
IL	17	X	X	X	X	X
IN	18	X	X	X	X	X
IA	19	X	X	X	X	X
KS	20	X	X	X	X	X
KY	21	X	X	X	X	X
LA	22	X		X	X	X
ME	23		X		X	X
MD	24		X			X
MA	25		X		X	X
MI	26	X	X	X	X	X
MN	27	X	X	X	X	X
MS	28		X	X	X	X
MO	29	X	X	X	X	X
MT	30	X		X	X	X
NE	31	X	X	X	X	X
NV	32					X
NH	33		X		X	X
NJ	34			X		X
NM	35					X
NY	36	X	X	X	X	X
NC	37	X	X	X	X	X
ND	38	X		X	X	X
OH	39	X	X	X	X	X
OK	40	X	X	X	X	X
OR	41	X	X	X	X	X
PA	42	X	X	X	X	X
RI	44					X
SC	45	X		X	X	X
SD	46	X		X	X	X
TN	47	X		X	X	X
TX	48	X	X	X	X	X
UT	49					X
VT	50		X		X	X
VA	51	X		X	X	X
WA	53	X	X	X	X	X
WV	54					X
WI	55	X	X	X	X	X
WY	56					X
<b>Total</b>		<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>



## Uses of Prices Paid Data

### Farmers

The farm producer is a primary user of Prices Paid index data. Producers use price index data when making decisions on purchases, sales, capital investments, and production contracts. These index data also provide reliable information to place farmers on equal footing with agri-businesses, bankers, credit associations, and policy makers.

### Farm Programs

Price information from the Prices Paid Surveys is used in the computation of parity prices, evaluation of current farm policy, and evaluation and formulation of future agricultural policy. Federal Marketing Orders use Prices Paid by Farmers data to set market standards and level of program payments.

### Media

Prices Paid by Farmers survey data are used by news media to illustrate price developments which affect the agricultural community. This data receives wide coverage by major farm magazines, newspapers, farm broadcasters, and others as a basis for advising farmers and for making economic forecasts.

### Lending Institutions

Reliable reports on Agricultural Prices are an invaluable aid to financial institutions in serving the farmer's credit needs. Available credit can be used more effectively if lending institutions can monitor trends in the agricultural sector. Banks, the Farm Credit Service, and other lending institutions use Prices Paid data as they determine loan requirements and develop production budgets for agricultural producers seeking credit.

### Agri-Business

Firms and individuals actively involved in the production, distribution, processing, and marketing of farm products use Prices Paid data to determine market potential and allocation of research and advertising funds. The location of a new dealership or the potential of a new product is contingent upon an evaluation of potential future income. NASS price surveys provide the only unbiased source of agriculture input product prices for the nation.

### Analysis and Research

Government agencies and policy makers use Prices Paid index data to evaluate the costs of agricultural inputs compared to other sectors of the economy. Economists use these data to determine net farm income, agricultural productivity, and to measure alternative production input costs. Analysts use the statistics in projecting current trends, interpreting economic implications, and evaluating courses of action

## Publication of Agricultural Prices

An *Agricultural Prices* publication is issued each month. The monthly *Agricultural Prices* publication contains the monthly average price, PPITW index value, and parity prices received for selected crops and livestock, the PPITW index value for prices paid, and milk and livestock feed-price ratios. Prices Paid Indexes are calculated for both the 1910-14=100 and 2011=100 base periods.

Starting in 2015, prices from the annual Prices Paid survey are no longer published in the April *Agricultural Prices* release, however Prices Paid prices continue to be collected and summarized for index construction.

## Weblinks

The following weblinks provide more information on the Prices Paid Surveys and may be of interest to survey respondents.

**[NASS Agricultural Prices release](#)**. The monthly release contains farm input index data.

**[Guide to NASS Surveys – Prices Paid and Prices Paid Index](#)**: Provides background information on the survey for respondents and data users.

[Price Program: History, Concepts, Methodology, Analysis, Estimates and Dissemination reference publication](#)

[January 2014 Agricultural Price Program Update](#)

[January 2015 Agricultural Price Program Update](#)

[April 2015 Agricultural Price Program Update](#)

[May 2022 Agricultural Price Program Update](#)

[Agricultural Price Program Update](#)

**NASS Quick Stats** <http://quickstats.nass.usda.gov/>

## Chapter 2 – Survey Procedures

### Introduction

The Prices Paid by Farmers surveys provides the data to calculate the farm production index, a major component of the Parity Index. This measure of the cost of farm inputs relative to the value of farm production provides a gauge of the “cost of doing business” over time.

Your job, as a survey enumerator, is to collect the prices used in the farm production index. This data is collected from businesses that sell fuel, feed, seed, chemicals, fertilizer, and/or machinery to farmers. You will not be collecting prices for all items sold in these establishments: rather, you will collect prices for a representative sample of items.

This Interviewer's Manual provides instructions needed to complete your job as a Prices Paid survey enumerator. This manual will help you prepare and answer many of the questions encountered during data collection. Become familiar with this manual and the survey questionnaire. Make notes in the margin, and underline points of emphasis. Bring topics needing clarification to your supervisor's attention.

### Employer

You are an employee of the National Association of State Departments of Agriculture (NASDA). Work on this survey is covered by a cooperative agreement between NASDA and NASS. Introduce yourself as a NASDA employee working for the (your State/Region) Field Office of the USDA, National Agricultural Statistics Service.

### Supervision

All questions regarding data collection for the Prices Paid survey should be directed to your NASDA supervisory enumerator. The Survey Coordinator in your Regional Field Office will also be helpful in answering questions about the survey questionnaire.

### Responsibility

It is your responsibility to obtain cooperation from selected operations, to remind respondents of the confidential nature of the data, to explain the uses of the data collected, to make the respondents aware of the Respondent Burden statement, and to collect quality data on Prices Paid Survey items.

## Confidentiality

Reports received from individual operations remain confidential and are used only in combination with other reports to arrive at regional and National estimates.

All reports are processed under strict security at Headquarters and Regional Field Offices. During report processing, survey data are restricted to authorized staff collecting and working with the data. The individual reports are not available for use by anyone except authorized NASS personnel.

Survey data being collected or processed are locked up at the end of each day to maintain confidential handling of individual reports. Under no circumstances will summary level price report data be revealed or published prior to the official release date and time.

It is your responsibility to inform the respondent that this is a voluntary survey and assure them their data are confidential. A respondent has the right to know under what authority the information is collected, the purpose for the information collected, and how information about their operation will be used. See your NASDA Employee Handbook for additional information regarding confidentiality.

## Burden Statement

Federal regulations require that all questionnaires used by agencies of the Federal government provide a burden statement - an estimate of the average time required to complete the questionnaire. This regulation is administered by the Office of Management and Budget (OMB), which has the duty of approving and overseeing government data collection efforts. The public may respond to the Office of Management and Budget regarding any aspect of a survey.

The burden statement appears on the front of all Prices Paid questionnaires. The average time indicated on the burden statement may represent the actual average completion time as recorded in previous years of the survey, or it may represent what NASS and OMB consider to be an average completion time.

If the respondent asks, "How long will this take?" note the burden statement average time requirement and never directly contradict the statement. However, you may provide additional information, such as, "The official average for this survey is 15 minutes, but the interviews I have been doing in this area are averaging around 10 minutes."

If the respondent is mailed a copy of the questionnaire, an enumerator collecting data by personal interview need not present a copy of the burden statement at the time of the interview.

### Example of Burden Statement:

"According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for

this information collection is 0535-0003. The time required to complete this information collection is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.”

## **Materials**

Your supervisor is responsible for furnishing necessary survey materials. If your materials run low, notify your supervisor immediately. Materials needed include: Interviewer's Manual, NASDA Employee Handbook, pencils, and blank questionnaires. You should also have a motor vehicle accident report kit, your identification card, county maps, state highway map, and a clipboard.

## **Data Collection**

Survey instructions and data collection procedures will be provided by your Regional Field Office.

Data will be collected by mail, phone, fax, internet, or personal interview. The preferred method of data collection is by telephone because this is most cost effective. However, a personal visit may be required for operations that require special handling due to survey coordination or other issues. Your supervisor will provide guidance regarding the most appropriate mode of data collection.

Prior to enumeration, all businesses should be mailed a letter from the Print Mail Center (PMC) or Regional Field Office, explaining the purpose of the survey, along with a copy of the Prices Paid Survey questionnaire. The questionnaire may be used as a mail version if the Regional Field Office elects to collect data by mail or as an informational version prior to personal interview or telephone by the Data Collection Center.

Advance planning and preparation will make your job much easier. Make every effort to plan your activities to get your work turned in on time and prevent last minute problems. Before heading out, map the location of all businesses you are to enumerate, and use this map to plan your daily travel route. Begin with businesses close to home and make a circle or return route to revisit those that were not available the first time. This will make the best use of your time and minimize duplication of mileage.

### **Interview and Call Back Procedures**

The business owner or a partner should be the first point of contact for the interview, unless the comments say otherwise. In some cases, the respondent will ask you to contact someone else for survey data, such as a bookkeeper. Note any arrangements for future data collection (who to contact, when, and how) on the questionnaire.

Generally, you will be able to contact the respondent and complete the interview on your first attempt. However, if they are unavailable, you may need to make one or more call backs. Use the following instructions as a guide.

**First Attempt:**

The first contact is the most critical in securing cooperation. During this visit, you should explain the Prices Paid survey to the respondent and describe what to expect and gain from participating in the survey. The respondent should be familiarized with the survey purpose, instructions for completing the questionnaire, and uses of the data. Be prepared to answer questions about the Prices Paid program. If they have questions you cannot answer, they may contact the Regional Field Office (RFO) or the Survey Coordinator in your state. Make sure the respondent understands the survey is voluntary and assure them their data are confidential.

You will reduce the burden on the respondent if you are thoroughly familiar with the questionnaire and instructions for completion. Also, it may be helpful for the respondent to follow along with a blank copy of the questionnaire, particularly for the more complicated chemical/fertilizer and machinery questionnaires.

If the contact is not present, but is expected shortly, wait for the interview. If the respondent is not available, set up an appointment. Be sure to keep the appointment and be on time.

Make notes on the questionnaire of what you observe and learned while trying to contact the respondent. This information will be useful if you are unable to secure an interview on a later visit.

**Second Attempt:**

If a second visit is required, try again to interview the respondent(s), unless the comments say otherwise. Optimize your chance for getting an interview by arriving at a different time of day.

**Final Attempt:**

If the contact is still not available, record observations made during your visits. At the very least, note whether the name on the label is still in business, and the types of products that you observed being sold (for example, fuel, feed, seed, fertilizer, chemicals, and/or machinery).

**Refusals:**

Make a diligent effort to obtain cooperation by explaining the purpose of the survey, confidentiality of the data, and the need for accurate statistics. Most of the people you contact will cooperate and provide the needed information. However, there are always a few people who are reluctant to provide information, and some will refuse completely.

If a respondent refuses completely, conclude the interview with a friendly attitude and leave the respondent with a positive, professional impression of you. Note on the questionnaire the reason for the refusal and observe, if possible, the types of agricultural products the establishment sells.

## Completing the Questionnaire

### General Instructions

These general instructions apply to the enumeration of all Prices Paid questionnaires. Instructions for completing specific Prices Paid questionnaires are found later in this manual, beginning with Chapter 4.

### Important Reminders:

- Use a #2 lead pencil.
- Price data should be recorded for NEW items only.
- Record the total quantity sold and the total dollar sales or the average retail cash price paid for an item for the previous calendar year
- The 2023 questionnaire asks for data for all of 2022.
- Except for gasoline, exclude all taxes.

When completing the questionnaire, be sure to ask questions in the order they appear. Read statements and questions exactly as written. The questionnaire may include information such as definitions and instructions about survey items. It is important that you read these to the respondent.

Pay close attention to “skip” instructions in the questionnaire to avoid asking questions needlessly. When skip instructions are not printed after an item, continue with the next question.

Enumerator instructions are directly after the question. These instructions are not read to respondents. For example:

Did this operation sell fuels to farmers/ranchers in the U.S. during 2022?

- **Yes** go to Question 3                      **No** go to Question 2

Probe, in a non-threatening manner, to verify unusual data or to correct misreported data. If answers are unusual, but are correct, make notes in the margins to explain. The notes are a very valuable editing tool and will help the survey statistician understand the recorded answers when reviewing the questionnaire.

Write complicated calculations on the margin or clear area of the questionnaire. This will be useful to you and the survey statistician later, when you review the questionnaire.

If the answer to a question is ‘None’, leave the answer cell blank or enter a dash. Do not enter a zero. Do not write notes or use notations such as NA (meaning “not available” or “not applicable”), ea. (meaning “each”), or dollar signs (\$) in the answer cells. Comments should be written outside the cells.

### Introduction

Rephrase the Introduction on the Face Page of the questionnaire into your own words. Make it comfortable for you to say and be prepared to answer a respondent's questions. Play close attention to the survey instructions on the Face Page, noting all inclusions, exclusions, and other important information related to the price data that you will be collecting.

### Recording Price Data

Items reported should be sold by the firm, of the type and quality most commonly sold. Prices should reflect "new" condition only.

Verify that recorded price data are for the unit size specified on the questionnaire. Make note if the item is sold in a size, number, or volume not specified on the questionnaire. For example: 5 lbs. price or 50 lbs. price is reported when the survey asks for a one-pound price. If the contact reports in a unit other than the one indicated on the questionnaire, write the response in the margin beside the answer cell and do the appropriate conversion after the interview.

Note that the chemicals in the Agricultural Fertilizer & Chemical questionnaire have variable unit coding. This allows the respondent to provide the package price data for the most commonly sold chemical. Along with the package price, record the package size and unit of measure the product is sold in.

### Recording decimals

Total quantity sold and total sales (\$) should be recorded to the nearest whole number. Average prices should be recorded in dollars and cents. Fractions should be rounded to the nearest whole cent. Fuel and machinery questionnaires are an exception to this rule. Fuels should be recorded to the nearest 1/10th of a cent (1,000<sup>th</sup> of a dollar), and machinery recorded to the nearest dollar.

Prices must be reported with cents following the decimal. For example:

**Correct:**       **Incorrect:**      

The computer is programmed to assume a certain number of decimal places for each item. If a price is in dollars and cents, the cents need to be recorded to the right of the decimal. If the price is to the even dollar, "zero" cents should be recorded. Place numbers correctly in relation to decimal points, and fill in every space printed after them.

## Completion Code Boxes

### Supervisor/ Enumerator Box (9998):

Enter your Supervisor/Enumerator Identification Number in code box 9998.

### Response Code Box (9901):

1	-	Complete	5	-	Refusal Estimated
2	-	Refusal	6	-	Inaccessible Estimated
3	-	Inaccessible	7	-	Office Hold Estimated
4	-	Office Hold	8	-	Known Zero (Office Use Only)



**Respondent Code Box (9902):**

- 1 - Operator/Manager
- 2 - Spouse of Operator
- 3 - Accountant or Bookkeeper
- 4 - Partner
- 5 - Other

**Mode Code Box (9903):**

- 1 - PASI (Mail)
- 2 - PATI (Telephone)
- 3 - PAPI (Face-to-Face)
- 6 - email
- 7 - Fax
- 19 - Other

**Date Box (9910):**

Record the date the interview was completed using the 6-digit date code (MMDDYY), where MM = month, DD = day, YY = year.

## Review your work

After completing your work, review the questionnaire while the interview is still fresh in your mind. Each questionnaire should be reviewed for readability, completeness, and accuracy. Pay particular attention to the following.

- All entries should be clear and easy to read. For example, make sure that we call tell a 3 from a 5, a 1 from a 7, and a 0 from a 6.
- All decimals should be reported correctly.
- All units must be coded or marked correctly.
- Calculations should be reviewed to make sure they are correct.
- Notes should be readable and explanatory.

## Returning completed questionnaires

Forward completed questionnaires to your Supervisor or RFO according to the survey instructions. If you have any doubt that completed questionnaires will not reach the RFO before the due date, call your Supervisor or the RFO for instructions. Do not send incomplete questionnaires back without explanatory notes.

## Reporting via CASI

Be aware that respondents may choose to complete the survey on the Internet, using the NASS computer Assistant Self Interview (CASI) system. Respondents will access the system using a survey code that is unique to them and this survey. This code is printed on the label of the questionnaire that was mailed to them. Instructions for completing the survey via CASI were sent along with the questionnaire.

If the respondent indicates that they prefer to report via the Internet, help them by pointing out survey code. Report to the office that this information will be coming via Internet, so that this response can be tracked. If the report is not received by Internet, the operation may need a friendly "reminder" from you to complete the survey.

## Chapter 3 – Terms and Definitions

An understanding of the terminology associated with the Prices Paid surveys is important so that you may communicate clearly and effectively with survey respondents. If you encounter unfamiliar terms during survey enumeration, and they are not listed here, check the NASDA website ([www.nasda.org](http://www.nasda.org)), or contact your NASDA supervisor. Also, contact the Survey Coordinator in your state or region and request that these terms are added to this Interviewer's Manual.

Listed in Chapter 3 are general terms and definitions used in the enumeration of all Prices Paid Surveys. Additional terms and definitions are found in other chapters of this manual, where they are discussed in reference to a particular Prices Paid survey.

### General Terms and Definitions for Enumeration

**Aggregator:** An individual or firm that purchases a commodity from a producer and combines it with other similar purchases in order to make a bulk sale.

**Agribusiness:** Producers and sellers of agricultural food, fiber, and services. Agribusinesses include manufacturers, processors, wholesalers, dealers, transporters, marketers, and retail outlets.

**Average Price:** The average price recorded on questionnaire item for a calendar year. It's defined as the total dollar sales divided by total quantity sold. The 2023 questionnaire collects price data for all of 2022.

**Cash Price:** The price paid for the item of interest should not include any sales tax or additional costs, such as delivery. Price data should include any discounts. However, rebates should not be factored into reducing the price.

**Commodity:** An agricultural or agricultural by-product available for sale.

**Confidentiality:** The assurance from NASS to survey respondents, backed by federal law, that individual information collected on authorized USDA surveys will not be released to any person, organization or institution, including court subpoenas. See the "NASDA Employee Handbook" for regulations.

**CWT (Hundredweight):** A marketing term referring to 100 pounds of a commodity.

**Due Date - [Enumerators]:** The date assigned materials must be received in the Regional Field Office.

**Editing:** Reviewing completed questionnaires for reasonableness and validity. Responses which appear unusual or unreasonable should be verified with the respondent and updated if incorrectly reported. Unusual but correct responses should be flagged and explained with notes indicating they were verified.

**Hundredweight (CWT):** A marketing term referring to 100 pounds of a commodity. Abbreviated "cwt."

**Inaccessible:** A sample unit which cannot be contacted, interviewed, etc. during the survey period.

**Input:** Items such as seed, fertilizer, chemicals, feed, machinery, fuel, labor, and land used in the production of an agricultural product.

**Input Provider:** The company or individual that sells or contributes products used in the production of agricultural commodities.

**Kilogram:** A measure of weight equal to 1,000 grams or about 2.2 pounds.

**Non-response:** Failure of a respondent to reply to a survey questionnaire; may be item non-response (refuse to answer one or more questions), survey non-response (refuse to answer any or most of the questions), or inability of enumerator to locate respondent during the survey period (inaccessible).

**Operator or Respondent:** The person responsible for all or most of the day-to-day decisions for the retail operation. The operator could be the owner, hired manager, or a partner.

**Parity:** A relationship which defines a level of purchasing power for farmers equal to an earlier base period.

**Parity Index:** See Prices Paid Index.

**Parity Price:** The price giving a unit of a farm commodity the same purchasing power or exchange value in terms of goods and services as farm commodities had in the base period 1910-14.

**Parity Ratio:** The ratio of the prices received index over the prices paid index, using 1910-14 as the base period. It measures the relative purchasing power of products sold by farmers.

**Partner:** An individual within a partnership.

**Point of First Sale:** The point in the marketing channel where the firm selling the product gives up ownership of the product.

**Price Paid by Farmers:** The price farmers pay for goods and services necessary for them to produce and market commodities.

**Prices Paid Index:** The Index of Prices Paid by Farmers is a measure of the change in average prices paid by farmers for goods and services used in family living, production, interest, taxes, and farm wage rates relative to a base period.

Example: The Production Index is 110 using the base period of 2011=100. This implies that the current aggregated price for the items included in the Production

Index cost 10 percent more than the same or comparable group of items cost in 2011.

**Questionnaire:** A form used to ask specific questions and to record the responses given to the survey questions by selected sample units. The questionnaire may be printed on paper or viewed on a computer screen (CATI = Computer Assisted Telephone Interview, called from the office, or CAPI = Computer Assisted Personal Interview, performed in the field using a computer to record responses).

**Release Date:** The date the survey results are published and released. The results of the Prices Paid survey are not published. But they are used in construction of price indexes in the monthly *Agricultural Prices* report.

**Refusal:** A person representing a sample unit who will not cooperate in the survey and who refuses to provide sufficient information to satisfactorily complete the questionnaire.

**Respondent or Operator:** The person who provides the information necessary to complete a survey interview.

**Sample:** A group of farm operators or agribusinesses selected to participate in a survey at a particular time.

**Sampling Frame:** A population or list of all possible operations which meet specified criteria to draw a sample.

**Sampling Unit:** An identifiable unit (for example, a name, farm, or business) of a sampling frame that may be selected when drawing a sample.

**Survey:** The collection of data from specific sample units. Data reported by the selected sampling units, when summarized, provides an indication of what the total would be if all the sample units within the population of interest had reported.

**Survey Period:** The time period during which survey data collection can occur. Primarily determined by the survey's reference date and due date.

**Total Quantity Sold:** The total number of a questionnaire item sold during the previous calendar year. The 2023 questionnaire collects price data for all of 2022.

**Total Sales:** The total dollar sales of a questionnaire item during the previous calendar year. The 2023 questionnaire collects price data for all of 2022.

## Chapter 4 – Prices Paid by Farmers for Farm Machinery

### General

The Prices Paid for Farm Machinery survey is enumerated beginning in March in all states except:

Alaska, Arizona, Delaware, Florida, Hawaii, Maryland, Mississippi, Nevada, New Jersey, New Mexico, Utah, West Virginia, Wyoming, and the six New England states (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont).

The Prices Paid for Farm Machinery survey collects total quantity sold and total sales or the average price for tractors, planting tillage, hay, harvesting equipment, and other farm equipment. The U.S. Production Item Index and subcomponent indexes for Tractors, Self-Propelled Machinery, and Other Machinery are published in the monthly Agricultural Prices release.

To better measure the price change in what agricultural producers are paying for new farm machinery, more narrowly defined specifications are needed. To assist with this, example models of equipment to be priced for each equipment item are provided on the questionnaire. Tractor manufacturers sometimes have multiple series within the specifications designated such as an E, R, or M with the model. These specify different accessories included for the model and the price differential between these is significant. The E, R, or M model designation is critical in obtaining the proper price data for the tractor item of interest.

### Completing the Prices Paid for NEW Farm Machinery Questionnaire

- Collect price data for the example models listed or comparable model for other manufacturers. If an example model is discontinued substitute the replacement. Provide HQ with the replacement model so questionnaire, etc. updates can be made.
- The 2023 questionnaire asks for data for all of 2022.
- Quantity sold, total sales (\$), and average prices reported should contain accessories **included in the base price and optional accessories** for the model listed or comparable model.
- Exclude state sales tax.
- Prices should be reported to the nearest dollar.
- If the respondent reports a price range for average prices, use the midpoint of the range for the average price.

## Pricing Factors

### Options:

The pricing options is all inclusive since the questionnaire now collects quantity and total dollars received for the example models or comparable model of an unlisted make or replacement model for one discontinued.

### Discounts and Rebates:

Cash discounts or rebates offered by the dealer or manufacturer should be included in the reported average price. Reported average price should be the purchasers net price paid after receiving any discount or rebate with no trade-in.

## Tractors

Tractors are priced by either PTO (Power Take Off) or engine horsepower range, depending on the size of tractor, with usual accessories included in the price data reported for the specific models listed as examples. The example models are for front wheel assist.

**Front Wheel Assist (FWA)** Most 2-wheel drive tractors are sold with a front-wheel assist option. Adding the FWA option means the 2WD tractor can deliver 10% more power to the ground for the same fuel consumption, and it will have better traction and flotation capabilities. Include the price for this option in the reported price if the dealer considers the front-wheel assist to be part of “usual” accessories. Do not record 2-wheel model tractors with the “front-wheel assist option” as a 4WD price.

**Equal 4-Wheel Drive Tractors (4WD)** have all four tires of equal size. This tractor type has the greatest power to weight ratio and can deliver between 55-60% of power at the drawbar.

## Tillage Equipment

Plows, harrows, discs, vertical tillage, and cultivators are types of equipment designed to prepare the seedbed, remove weeds, and aerate the soil. Planting and cultivating equipment are generally attached to and drawn by tractors.

## Planters and Drills

Planters and drills are used to insert seeds into the ground. Advanced models may till, fertilize, and seed in one pass. Some models have been developed for the planting of seed into undisturbed soil (no-till or minimum-till), while others require a prepared seedbed.

The planter is the most common type of seeder, and spaces seed out equally in long rows. The planter is usually adjustable for row spacing of between 20 inches to 40 inches and is used for row crops like corn and soybeans.

A drill has closer spacing than a planter, around 4 inches to 12 inches, and is used to plant small grains like wheat or row crops like soybeans. Placement of the seed by the drill is less precise than when using the planter. The newer air technology achieves greater accuracy in seed placement.

## Hay Equipment

Hay equipment includes balers, forage harvesters, and windrowing equipment. Rotary cutters are in the Other Equipment section of the questionnaire.

## Harvesting Equipment

Harvesting equipment includes combines, corn heads, grain heads and cotton pickers.

**Combines (Self-Propelled):** Only 250 and 350 bushel capacity machines are surveyed for new combine prices.

## Other Equipment

Other types of farm equipment for which we collect price information include wagons, wagon running gears, grain carts, elevators or conveyors, feed grinders, loaders, sprayers, and manure spreaders. See "Terms and Definitions" for item descriptions. Rotary cutters are new to this section of the questionnaire.

## Terms and Definitions

**Base Unit:** The standard manufactured item specified. Excludes product upgrades or optional items that are installed by the factory or dealer.

**Chisel Plow:** A primary tillage machine, either integral or trailing, that consists of three or more ranks or bars upon which either rigid or spring trip standards are attached. The shanks are usually spaced 12 inches apart overall. A variety of ground engaging tools may be used, from narrow points or shovels to 18-inch-wide sweeps. Chisel plows may be used to a maximum depth of 18 inches.

**Combine:** Self-propelled implements for harvesting standing crops or to gather crops from windrows or swaths. Combines separate the crop from the straw, stalks, cobs and husks, cleans and elevates it into a holding tank for immediate or eventual delivery into a truck, wagon or grain cart. Self-propelled units may have 2 wheels, 4 wheels or track drives and can be set up for rice, barley, peanuts, beans, small grains, and soybeans. They may have rigid or flexible cutter bars, bat or pick-up reels or windrow pickups, and may be fitted as hillside, sidehill or level land machines. Special barley and other row crop heads are available.

**Conventional Moldboard:** A plow equipped with a moldboard which receives the furrow slice and turns it partially or completely over.



**Conventional Tillage:** A tillage system where the entire surface layer of the soil is mixed or inverted by plowing, tillage, or disking.

**Corn Head:** Combine header, designed to harvest corn and other row crops, equipped to remove the stalk and leaf from the ear.

**Corn Planter:** Any of several different mechanical devices used to plant corn, which differ according to the manner in which the corn seed is dropped.

**Cotton Picker:** A machine used for mechanically harvesting cotton, which removes only the mature seed cotton. The basic principle on which it operates is a revolving spindle which penetrates the cotton plant, winds the seed cotton from the open boll, and carries it to a dropping zone in the machine. The cotton crop can be picked more than once using this technique.

**Cotton Stripper:** The leaves of the plant are removed with a chemical spray about two weeks before picking. Strippers work faster than pickers and strip the plant of all its growth in a single operation, including not only the open bolls but also the closed bolls and the needless foliage and stem.

#### **Cultivators:**

**Field:** An implement similar to the chisel plow except of lighter construction and with shanks or s-tines closer together (about 6 inches overall). The shanks are usually of a coil spring, and s-tines are designed to vibrate. Both are designed to break up the soil without getting caught by obstructions. The ground contact tool may be points, shovels or sweeps. Size may range up as high as 70-80 feet in width. Used primarily as a secondary tillage machine.

**Row:** An implement with shanks arranged in such a manner that rows of the crop can pass through without damage while weeds are removed. The shanks or standards may be fitted with shovels, disks or spider-wheels set at an angle to the direction of travel. Size can vary from 1-24 rows. Most are mounted on tractor either front or rear toolbar.

**Disk:** A farm implement composed of circular plates arranged at an angle with the soil. Used to prepare soil for seeding.

**Disk Harrow:** Also known as Tandem-Disk. Two gangs of disc blades are hitched in tandem; the front set throws the soil outward, and the rear set throws it inward. Width of cut may vary from 5-35 feet or more. Blade diameter size may vary from 16-26 inches with different spacing between blades (7, 9, 11 inches most common).

**Drilled:** Seeds which have been planted below the soil surface in rows by means of a drill or seeder.

**Drills, Grain:** Equipment used for seeding. Has a seed box which meters seed through tubes to single or double disk openers. May have fertilizer attachment. There are generally three types of grain drills: plain, press, and no-till.

**Plain:** Seeder with seed box, metered seed fed through tubes to single or double disc openers; spaced at 7, 9, 10 inch widths; without fertilizer attachment.

**Press:** A drill with either discs or lister bottoms plus press wheels to firm soil around seed.

**No-till, Minimum-till:** An implement with a disk to cut through the untilled soil and create a seed trench. The seed is placed in the furrow and covered by a harrow or closing wheel.

**Elevator:** A device to move grain, hay bales, feed or other commodities by belt, chain, bucket, auger, etc. in a vertical or horizontal direction or any variation thereof.

**Farm Wagon:** A four-wheeled, tractor-drawn vehicle used to transport produce, fertilizer, seeds, hay, and other materials.

**Feed Grinder/Hammer Mill:** A feed grinding device or mill in which hammer-like projections are mounted on the surface of a cylinder which revolves at a high speed within a heavy perforated metal enclosure and shatters the grain material by beating it to pieces. When the grain pieces become small enough from the hammering action to pass through a perforated screen, they are used as feed. The fineness of the feed is controlled by the size of the perforations in the screen.

**Forage Harvester (Field Forage Harvester, Field Chopper, Field Ensilage Harvester):** A harvesting machine, tractor drawn or self-propelled, which is used for field chopping of corn, legumes, and grasses into suitable lengths for either silo or mow storage. Forage Harvesters can have either a pick-up or row-crop head.

**Front-End Loader:** A mechanical implement mounted on a tractor for front-end operation to load manure, hay, or other loose type materials. It has three basic parts: a) the loader bucket, with flat bottom and vertical sides or fork with 7-12 tines; b) the support structure (framework) for mounting and maneuvering; and c) hydraulic fluid cylinders, valves, and hoses.

**Grain Head (Grain Platform):** Combine header designed to harvest soybeans and cereal crops. Most are equipped with a cutterbar and a revolving reel designed to lift and move the crop over the cutterbar to be conveyed by the auger.

**Grain Cart (1000-1200 bushel):** An auger wagon or trailer used to move grain from trucks and grain carts into storage bins. These implements are towed by a tractor that has a built-in auger conveyer system.

**Hay Baler:** A machine used for compressing loose grass or legumes like alfalfa into compact bales. The pick-up baler picks up grass from a windrow and the bale is made while the machine is in motion. Three principle bales are formed: square bales up to 200 pounds each, square bales up to 2 tons each, and round bales averaging 1400 pounds each.

**Hammer Mill:** See Feed Grinder.

**Implement:** Any farm machine used to perform operations when raising crops or livestock.

**Manure Spreader:** A 2-wheel or 4-wheel implement designed for hauling and scattering manure in a broken-to-pulverized form with a high degree of uniformity of spread at the destination point. The manure is conveyed to a point where it is passed through higher speed shredders before it is pitched by blades mounted on a rapidly rotating horizontal bar or cylinder.

**Minimum Tillage:** An energy-saving and erosion-control soil management system where cropland preparation methods involve no plowing and limited cultivation.

**Moldboard Plow:** A primary tillage machine with 1-18 curved metal plates (bottom or moldboards) that engage the soil to a depth up to 12 inches. The curvature of the moldboard causes the soil or furrow slice to be completely inverted. This action pulverizes the soil and buries almost all of the crop residue or stubble.

**Mower (Sickle Bar Mower):** A machine with a mowing sickle cutting bar which is designed to cut forage for hay, weed, etc.

**Mulch-Till:** A conservation tillage system in which the soil surface is worked with tillage tools such as a chisel, disk, or field cultivator prior to planting. Mulch-till incorporates part of the crop residue into the top few inches of the soil, helping increase roughness and moisture retention where it is needed.

**No-Till:** Method of planting crops that involves no seedbed preparation other than opening small slits in the soil so that seed can be placed at the intended depth. There is generally no cultivation during crop production, but chemicals are often used for weed control.

**Planter:** An implement that uses seed plate metering devices (mechanical or air activated) to drop seed through a boot or shank into a seed bed opened by a shoe or disc.

**Plow:** Any of various implements designed to perform primary deep tillage operations on the soil, usually in preparation for planting.

**Plow Down:** To bury material lying on the surface of a field, such as fertilizer or a cover-crop (green manure), by plowing.

**Power-Take-Off (PTO):** System of shafts used to transmit power from a tractor's engine to an attached implement. Standard PTO speeds are 540 rpm and 1000 rpm.

**Ridge-Till:** Method of planting crops that leaves the soil undisturbed from harvest to planting. Ridges formed while cultivating serve as the next year's seedbed. Herbicides and cultivation control weeds. Ridge-till is good for poorly drained areas.

**Rotary Cutter (Rotary Weed Cutter):** A large, power-driven blade rotating in a horizontal plane mounted on a tractor, used for cutting various types of vegetation.

**Rotary Hoe:** A series of curved spider wheels attached either to a solid shaft or in segments of two to four wheels for flexibility. Usually used to kill small weeds in summer fallow or row crops and sometimes as a wind erosion stop-gap.

**Rotary Mower:** A machine that uses a rotary cutting mechanism for mowing forage, grain, weeds, lawns, and other vegetation. Two common types are (a) the rotary knife blade which rotates rapidly in a horizontal plane having a vertical shaft; (b) the cylinder type, in which knives attached to a horizontal shaft cut off the vegetation when passing over a horizontal shear plate.

**Row Space:** For crops planted in rows, the distance from the center of one row to the center of the next row.

**Sprayer, Power Hydraulic:** There are two types: (1) A sprayer with hydraulic pump (piston, gear, roller, etc.) driven by gasoline engine, electric motor, PTO. Comprises a tank or other container for spray material. (2) A power-driven pump which draws spray material into the discharge system. Tank capacity ranges from 25-1600 gallons. Sprayer types can be mounted, skid, trailer, or self-propelled and are either boom, boomless or gun.

**Tillage:** The practice of working the soil to bring about more favorable conditions for seed germination, root growth, and weed control to improve plant growth.

**Tractor:** A self-propelled vehicle with 2 or 4-wheel drive or traction driven using treads, with a gasoline or diesel engine used to supply power to other machines in one or more of 3 ways: pulling at the drawbar or hitch point; rotary power from the power-take-off (PTO); hydraulic fluid power.

**Windrow:** The gathering of grains or forage in a row to facilitate mechanical harvesting.

**Windrower:** A mechanical device used for taking the cut hay or grain from the swath and turning it into a windrow ready for further handling with the hay loader, field chopper, hay baler, or combine.

## Chapter 5 – Prices Paid by Farmers for Feed

### General

The Prices Paid for Feed Survey is enumerated beginning in March in all states except:

Alaska, Hawaii, Louisiana, Montana, Nevada, New Jersey, New Mexico, North Dakota, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Virginia, West Virginia, and Wyoming.

The Prices Paid for Feed survey collects total quantity sold and total sales (\$) or the average price data on various livestock (poultry, beef cattle, dairy, and hog) feeds, concentrates, supplements, and additives for the previous calendar year. The 2023 questionnaire ask for data for all of 2022.

The U.S. Production Item Index for Feed and selected subcomponent indexes for complete feeds, feed grains, hay/forages, concentrates, and supplements are published monthly in the [Agricultural Prices](#) release. The Bureau of Labor Statistics Producer Price Indexes (PPI) are used to measure price change for months other than April.

### Completing the Prices Paid for Feed Questionnaire

- Collect the total quantity sold and total sales (\$) or the average retail price for the brand or quality with the largest volume of sales.
- Collect price data for both bulk and bagged feeds, if both are commonly sold by the establishment.
- Exclude state sales tax and delivery charges
- Prices should be reported to the nearest cent (\$0.01). Make sure all decimal places are completed on the questionnaire; enter zeros if necessary.
- Mark the proper unit size unit on the questionnaire, if applicable.
- If the respondent reports a range of prices, probe to determine a single, average price.

### Bagged vs. Bulk Prices

Feed may be sold loose (in bulk), or packaged (bagged). To review the price spread between bulk and bagged feed, convert both to a ton price. For example, if the establishment reports a price for a 100-lb bag of feed, convert by multiplying bagged price x 20 = \_\_\_\_\_ dollars.

The price differential between the bulk ton and bagged ton price generally should not be more than \$50; the bulk should be lower. If both are the same, this should be verified.

## Complete Feeds and Concentrates

Complete feeds do not require additional supplemental feeding to meet a balanced ration. Concentrate feeds have a high protein content and usually supplement the regular diet. Both of these feed types are “commercially” prepared feeds and generally include multiple ingredients. They may include specified trace nutrients or antibiotics as requested by the livestock or poultry producer.

**Poultry Feed:** Price for poultry feeds must be for a complete ration feed which will usually contain some antibiotics. Extremely high prices should be closely reviewed since some of the respondents may report a concentrate instead of the complete feed.

**Beef Cattle Concentrate:** Enter prices for concentrates with the specified percent protein on the questionnaire

**Dairy Feed:** Enter prices only for the percent protein specified on the questionnaire. There may be slight shifts due to demand or popularity of the feed. The source of the protein is a factor. For example, cattle feed where urea is used as a protein source will be cheaper than other sources.

**Hog Feed:** Enter prices only for the percent protein specified on the questionnaire.

## Supplements and Feed Additives

Supplements and feed additives are usually priced per 100 pounds (cwt). For ease of handling, some of these items may be sold in smaller size units.

**Cornmeal:** Exclude prices for distiller's grade cornmeal.

**Molasses:** Exclude dry molasses. Molasses may be reported in gallons or by weight.

**Salt:** Salt may be plain white or iodized. Salt may be reported in blocks or bags. Commonly reported sizes for salt are 50 lbs. per block and 80 lbs. per bag.

**Trace Mineral Blocks:** Trace mineral is sold in blocks of either 40 or 50 pounds. The weight of the block depends on the type and amount of filler, but the mineral content is the same (94.5% – 97.5%) regardless of weight. If trace mineral is sold in bulk by the ton, it is important to indicate on the questionnaire whether the purchase was for 40 or 50 pound blocks.

**Distillers Grain:** Record price data for distillers' grain sold on a wet bulk basis and not dry.

## Pricing Factors

**Livestock feeds** are blended from various raw materials and additives. They are manufactured by feed compounders as meal type, pellets or crumbles and are formulated according to specific requirements of the target animal.

The main ingredients used in commercially prepared feed are feed grains such as corn, soybeans, sorghum, oats, and barley. Other ingredients such as vitamins, minerals, chemical preservatives, antibiotics, and fermentation products may be added.

Feeds can be complete feeds that provide all the daily required nutrients, concentrates that provide a part of the ration (protein, energy) or supplements that only provide additional micro-nutrients such as minerals and vitamins.

Several factors may cause the price farmers pay for feed to differ from a “posted list price”. Discounts for quantity purchases, cash payments and delivery arrangements make data collection and review of feed prices for comparability rather complex. However, as a general rule, bulk prices are generally lower in price than bagged price and feeds higher in protein are generally higher in price than lower protein feeds.

## Terms and Definitions

**Additive, Feed:** Anything added to a diet or ration mixture to increase its efficiency or to give it more desirable characteristics.

**Bagged:** Refers to how feed is packaged, in a bag (paper, burlap, or cloth). Bag sizes are usually 25, 50, 80, and 100 pounds (cwt).

**Balanced Ration:** See “Ration, Balanced.”

**Block Salt:** A cube of about 10 inches of compressed salt used for consumption by livestock.

**Bran:** The outer layers of a grain removed in milling. Bran can be used for livestock feed as well as human consumption.

**Bulk:** Refers to feed sold in a loose form – not divided into packages or containers. Feed is often sold in bulk quantities of a ton.

**Broiler Grower:** A type of poultry feed which is fed to chickens that are being raised for meat.

**Chick Starter:** A balanced feed for the quick growth of baby chicks, consisting of ground grains, leaf meal, soybean meal, dried milk, limestone, iodized salt, vitamins, antibiotics, and other items.

**Concentrate:** A highly digestible feed component that is high in energy or protein and low in fiber content. Concentrate can be fed straight or mixed with grain. This term is often used interchangeably with supplement.

**Complete Feed:** A feed ration which usually contains additives and is nutritionally balanced for a particular type of livestock.

**Cottonseed Cake:** The solid residue left after the extraction of oil from cotton seeds. It should contain more than 36% protein and is sold according to its protein content.

**Cottonseed Meal:** The residue of cottonseed kernels from which oil has been pressed. It is used as livestock feed or fertilizer. Record price data for 41% protein cottonseed meal only.

**Crumbles:** Pelleted feed that has been broken into smaller granular pieces.

**Dry Distillers Grain:** A by-product of processing bio-fuels from grain. It may be sold for a variety of purposes, often as fodder for livestock.

**Feed:** The diet provided to livestock or poultry.

**Feed Additive:** See "Additive, Feed".

**Feed Concentrate:** See "Concentrate".

**Feed Grain:** Any of several grains most commonly used for livestock or poultry feed, such as corn, sorghum, oats, and barley.

**Laying Feed.** A type of poultry feed that is fed to hens or pullets producing eggs.

**Minerals:** See "Trace Mineral".

**Molasses:** Thick syrup obtainable as sugar cane, beet, citrus, or wood molasses. All are low in protein but high in carbohydrates, vitamins, and minerals, such as calcium, magnesium, potassium, and iron. The lowest grade, called blackstrap, is mainly used as a feed supplement.

**Oilseed Meal:** The product obtained by grinding the cakes, chips, or flakes that remain after most of the oil is removed from oilseeds. Oilseed meals are mainly used as a feedstuff for livestock or poultry. They are also used as a raw material in processing edible vegetable-protein products.

**Protein supplement:** A feed or mixture of feeds containing 20% or more protein or protein equivalent (e.g., soybean meal, canola meal).

**Ration:** The amount of feed an animal receives in a 24-hour period.

**Ration, Balanced:** A daily allowance of livestock or poultry feed; mixed to contain suitable proportions of nutrients required to promote normal development.

**Soybean meal:** The material left after the extraction of oil from dried soybeans. After the extraction, the remaining material is "toasted" and ground.



**Supplement:** Feed or feed mixtures used to improve the nutritional value of basal feeds. A supplement is rich in protein, energy, vitamins, minerals and/or antibiotics, and is combined with other feeds to produce a more complete feed.

**Trace Element:** A chemical substance which is essential in very small amounts for both plants and animals.

**Trace minerals:** Dietary supplement provided to livestock which contains nutrients needed in small amounts (such as manganese (Mn), copper (Cu), zinc (Zn), selenium (Se), iron (Fe), cobalt (Co), iodine (I) and fluorine (F)). Trace mineral is sold in blocks of either 40 or 50 pounds. The weight of the block depends on the type and amount of filler, but the mineral content is the same (94.5% – 97.5%).

**Turkey grower:** Specialized type of feed fed to turkeys that are being raised for meat.

**Urea:** A non-protein, organic compound of nitrogen, made synthetically by a combination of ammonia and carbon dioxide, and used in fertilizers and as a livestock feed supplement.

## Chapter 6 - Prices Paid by Farmers for Fuel

### General

Prices Paid for Fuels are collected in March in all states except:

Alaska, Arizona, Delaware, Hawaii, Maryland, Nevada, New Jersey, New Mexico, Rhode Island, Utah, West Virginia, and Wyoming.

The U.S. Production Item Index for Fuels and selected subcomponent indexes for diesel, LP gas, and unleaded gasoline are published monthly in the Agricultural Prices release. In non-surveyed months fuels are estimated using Energy Information Administration (EIA) data.

### Pricing Factors

Retail establishments that sell gasoline, diesel, or L.P. gas may not know specifically if farmers purchase their fuels. If this is the case, note on the questionnaire that it is not known if their customers are farmers and collect the price data.

### Completing the Prices Paid for Fuel Questionnaire

- Record total quantity sold and total sales (\$) or the average retail price for the previous calendar year.
- The 2023 questionnaire asks for data for all of 2022.
- Prices should be recorded to three decimal places.  
For example: \$2.499/gallon = 2.499      \$2.50/gallon = 2.500
- Unleaded gasoline may be priced as either the service station pump price and/or as bulk delivery.
- Diesel fuel and L.P. gas are priced in bulk only.
- Include all federal, state, and local taxes for unleaded gasoline (both bulk delivery and pump price).
- Exclude all taxes for diesel fuel and L.P. gas.
- If the respondent reports a range of prices, probe to determine a single, average price.

#### **Unleaded Gasoline and Ethanol Fuels:**

If the operation sells ethanol blends as well as unleaded gasoline, determine which is most commonly sold. Record the price data for the most commonly sold fuel in the box for unleaded gasoline. If the most commonly sold fuel is ethanol blends, make a note on the questionnaire that the price data is for ethanol.

Collect price data for both "at the pump" and bulk delivery if the establishment offers both types of sales.

## Terms and Definitions

**Ethanol:** The alcohol product of grain fermentation used for industrial purposes, including gasoline. Ethanol is often added to gasoline.

**LP Gas:** Liquefied petroleum gas such as butane, propane, or any mixture of the two, which is kept under pressure in a metal container. Farm use is mainly for pumping engines and farm tractors.

**Unleaded Gasoline:** Unleaded gasoline is usually sold as a blend of gasoline and ethanol, most commonly composed of 90 percent gasoline and 10 percent ethanol by volume.

## Chapter 7 – Prices Paid by Farmers for Fertilizers and Agricultural Chemicals

### General

The Prices Paid by Farmers for Fertilizers and Agricultural Chemicals survey occurs once a year beginning in March. All states are included in the survey except:

Alaska, Delaware, Hawaii, Maryland, Nevada, New Mexico, Utah, West Virginia, Wyoming and the six New England states (Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont).

The U.S. Production Item Indexes for Fertilizer and Chemicals, along with selected subcomponent indexes for mixed fertilizer, nitrogen, potash and phosphate, herbicides, insecticides, and fungicides, are published monthly in the [Agricultural Prices](#) release. The Bureau of Labor Statistics Producer Price Indexes (PPI) are used to measure price change for months other than April.

### Completing the Questionnaire for Fertilizer and Chemicals

- Record total quantity sold and total sales (\$) or the average prices for the item of interest for the previous calendar year. The 2023 questionnaire asks for data for all of 2022.
- Report price data for the product that contains the active ingredients specified on the questionnaire. Trade names are provided as examples to assist with reporting only. Chemicals may be sold under additional names.
- Exclude application costs for nitrogen solutions and anhydrous ammonia. Record prices with two (2) decimal places.
- Exclude sales tax.
- If the respondent reports a range of prices, probe for a single, average price.
- Take good notes. Jot down the trade name of the product reported and the unit of measure the product is sold in on the margins of the questionnaire. This will be useful later when reviewing the questionnaire.
- Verify prices that are unusually high or low and write comments explaining why the price is outside of the normal range.
- Record names of popular products sold in “Other Top Sellers.”

### Variable Unit Pricing for Chemicals

Variable unit pricing will be used for recording chemical price data. The size of the package, the unit of measure that the material is sold in, and the price data for the package will be recorded for the most commonly sold size and brand containing the active ingredient.

Note that a chart will appear on the questionnaire with a list of units of measure for the chemical items. This chart will be used to complete Column 2 (Unit Code) of the questionnaire. The number that corresponds with the correct unit should be entered in Column 2. For example, if the price reported is per dry ounce, a '28' should be recorded in Column 2.

Use these unit codes below

Liquid Measure		Dry Measure	
Code	Unit	Code	Unit
12	Gallon	1	Pound
13	Quart	2	Cwt
14	Pint	3	Ton
15	Liquid Oz	23	Fifty Pound Bag
41	Liter	24	Hundred Pound Bag
42	Drum (30 gal)	28	Dry Oz
		30	Grams

If the respondent answers using only the code number, verify that the code is correct by repeating the answer in words. Jot down the unit on the margin of the questionnaire also, as this may be useful while editing.

Fertilizer price data is only recorded in tons on the questionnaire.

## Pricing Factors

Price variation may partially be explained by the following:

- The differential between bulk and bagged quotations and the proportion of fertilizer or materials sold in bulk.
- Volume discounts.
- Whether quoted price data includes transportation, fees for custom blending or transportation.

## Fertilizers and Mixed Materials

Most fertilizer prices are priced on a per ton basis (2,000 pounds).

Generally, fertilizers with higher concentrations of plant nutrients will be priced higher than those with lower concentrations of nutrients. For example, the average price of 10-10-10 fertilizer in 2010 was \$408, while the price of 19-19-19 fertilizer was \$520. Verify inconsistencies with the respondent.

Fertilizer prices should reflect cost at the farm gate (delivered), but exclude cost of application.

## Agricultural Chemicals

DO NOT include application charges in reported price of agricultural chemicals.

Some chemicals are sold in both liquid and dry formulations. Chemicals may also be sold in different concentrations (different % active ingredient). Collect the price for the product which contains the active ingredient in the concentration and form specified on the questionnaire. Prices reported for concentrations or formulations other than those specified should not be recorded.

Trade names are provided to help in reporting. However, they are only examples of the products that may contain the active ingredient. If the active ingredient is sold under a different trade name than is listed on the questionnaire, collect the price and note the name of the product on the margin of the questionnaire.

Pesticides containing the same active ingredient will generally be close in price. For example, Pounce and Ambush are both broad spectrum insecticides which contain permethrin. Collect the price data for the most commonly sold brand and package size containing the active ingredient. In general, if a chemical does not have lbs./gallon noted, then it is a dry formulation.

## Common Abbreviations

AF	Aqueous flowable	MF	Modified formulation
AG	Agricultural formulation	OL	Oil soluble liquid
AS	Aqueous suspension	P	Pelleted
D	Dust	RTU	Ready to use
DF	Dry flowable	S	Solution
E	Emulsifiable concentrate	SL	Slurry
EC	Emulsifiable concentrate	SP	Soluble Powder
ES	Emulsifiable solution	ULV	Ultra-low volume concentrate
F	Flowable	W	Wettable powder
FL	Flowable	WDG	Water dispersible granule
FC	Fertilizer compatible	WP	Wettable powder
G	Granular	WSB	Water soluble bag
L	Liquid	WSP	Water soluble packet
LO	Low odor		
LV	Low volatility		

## Terms and Definitions

**Active Ingredients:** The ingredients in fertilizer or a pesticide which will chemically react with the soil, plant, animal, or pest to give the desired effect.

**Actual Nutrients:** As related to fertilizer, primary plant nutrients expressed in terms of active ingredients or units of nitrogen, phosphorus, potassium, and sulfur applied. Pounds of actual ingredients are not collected for the Prices Paid Survey.

**Biological Pesticide:** A naturally occurring substance that controls pests. Bifenthrin is an example of a biological pesticide.

**Bulk Fertilizer:** Commercial fertilizer delivered to the purchaser in a non-packaged form to which a label cannot be attached. NASS does not collect price data for bulk fertilizers.

**Concentration:** The amount of active ingredient in a given volume or weight.

**Defoliant:** A chemical agent that causes leaves to drop from a plant. Defoliants are often used with some crops to facilitate harvest.

**Desiccant:** A preparation intended for artificially speeding the drying (loss of moisture) of crop plant parts such as cotton leaves and potato vines.

**Dry Flowable (Dry Concentrate):** A dry, relatively free-flowing powder containing the maximum possible amount of active ingredient. A wetting agent may be included so that the mixture is ready to be dispersed in water for spray application, in which case it is termed a dry wettable. Without a wetting agent, but suitable for further dilution to form a dust, it is called a dust base.

**Emulsifiable Concentrate:** Liquid formulation produced by dissolving the toxicant and an emulsifying agent in an organic solvent. Strength usually stated in pounds of toxicant per gallon of concentrate.

**Fertilizer:** Any material put on or in the soil or on plant leaves to improve the quality or quantity of plant growth. See "Nitrogen," "Phosphate," and "Potash."

**Fertilizer Analysis:** The percentage of nitrogen, phosphate, potash, and sulfur (N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O, S), specified in that order, contained in a blend of fertilizer. Fertilizer may also be blended with various micronutrients or trace elements.

**Fertilization:** As used in this chapter, the practice of adding nutrients to soil or plants for use by plants.

**Flowable:** A liquid formulation of a pesticide consisting of a finely ground active ingredient suspended in a liquid. Mixed with water for application.

**Fumigant:** A substance or mixture of substances which produce gas, vapor, fume, or smoke intended to destroy insects, bacteria, or rodents.

**Fungi:** A form of plant life which may be parasitic on crops and other plants, resulting in reduced production and quality of the crop.

**Fungicide:** A chemical used to kill fungi. The fungi are parasitic to the host plant and cause an economic loss (reduced production and/or lower quality).

**Granular:** A dry formulation of pesticide which is mixed with or coated onto an inert carrier material.

**Herbicide:** Any chemical used to control, suppress, or kill plants, or to severely interrupt their normal growth processes. Some herbicides kill a broad range of plants while other herbicides are selective.

**Herbicide, ALS:** Herbicide that binds to the acetolactate synthase (ALS) enzyme in the plant.

**Herbicide, Selective:** A herbicide which kills only certain groups of plants, e.g., 2,4-D kills broadleaf plants but not grasses.

**Inert Material:** Inactive filler material used in fertilizers and chemicals as a carrier for the desired active materials to facilitate preparation, shipment, storage, or use.

**Insecticide:** A chemical killer of insect pests.

**Insecticide, Systemic:** A substance which, when absorbed by plants, renders them toxic to insects feeding on them.

**Micronutrient:** A mineral required in a relatively small amount for plant growth. Micronutrients required for plant growth are Boron, Chloride, Copper, Iron, Manganese, Molybdenum, and Zinc. NASS does not collect price data for micronutrients.

**N-P-K:** Chemical symbols for nitrogen, phosphorus, and potassium.

**Nematicide:** Any substance used to kill parasitic nematodes.

**Nematode:** Microscopic, worm-shaped parasitic animals. Nematode damage can be severe in some crops.

**Nitrogen (N):** A chemical element essential to life and one of the primary plant nutrients. Animals get nitrogen from protein feeds, plants get it from soil, and some bacteria get it directly from air. Nitrogen is one of the three primary ingredients in complete fertilizers. Nitrogen content is the XX in a fertilizer's analysis of XX-0-0.

**Organic:** A production system that is managed in accordance with regulations governing organics to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity. Note that no genetically modified seed or synthetic pesticides can be used in an organic production system.

**Pesticide:** A substance or mixture of substances to control insects, rodents, fungi, weeds, and other forms of plant or animal life considered to be pests. Pesticides include insecticides, fungicides, herbicides, and nematicides.

**Pesticide Product Formulation:** The concentration of active ingredient(s) and other ingredients that make up the product.

**pH Number:** Number that indicates acidity or alkalinity of a solution. Number 7 indicates a neutral solution; numbers above 7 indicate an alkaline solution; and numbers below 7 indicate an acidic solution.



**Phosphate ( $P_2O_5$ ):** A term indicating a fertilizer which supplies phosphorus, one of the three primary ingredients in a complete fertilizer. The phosphate content in a fertilizer's analysis is indicated as the XX's in 0-XX-0.

**Potash ( $K_2O$ ):** A term used to indicate fertilizers which supply high levels of potassium. The potash content in a fertilizer's analysis is indicated as the XX's in 0-0-XX.

**Potassium (K):** A major element required by plants and animals. Potassium content (XX) in a fertilizer analysis is indicated as 0-0-XX.

**Primary Nutrients:** The three major plant nutrients which are nitrogen (N), phosphorus (P), and potassium (K). Phosphorus may also be referred to as phosphate and potassium may be referred to as potash.

**Restricted Use Chemical:** A pesticide which can cause unreasonable adverse effects on the environment. A restricted use pesticide may be used only by a certified applicator on designated crops and under specified conditions.

**Secondary Nutrients:** Essential plant nutrients needed in less quantity than primary nutrients. These nutrients are Calcium (Ca), Magnesium (Mg), and Sulfur (S).

**Selective Pesticide:** A chemical that is more toxic to certain plants than others (for example, broadleaf plants vs. grasses).

**Soil Fertility:** Conditions in the soil which are favorable for sustaining plant growth.

**Soluble Powder:** A finely ground dry powder formulation which will dissolve in water or other liquid.

**Surfactant:** A chemical added to a pesticide which improves the emulsifying, dispersing, spreading, and/or wetting properties of the pesticide.

**Trace Element:** A chemical substance which is essential in very small amounts by both plants and animals.

**Urea:** A non-protein, organic compound of nitrogen made synthetically by a combination of ammonia and carbon dioxide and used in fertilizers and as a livestock feed supplement.

**Vapor Drift:** The movement of vapors created when applying pesticides from the area of application to adjacent areas.

**Weed:** Any plant growing where it is not wanted.

**Wettable Powder (WP):** A powder which mixes with water to form a suspension but does not dissolve; continuous agitation is required to maintain suspension.

## Description of Chemicals Listed on the Prices Paid Questionnaire

### Fertilizer and Fertilizer Mixes

**Ammonium Nitrate:** Common chemical fertilizer having the analysis of 34-0-0.

**Ammonium Polyphosphate:** Common chemical fertilizer having the analysis of 11-37-0.

**Anhydrous Ammonia:** Common chemical fertilizer having the analysis of 82-0-0. It occurs in the form of a compressed gas. Special storage, handling, and application equipment is required.

**Diammonium Phosphate:** Common chemical fertilizer having the analysis of 18-46-0.

**Monoammonium Phosphate:** Phosphate fertilizer having the analysis of 11-52-0. Used for high-alkaline soils.

**Muriate of Potash: 60-62% K<sub>2</sub>O:** See Potassium Chloride.

**Nitrogen Solution, 32%:** Common nitrogen fertilizer having the analysis of 32-0-0. Can be used for side dressing cotton, corn, cereal grains, potatoes, and other crops.

**Potassium Chloride:** Common chemical fertilizer having the analysis of 0-0-60.

**Potassium Nitrate:** Common chemical fertilizer having the analysis of 13-0-44.

**SoilStart:** All natural commercial fertilizer having the analysis of 7-1-1. Soil nutrients are derived from fermented grain.

**Triple Super Phosphate:** A phosphate fertilizer have the analysis of 0-45-0 or 0-46-0.

**7-1-1:** See SoilStart.

**10-34-0:** See Ammonium Polyphosphate.

**15-60-0:** See Ammonium Polyphosphate.

### Fungicides

**Bravo:** See Chlorothalonil.

**Captan: 50% WP:** For control of scab, black rot, botrytis, sooty blotch, fly speck and summer rots on apples; brown rot and leaf spots on store fruits and almonds; dead arm, down mildew and black rot on grapes. Also, for control of a wide

variety of fungal diseases on small fruits, berries, vegetable, and ornamental crops. It is also used as a seed treatment.

**Chlorothalonil: 6 pounds/gallon:** A broad spectrum fungicide. Registered for use on stone fruits, soybeans, dry edible beans, snap beans, cole crops, carrot, celery, sweet corn, cucumber, onion, cantaloupe, muskmelon, honeydew, watermelon, squash, pumpkin, peanut, potato, tomato, passion fruit, papaya, conifers, and ornamentals; grass grown for seed; also used in paints and as a wood preservative.

**Copper Hydroxide: 77%:** A fungicide for alfalfa, almonds, apricots, avocados, bananas, beans, blackberries, broccoli, Brussels sprouts, cabbage and cauliflower, cacao, cantaloupes, honeydews, muskmelons, carrots, celery, cherry, citrus, coffee, cranberry, cucumbers, currants, gooseberry, grapes, filberts, peaches, nectarines, peanuts, pears, peas, peppers, philodendron, potatoes, pumpkin, squash, strawberries, apples, eggplant, hops, lettuce, onion, sugar beets, sycamore, tomatoes, walnut, watermelon, wheat, and barley.

**Fosetyl-AL: 80%:** A systemic fungicide used to prevent and cure activity against many Oomycetes on avocado, cacao, citrus, hops, ornamentals, pineapple, rubber, strawberries, fruit crops, tobacco, vegetable crops, and vines.

**Kocide 101:** See Copper Hydroxide.

**Propiconazole (Tilt): 3.6 pounds/gallon:** Fungicide used to control disease on crops.

**Pyraclostrobin (Headline): 2.0 pounds/gallon:** Fungicide that helps growers control diseases and improve overall plant health.

## Herbicides

**2, 4-D: 3.8 pounds/gallon:** For post-emergence use on grasses, wheat, barley, oats, sorghum, corn, sugarcane and non-crop areas for control of weeds such as Canada thistle, dandelion, annual mustards, ragweed and lambsquarters. Many broadleaf crops are extremely sensitive, such as cotton and grape vines. Leaves no residue carryover to the next year. Absorbed through leaves.

**AAtrex:** See Atrazine

**Atrazine: 4 pounds/gallon (Liquid):** Used for season-long post-emergent weed control in corn, sorghum, and pasture. At highest rates it is used for non-selective weed control in non-cropped areas. Residual weed control; absorbed through leaves and roots; tank mixes with grass herbicides; no residue carryover to the next year.

**Banvel:** See Dicamba.

**Butylate (Sutan): 6.7 pounds/gallon:** Incorporated as pre-plant to control most grassy weeds, including nutgrass, in corn; breaks down in soil relatively soon to be harmless to crops following corn. Should not be applied on milo or sorghum.

**Callisto:** See Mesotrione.

**Dual Magnum:** See S-metolachlor.

**Dicamba (Banvel): 4 pounds/gallon:** A selective herbicide derived in several salt formulations and an acid formulation. These forms of dicamba have different properties in the environment. Products with dicamba often contain other herbicides as well. Dicamba products may come in the form of liquids, dusts or granules and can be ready-for-use or concentrated.

**Glufosinate-ammonium: 2.34 pounds/gallon:** Glufosinate-ammonium is a non-selective herbicide which is a synthetically produced compound from the chemical phosphinic acid. Glufosinate-ammonium acts on contact, with very minimal systemic effect. It can be applied as a foliar spray and a soil treatment, to both pre-emergent and post-emergent weeds.

**Glyphosate: 4.0 pounds/gallon:** Controls many annual and perennial grasses and broadleaf weeds plus many tree and woody brush species in cropland and non-crop sites. A foliar-applied, trans-located herbicide, it may be applied in spring, summer, or fall to undesirable vegetation by boom equipment, hand-held and high-volume equipment, and selective equipment throughout the U.S. and, in some states, by aerial application equipment. May be tank mixed with Lasso, Atrazine, and Princep for use in minimum tillage systems for corn. In combination with Lasso, Lorox, Lezone, and Sencor for use in minimum tillage systems for soybeans.

**Karate:** See Lambda-cyhalothrin.

**Karmex:** See Diuron.

**Lasso:** See Alachlor.

**Lexone:** See Metribuzin.

**Mesotrione (Callisto): 4 pounds/gallon:** Inhibitor of the enzyme p-hydroxyphenylpyruvate dioxygenase (HPPD) that is involved in pigment synthesis that protects chlorophyll from decomposition by sunlight sold under the brand names Callisto and Tenacity. Applied pre- and post-emergence through ground or aerial application equipment.

**Pendimethalin (Prowl): 3.3 pounds/gallon:** For pre-emergence or post-emergence use in field corn; pre-emergence or pre-emergence incorporated use in potatoes; early post-emergence use in rice; post-emergence incorporated use in sorghum; and pre-plant incorporated use in cotton, soybeans, tobacco, peanuts, and sunflowers. Controls most annual grasses and certain broadleaf weeds.

**Prowl:** See Pendimethalin

**Roundup:** See Glyphosate.

**S-metolachlor (Dual Magnum): 83%:** Widely used herbicide used to control most annual grasses and small-seeded broadleaf weeds.

**Treflan:** See Trifluralin.

**Trifluralin (Treflan): 4 pounds/gallon:** Pre-emergent herbicide that is incorporated into the soil to provide control of annual grasses and broadleaf weeds. This herbicide controls susceptible weeds by killing seedlings as they germinate; however, it does not control established weeds. For use in many crops including cotton, peanuts, sugar beets, grain crops, forage (alfalfa, kale, and rape), most vegetables, horticultural crops (woody nursery stock and many perennials), vineyards, fruit and nut trees, and cottonwood trees grown for pulp.

## Insecticides

**Bidrin:** See Dicrotophos.

**Bifenthrin: (Brigade 2 EC), (Tundra EC):** A manmade insecticide in the pyrethroid family. Pyrethroids are manmade versions of pyrethrins that are derived from chrysanthemum flowers. Bifenthrin is used on various agricultural crops and in homes. Bifenthrin is soil soluble and insoluble in water. Also has the longest residual time span in soil than any other insecticide.

**Brigade 2 EC:** See Bifenthrin.

**Carbaryl (Sevin): 80%:** For the control of insect pests on more than 100 different crops including citrus, fruit, forage crops, forests, corn, soybeans, peanuts, tobacco, cotton, rice, peanuts, sorghum, other small grains, lawns, nuts, ornamentals, rangeland, shade trees, poultry, and pets.

**Dicofol: 4 pounds/gallon:** An acaricide for use on many fruit, vegetable, ornamental, and field crops to control various mite species.

**Dicrotophos (Bidrin): 8 pounds/gallon:** Used to control certain pests of cotton. Also, for coffee borer control. Available for control of elm bark beetles (tree injection system). Enters plant tissue rapidly, thus enabling many beneficial insects to survive.

**Karate:** See Lambda-cyhalothrin.

**Lambda-cyhalothrin (Warrior/Karate):** Organic compound used as a pesticide and is often used as an active ingredient in insecticides because they remain effective for longer periods of time. It is a colorless solid while samples can appear beige, with a mild odor.

**Methyl Parathion: 2 pounds/gallon:** Used for control of boll weevil in cotton; sorghum; corn; soybeans; rice; wheat and other small grains.

**Permethrin (Synthetic Pyrethroids): 2-3.2 pounds/gallon:** For use on cotton, soybeans, vegetables and fruit. Used to control beet army worm, bollworm,

cabbage looper, cotton fleahopper, cotton leafperforator, lygus bugs, pink bollworm, tarnished plant bug, and tobacco budworm. Effective broad spectrum insecticide.

**Phorate (Thimet): 20%:** A soil and systemic insecticide used to control a wide range of insects on a variety of crops: alfalfa, barley, beans, corn, cotton, peanuts, potatoes, sorghum, sugar beets, soybeans, sugarcane, and wheat.

**Sevin:** See Carbaryl.

**Terbufos (Counter): 15%:** Control of corn rootworm and other soil insects infesting field corn. Control of sugar beet maggots on sugar beets; greenbug on grain sorghum.

**Thimet:** See Phorate.

**Tundra EC:** See Bifenthrin.

**Warrior:** See Lambda-cyhalothrin.

## Other Agricultural Chemicals

**Gibberellic Acid (Pro-Gibb): 1.8-2.0%:** A hormone found in plants which is available commercially to apply to crops to act as a plant growth regulator. For example, gibberellic acid may be applied to grapes to elongate cluster, increase berry size, and reduce bunch rot. It may be applied to lemons to maintain green color, delay yellowing, and reduce the percentage of small tree-ripe fruit. It reduces rind staining, water spot and tacky rind in Navel oranges. This chemical can help produce taller, thicker stalks of celery harvested in cool seasons; prevent head formation, induce production of seed stalk in lettuce; increase fruit set; accelerate maturity of artichokes to shift harvest to an earlier date; stimulate uniform sprouting of seed potatoes that do not have a full rest period; delay harvesting, produce a brighter colored, firmer fruit, and to increase size of sweet cherries; reduce internal browning and watery pits of the Italian prune and increase yields; increase yield of marketable forced rhubarb; and to break dormancy on plants receiving insufficient chilling.

**Ethephon: 6 pounds/gallon:** Plant growth regulator.

**NAD (Naphthaleneacetamide) (Amid-Thin W): 8.4% WP (wetable powder):** A plant growth regulator used to thin apple and pear blossoms. It is used to prevent premature fruit fall in apples and cherries. This product stimulates root formation in cuttings and transplants.

## Chapter 8 – Prices Paid by Farmers for Retail Seed

### General

Total quantity sold and total sales or the average prices for the seed of selected crops are collected from retail seed outlets by all states except Alaska and Hawaii each year beginning in March. Seed prices are obtained for the following items:

<u>Row Crops</u>	<u>Small Grains</u>	<u>Legumes</u>	<u>Grasses</u>
Corn	Wheat	Alfalfa	Kentucky Bluegrass
Soybeans			Tall Fescue
			Ryegrass (annual)

Select states also collect total quantity sold and total sales (\$) or the average prices for the seed of potatoes, cottonseed, rice seed, peanut seed, and sunflower seed. These crops are not included on the Retail Seed questionnaire because these crops are grown only in limited areas of the U.S. These price data are collected using separate questionnaires.

The U.S. Production Item Indexes for Seeds and selected subcomponent indexes for field crops and grasses & legumes are published monthly in the Agricultural Prices release. The Bureau of Labor Statistics Producer Price Indexes (PPI) are used to measure price change for months other than April.

### Completing the Prices Paid by Farmers for Retail Seed Questionnaire

- Record the total quantity sold and total sales (\$) or the average prices for the previous calendar year. The 2023 questionnaires ask for data for all of 2022.
- Record price data for the grade and quality most commonly sold.
- Include technology fees.
- Include seed treatment.
- Exclude sales tax.
- Record the price to two (2) decimal places.
- If the respondent reports a range of prices, probe for a single, average price.

### Pricing Factors

Price variation may partially be explained by:

- Volume discounts.
- Specialized seed is available for some agricultural crops, including biotech varieties and proprietary (patented) varieties. Prices for biotech and proprietary varieties are generally higher.

## Terms and Definitions

**Biotechnology:** Development of products by a biological process involving the transfer of genes which produce desirable traits. Biotechnology may use microorganisms such as yeasts or bacteria or natural substances such as enzymes to complete the gene transfer process.

**Certified Seed:** Seed that meets rigid standards of purity and germination, which is designated by an authorized agency (for example, State Department of Agriculture).

**Enhanced Seed:** Term for seed products that have been improved by traditional breeding or genetic engineering to improve yields, resist pests and diseases, or tolerate herbicides.

**Gene stacking:** Combining multiple desirable traits such as resistance to herbicides, diseases, insects, etc. into a single hybrid variety.

**Genetic Engineering:** A biotechnology method which uses enzymes to move DNA from one organism to another, bypassing the sexual reproduction process. The organisms may or may not be related to each other.

**GMO:** Genetically Modified Organism. A variety developed by genetic manipulation (as opposed to traditional breeding methods).

**Hybrid:** A plant resulting from a cross between parent plants that are not genetically identical.

**Seed, Biotechnology (Biotech) Varieties:** The term biotechnology refers to genetically modified seed varieties that have been developed to possess particular traits. Examples include Round-Up Ready soybeans, which provide the soybean plant resistance to the effects of Round-Up (which would otherwise kill it), and YieldGard corn, which contains an insecticidal protein which kills caterpillar larvae, including the corn borer.

**Seed, Proprietary Varieties:** Seeds developed by commercial plant breeders which are protected by patent. By law, proprietary seed must be purchased from seed vendors each year – that is, seed cannot be collected from the current year's harvest and planted for the next crop season. Proprietary varieties include all biotech varieties and some non-biotech varieties.

**Seed, Public or Common Varieties:** Seed which is not protected by patent and which may be collected and saved from one year's harvest and used to produce a crop the next year. Common varieties may be used repeatedly by a single individual and may also be shared between growers. Public varieties are most often developed by universities, public research labs, or non-profits.

**Stacked Gene Variety:** Genetically modified seed variety that includes both insect resistance and herbicide resistance.

**STS Soybeans:** Soybeans that are resistant to Synchrony STS herbicide.