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(OECD)**

Session III : Agricultural Price Statistics

DIFFERENT APPROACHES TO PRICE COLLECTION

Paper submitted by Azerbaijan, Canada, Denmark, Finland, Norway, Poland, Sweden
and United States of America*

Introduction

1. This paper is a summary of information on the various approaches to price collection. The intent was to provide descriptions of the various methods and procedures that are successfully being employed to compile agricultural price statistics. The examples are not exhaustive, but they do provide an insight into the range of methods from a selection of

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countries, that are different from each other in many respects. The examples are from North America (Canada and the United States), the European Union (Sweden, Denmark, Norway and Finland), European countries in transition (Poland) and transition countries of the former Soviet Union (Azerbaijan).

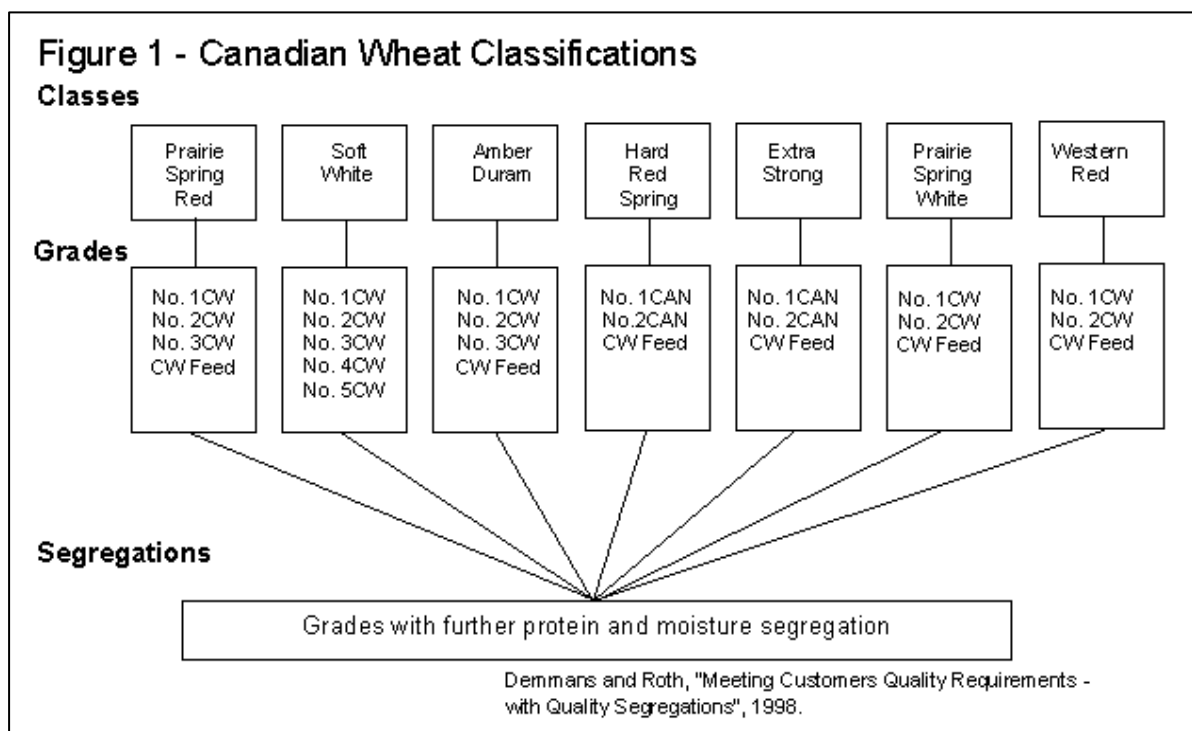
2. Reliable price statistics are a critical element of all agriculture statistics programs because of their importance in measuring returns to farmers in terms of farm cash receipts and farm income the agriculture sector's contribution to gross domestic product.

3. Conceptually, the price received by farmers is the price, which, if multiplied by the total quantity of the commodity sold, would give the total amount received by all farmers for that commodity. The estimated price reflects prices received by farmers for all classes and grades of the commodity being sold, including quality premiums or discounts. Estimates generally relate to prices farmers receive for their products at the point of first sale. This is usually a local market or delivery point such as a grain elevator, processing plant or slaughterhouse. Farm price estimates normally exclude farm-to-farm sales and sales for seed and pure-bred animals due to the difficulty of collecting these data and the relatively small percent of total production accounted for by these sales.

4. Prices are estimated at the point where ownership first changes hands. There is no one single method for compiling commodity prices, the procedures differ by commodity depending on the data that are available. Administrative data from marketing co-operatives or food processors are often used when they are available providing the value and number of animals sold which is used to calculate an average price. The guiding principle is to establish as much price detail as necessary to provide an accurate reflection of the numerous prices offered to farmers as a consequence of differences in grade, quality and marketing channel.

5. Calculating an agricultural commodity price is often more involved than it first appears. Take the estimation of the price of Canadian wheat as an example. There is no single price for wheat. Prices depend on the type of wheat variety sold and its quality or grade. Wheat has many prices. At a minimum one needs to know the amount sold by variety and grade. The amount of necessary information can be significant. Figure 1 provides some idea of the number of wheat varieties and grades for which one needs data in order to calculate an average Canadian wheat price.

6. Statistical systems are complex, usually constructed as a consequence of a long evolutionary process and often as part of an international co-operative effort. The similarities in requirements, and the desire for comparable statistics among nations have meant that countries have traditionally co-operated in the development of standard conventions for measuring agricultural prices. Such efforts have been facilitated by organisations such as the International Statistics Institute (ISI), the Food and Agriculture Organisation of the United Nations, the United Nations Economic Commission for Europe and the Organisation for Economic Co-operation and Development.



7. The actual process and the statistical methods that are adopted are highly dependent on the amount of resources available for the program, the availability of experienced professionals to develop and maintain it and the nature of the agricultural commodity price data that is available. Measurement methods are not static. They are reshaped over time to reflect the changing social and economic fabric of nations. As a result, there is a continuous process to adjust and modify the statistical system in an effort to address emerging needs and priorities.

8. There are now many well-established concepts, conventions and statistical models that countries can refer to when developing their statistical systems. Countries that have established statistical systems have a vested interest in the current concepts, methods and conventions. This means that change is slow and considered, but not because they are unwilling to change. Countries with established systems have data users that want conceptual and measurement changes to have a minimal impact on the story told by the current and historical data and the international comparisons. Furthermore, the development and testing of new methods takes time.

9. This paper focuses on agricultural price statistics in relation to how they are compiled and collected. What follows is a brief summary of the documentation provided by the contributing authors, all staff experts on agriculture price statistics in their respective countries. Further information can be found in the individual country reports written by the contributing authors which are available as an Annex to this paper.

Canada

10. Most Canadian price data are available monthly, by Province, based on either administrative sources or a survey of farmers. Survey data are only collected in instances when administrative data are not available.
11. Prices of wheat and barley marketed by the Canadian Wheat Board (CWB) are the monthly prices as recorded by the Board. The Board provides quantity and price data by grade based on actual sales. Prices for cereals and oilseeds not sold by the CWB are based upon a monthly survey of the major grain elevator companies.
12. Prices for fruits and vegetables, excluding potatoes, are obtained from the annual Fall Fruit and Vegetable Survey. Potato prices are based on a separate potato survey.
13. Milk prices are available from the national supply management program for milk. Each province provides detailed monthly product price information from administrative records. Cattle and calf prices are based on monthly administrative data for feeder and slaughter animals. Deductions for commissions, transportation, insurance and any other associated marketing costs or levies are subtracted to reflect the actual price received by farmers. Hog prices are based on monthly administrative information from pork marketing boards.
14. Poultry prices are based on information compiled from meat inspection information. Egg prices are obtained from the Canadian Egg Marketing Agency with administrative responsibility for the national supply management system for eggs. The egg prices for small flocks, exempt from the national supply management program, are obtained from a semi-annual survey of farmers with small flocks of laying hens.

United States

15. Prices are published monthly in Agricultural Prices for some 65 farm commodities and annually for another 65 farm commodities. In addition to the U.S. prices, State level prices are generally provided for the States that, in the aggregate, account for 80 percent of the total U.S. marketings of that commodity. State prices are weighted to the U.S. price based upon each State's volume of marketings.
16. The price received by farmers is the price, which, if multiplied by the total quantity of the commodity sold, would give the total amount received by all farmers for that commodity. The estimated price reflects prices received by farmers for all classes and grades of the commodity being sold, including quality premiums or discounts. Estimates generally relate to prices farmers receive for their products at the point of first sale, usually a local market or the point to which farmers deliver their products. Estimated farm prices generally omit farm-to-farm sales and sales for seed and purebred animals due to the difficulty of collecting these data and the relatively small percent of total production accounted for by these sales.
17. The sampling frames for the farm commodities in the price program are divided into several commodity areas. Grain price information is obtained from grain elevators and buyers. Respondents report total quantity purchased and total dollars paid to farmers.

18. Livestock prices are collected from livestock buyers, auctions, stockyards, and packing plants that buy directly from producers. States collect data on the number of head sold, total liveweight, and dollars paid to producers. Agricultural Marketing Service price data are used in some states to supplement, even substitute for, the National Agriculture Statistical System (NASS) survey data. State prices are weighted to the U.S. level, using State volume of slaughter data.

19. Fruit and vegetable price information is collected from State boards, marketing co-operatives, grower associations, processors, canneries, and producers. Prices are collected by major use, fresh market or processing, and reflect bulk commodities delivered to the plant door. State prices are weighted to U.S. prices using State shipment data.

20. Cotton prices are collected using a probability survey. Rice prices are collected from all known rice buyers. Both cotton and rice prices are weighted to the U.S. level using the volume of State marketings.

21. Prices received by farmers were originally used primarily to measure returns to farmers and to derive farm income. The use of the farm price series has broadened in recent times. Farm prices are now used to determine disaster and crop insurance payments, determine parity prices; promulgate marketing orders; and assist in government purchase program decisions. In addition, there are many private uses such as the determination of land rental contracts, grazing fees, loan decisions, insurance payments, production decisions, and tax assessments.

Denmark

22. Danish agriculture has a long tradition of farmer-owned co-operative societies. Denmark is characterised by a few large co-operative societies buying the majority of Danish agricultural production and supplying a large part of the means of production to farmers. This means, that in most cases it is sufficient to collect prices from a small number of co-operative societies in order to get relevant information about price levels and price trends.

23. Sample surveys are not used in Denmark when deciding which co-operative societies should be included in the collection of producer prices. Instead, the co-operatives are selected according to their size and regional importance.

24. Cereal prices are collected monthly from two co-operative societies covering around 60 percent of the cereals bought from farmers. All sugar beets produced in Denmark are bought by one enterprise, from which prices are collected annually. Prices are recorded for sugar beets with actual sugar content, as well as for sugar beets with a standard sugar content of 16 percent.

25. Prices for rape are collected monthly from one co-operative society. Prices for other oilseeds are collected annually from the Danish Seed Trade Association; however, these products are of minor importance in Denmark. Prices for crops grown for seed are collected annually from the Danish Seed Trade Association. Prices for potatoes for human consumption are collected on a monthly basis from two sources covering two different parts of the country. Prices for seed potatoes are collected annually.

26. The Danish Dairy Board collects data on the price of milk (4.2 percent fat and 3.4 percent protein). The price is a weighted average for 30 dairies collecting milk from farmers and of which half

are co-operatives. They cover 98 percent of all milk produced and include the largest dairy in Denmark, which alone represents around 92 percent of all milk produced. Almost all milk from the farmers goes to farmer-owned enterprises. Additional payments for the milk are paid from the dairies to the farmers at the end of the year. This payment is estimated in advance and included in the milk prices recorded in the statistics.

27. Cattle prices according to the EUROP classification are collected weekly from the Danish Livestock and Meat Board, covering 98 percent of all slaughter, most of which takes place in farmer-owned slaughterhouses. The prices are recorded for different qualities and used for the calculation of price indices. Value of production, information on the actual payments to producers is collected from The Danish Livestock and Meat Board, from which average prices can be calculated. Prices on live animals are collected on a weekly basis for a large number of categories and qualities in order to be able to calculate the value of stocks.

28. The Federation of Danish Pig Producers and Slaughterhouses collects pig prices, which provides Statistics Denmark with a number of quality dependent prices for different categories of animals. As in the case of cattle, most of the pigs are slaughtered in farmer-owned slaughterhouses (95 percent). Information on the actual payments to producers is also collected. The value of production includes subsidies while taxes are excluded.

29. Sheep and lambs are of minor importance in Denmark. Prices are collected on a weekly basis and cover about half of the slaughter. Poultry prices are collected on a weekly basis. For the calculation of value of production, prices paid to the producers by farmer-owned slaughterhouses are used. Average egg prices are collected on a quarterly basis from the Danish Poultry Council. The prices for fur animals are based on prices from the fur auctions where all furs are sold. The prices are specified by type of animal, sex, colour, size, etc. Weighted average prices are used in the calculation of value of production.

Finland

30. In Finland the Information Center of the Ministry of Agriculture and Forestry (ICMAF) compiles statistics on agricultural product prices. Statistics Finland is responsible for producing agricultural price indices. Price indices are based on product prices collected mainly by ICMAF and prices of the means of production collected by Statistics Finland.

31. There are two main methods used in the collection of agricultural product prices in Finland. Prices of milk and meat, which are the most important agricultural products in economic terms, are collected monthly from all enterprises buying those products from farms. Thus almost all the domestic production is covered. In addition, some key product prices are collected weekly from the biggest enterprises in order to monitor rapid changes in agricultural markets.

32. Producer prices of milk are collected monthly, by fax or mail, from the 45 dairies that receive milk. The dairies report the producer price of milk in class 1 (average content 4.3 percent fat and 3.3 percent protein), the production subsidies paid, quality deductions and quality additions. Once a year co-operative dairies also report the possible extra payments paid per liter to member-producers.

33. There are approximately 30 abattoirs in Finland. Producer prices of meat from bulls, cows, heifers, calves, sows, boars, fattening pigs, lambs, sheep, poultry, horses, reindeer and deer are collected monthly from all the abattoirs by fax or mail. In addition information is collected from agents buying meat from farms. Once a year the abattoirs also report any extra payments to member-producers. Since Finland's accession to the EU market prices of beef, lamb and pig meat are also produced on a weekly basis. The price reported is a carcass weight price. The data are collected by fax from 8 abattoirs once a week. These enterprises cover the slaughter of approximately 70 percent of all cattle, 66 percent of pigs and 63 percent of lambs.

34. Market prices of broilers are compiled weekly, on a carcass weight basis. The information is collected from 3 enterprises, which slaughter approximately 97 percent of the broilers. Egg prices are collected by fax both weekly and monthly. Information about producer prices is produced monthly. The data is collected from 12 packing stations, which receive approximately 82 percent of the domestic production. Weekly egg prices are collected from 6 packing stations receiving approximately 72 percent of domestic production. The prices are expressed in different classes according to the size of eggs.

35. Cereal prices are collected on a weekly basis. The price is reported for cereals of intervention quality delivered to buyer. The data is collected by fax from 30 enterprises and because of transportation and handling costs the producer price is smaller than the quoted market price. The statistics cover 60 to 90 percent of the cereal purchases. Finland also compiles daily export prices of cereals delivered to port or to a processor, free in carrier.

36. Producer prices of peas and oilseeds are collected monthly from enterprises buying direct from farmers. Information about producer prices of sugar beets is obtained from a research center that is specialized in the sugar beet sector. Producer prices of potatoes for human consumption (class 1 product quality) are compiled by different package sizes monthly.

37. An organization owned by farmers is responsible for producing information about producer prices of vegetables. The data is collected daily from producers and their marketing organizations using a computer-based system. Prices are reported for class 1 products. The price reporting system covers 10 to 40 percent of domestic production.

Norway

38. The situation in Norway is very similar to Sweden, since most Norwegian farmers are members of co-operative enterprises, and most of the enterprises have from 70 to nearly 100 percent of the market. To a large extent the co-operatives determine the prices for the whole Norwegian market.

39. Cereal and oilseed prices are fixed every year by negotiations between the government and the farmers' organisations in connection with the Agricultural Agreement. The prices are fixed for 12 months, usually from July one year to June the next. Prices are paid by the Norwegian National Grain Administration, which buys nearly 100 percent of the Norwegian production except what is produced and fed on farms. The prices refer to grain with 15 percent water content, and the producers are given a premium to store grain from October until the new season begins.

40. The market for potatoes for human consumption, vegetables, fruits and berries is quite different from that of other products. The farmers' co-operatives have a rather small share of the market, so there are many selling channels. The prices are therefore mainly determined by the demand. The prices are collected once a week by visiting the wholesale market in Oslo and a few other selected cities.

41. Milk prices are compiled from the information from farmer co-operatives, which have nearly 100 percent of the market. Meat prices for cattle, pigs and sheep are supplied by farmer co-operatives, which have between 70 and 80 percent of the market. The prices of the co-operatives largely determine prices for the rest of the market. Egg prices are collected from farmer co-operatives using price-lists. Similar to meat, farmer co-operatives have a considerable share of the market, approximately 70 to 75 percent for eggs and poultry.

Sweden

42. In Sweden most farmers are members of co-operative enterprises, which buy agricultural products from the farmers and sell means of production to the farmers. These farmer-owned enterprises are few in number but large in size. There are also a few large private enterprises, which buy from and sell to the agricultural sector.

43. In Sweden sample surveys are not used when deciding which enterprises should be included when collecting producer prices. Instead enterprises are chosen according to their size and regional importance.

44. Cereal prices are collected each month, by mail, for cereals of intervention quality and 14percent water. The information is provided by six enterprises, four co-operative and two private enterprises, covering about 80 to 90 percent of the total cereals sold. Prices for sugar beets are supplied by the sole enterprise buying sugar beets from farmers. For A and B quotas, farmers are paid according to the EU minimum price for actual sugar content. This price is expressed in Euros, and then converted to SEK. Prices for sugar beets in C quota and pulps are collected annually.

45. Prices of oilseeds standardised to a water content of 9 percent are collected through the Internet from two co-operative enterprises which buy more than 90 percent of the harvest.

46. Fruit and vegetable product prices, including potatoes, are quite different from those of most other products as there are many different selling channels and many small enterprises are buying from the farmers. Weekly prices for the most common varieties are collected from at least three of the larger enterprises or one of the buyer organisations. There is one private starch processor buying potatoes.

47. Milk prices are obtained from the approximately 15 dairies buying milk from farmers. Most are co-operative enterprises and members of a central service organisation. This organisation is collecting farmer prices from the dairies and is then calculating average monthly prices for milk with fat content 4.2percent and protein content 3.4percent. The dairies account for more than 99 percent of the total amount of milk purchased from farmers. Supplementary payments to milk producers, which are decided at the end of each year, are estimated in advance and added to the prices. At the end of the year the actual payments are calculated and the average prices are revised.

48. Cattle, pig and sheep meat prices, by weight and quality, are compiled from weekly data published by the farmer-owned co-operative slaughterhouses. The slaughterhouses have a common service division, which calculates actual monthly average prices received by farmers for all animals slaughtered. The slaughterhouses have a total market share of about 70 to 80 percent of total slaughter. The prices are used in the EAA when calculating production values. Any additional payments on meat are handled in the same way as for milk. Poultry prices are obtained from four slaughterhouses. These slaughterhouses serve more than 80 percent of the market. Egg prices are compiled from information from six enterprises, which represent more than 80 percent of the market.

Azerbaijan

49. Until 1993 agricultural products and raw materials were purchased in Azerbaijan from the collective (State) as well as private farms, by procurement organisations and industrial processing enterprises that applied standard procurement prices to the produce according to its quality. The purchasing was done under State plans and later in accordance with State orders approved at Government level. At the same time private farms sold their surplus produce in town markets at agreed prices.

50. In 1993, with the implementation of economic reforms countrywide, the State procurement organisations were eliminated and the standard procurement prices were abolished. Prices for agricultural products were then established between producers and buyers on the basis of agreements that were later reflected in contractual arrangements. The same procedure exists to this day. At the beginning of each financial year, the buyers of agricultural products conclude contracts with the producers and provide them with material and financial assistance for growing the requisite crops.

51. Statistical study of the average prices offered by procurement organisations and processing enterprises used to be based on State statistical records of purchases and on the annual bookkeeping records of those organisations. However, after the abolition of State orders for the procurement of agricultural products and raw materials, the related State statistical accounting was also terminated. Ad hoc State statistical reporting for agricultural enterprises was therefore introduced as of 1991 to study producer prices. This reporting has yielded data in physical and value terms for 57 types of crops and 25 types of livestock products by sales outlet. Marketing of products includes information for:

- total sales for all outlets;
- sales to purchasing organisations and processing enterprises;
- sales to consumer co-operative organisations;
- sales on markets, in private shops, at fairs and on commodity exchanges;
- sales and in-kind payment of labour by the producers themselves;
- barter transactions;
- other outlets.

52. Agricultural prices are reported as of 1 January each year according to the above programme. Monthly price data are available from a programme that compiles information on the quantities and value of 11 crops and 5 livestock products. These are available as, "total sales by two distribution

53. The average prices, for particular products and sales outlets country-wide and for individual regions, are estimated by dividing the value of the products by their quantity. The results are used to calculate macroeconomic indicators and changes in the index of prices for agricultural products and raw materials.

54. The market for agricultural produce has not taken shape in Azerbaijan as was expected. Processing enterprises have not been working at full capacity. As a result, the privatisation of the enterprises in some processing sectors has led to a monopoly situation. This was the case with respect to cotton-processing enterprises, which then dictated prices for the raw material. That brought about a sharp decline in agricultural output as the entire crop is produced for the cotton processors.

55. Notwithstanding these difficulties, however, Azerbaijan is gradually proceeding with economic reforms that will help to normalise the functioning of industrial enterprises engaged in wholesaling and processing agricultural products. For the second year in a row Azerbaijan has been preparing information concerning the purchase prices of agricultural products on the basis of the information from the buyers. For the time being we are experiencing some difficulties in the collection of primary statistical data.

56. In the past few years, economic reform, the dismantling of collective and State farms and the sale of land, livestock and farm equipment to private owners have profoundly changed the social and economic structure of agricultural production. In the 1980s almost two thirds of gross agricultural output was attributable to agricultural enterprises such as agricultural co-operatives and collective and State farms. This figure is now about 5 per cent.

57. The main agricultural producers today are small-scale peasant or private farms and individual holdings. By 1 February 2000, a total of 788,000 families had received land in private ownership under the Land Reform Act representing almost 95 per cent of the total gross agricultural output.

58. A sample survey was conducted in February-March 2000 on peasant or private farms and on individual holdings to ensure the representativeness of data concerning basic agricultural prices. The data relating to these categories of farms will be used in the calculation of macroeconomic indicators on agriculture. Sample surveys are also being conducted and analysed with other sources of information to study the relationship between the prices of agricultural products sold and of industrial goods and services acquired.

Summary and conclusion

[To be completed]

Issues for discussion

[To be completed]