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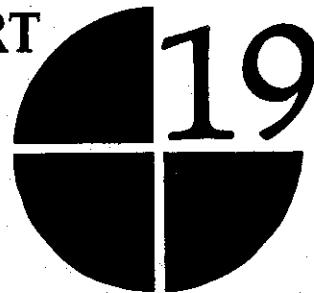
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RESEARCH REPORT



A Comparative Study
of FAO and USDA Data on
Production, Area, and Trade
of Major Food Staples

by
Leonardo A. Paulino
and
Shen Sheng Tseng



October 1980

The International Food Policy Research Institute was established to identify and analyze alternative national and international strategies and policies for meeting food needs in the world, with particular emphasis on low-income countries and on the poorer groups in those countries. While the research effort is geared to the precise objective of contributing to the reduction of hunger and malnutrition, the factors involved are many and wide-ranging, requiring analysis of underlying processes and extending beyond a narrowly defined food sector. The Institute's research program reflects worldwide interaction with policymakers, administrators, and others concerned with increasing food production and with improving the equity of its distribution. Research results are published and distributed to officials and others concerned with national and international food and agricultural policy.

**A COMPARATIVE STUDY OF FAO AND
USDA DATA ON PRODUCTION, AREA, AND
TRADE OF MAJOR FOOD STAPLES**

**Leonardo A. Paulino
Shen Sheng Tseng**

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CONTENTS

Preface	
Foreword	
1. Summary	9
2. Introduction	12
3. Data on Production and Area of Staple Food Crops	17
4. Data on Imports and Exports of Cereals	32
5. Conclusions and Recommendations	45
Appendix	48
Bibliography	77

TABLES

1. Number of countries included in FAO and USDA reports on the production of major staple food crops and on cereal trade, 1975	13
2. Cereal production and area: distribution of the commonly reported countries based on the relative difference between FAO and USDA estimates, 1965, 1970, and 1975	18
3. Number of countries with identical FAO and USDA estimates on cereal production and aggregate production of those countries for 1965, 1970, and 1975	20
4. Cereal production and area: ratios of aggregate FAO and USDA estimates for the commonly reported countries by geographical region, 1965, 1970, and 1975	21
5. FAO and USDA data on the production and area harvested of rice in Australia, 1961 to 1975	22
6. Cereal production and area: ratios of aggregate FAO and USDA estimates for the commonly reported countries by economic group, 1965, 1970, and 1975	23
7. Cereal production and area: ratios of the world totals of FAO and USDA estimates for 1965, 1970, and 1975	25
8. Cereal production: close and poor agreement for growth rates derived from FAO and USDA data for the developing-market-economy countries, 1961 to 1976	26
9. FAO and USDA data on maize production in South Africa, 1961 to 1976	27

10. Production of root crops, pulses, and groundnuts: distribution of the commonly reported countries based on the relative difference between FAO and USDA estimates, 1965, 1970, and 1975	28
11. Production of root crops, pulses, and groundnuts: ratios of aggregate FAO and USDA estimates for the commonly reported countries by geographical region and economic group, 1965, 1970, and 1975	30
12. Production of root crops, pulses, and groundnuts: ratios of world totals of FAO and USDA country estimates for 1965, 1970, and 1975	31
13. Cereal imports and exports: distribution of the commonly reported countries based on the relative difference between FAO and USDA data, 1965, 1970, and 1975	33
14. Cereal imports and exports: ratios of aggregate FAO and USDA data for the commonly reported countries by geographical region, 1965, 1970, and 1975	36
15. Cereal imports and exports: ratios of aggregate FAO and USDA data for the commonly reported countries by economic group, 1965, 1970, and 1975	38
16. Cereal imports and exports: ratios of world totals of FAO and USDA data, 1965, 1970, and 1975	40
17. Rice imports and exports: ratios of aggregate FAO and USDA data for the commonly reported countries classified by type of trade, calendar year 1970	41
18. Wheat imports and exports: distribution of the commonly reported countries based on the relative differences between the six-year average of FAO and USDA data for the periods 1965-70 and 1970-75	43
19. Wheat imports and exports: ratios of the six-year average of aggregate FAO and USDA data for the commonly reported countries by economic group and geographical region for the periods 1965-70 and 1970-75	44
20. FAO and USDA countries with reports on production and area of the major staple food crops and on cereal trade, 1975	48
21. Relative distribution of production among major staple food crops by economic group and geographical region, 1970	52
22. Relative distribution of world cereal imports and exports by economic group and geographical region, 1970	53
23. FAO and USDA reference periods for the production estimates of major staple food crops and for the trade data on cereals	53

24. Number of countries using each marketing year period for USDA trade data on cereals, 1965, 1970, and 1975	54
25. Cereal production: totals of identical FAO and USDA estimates by economic group and geographical region, 1970	55
26. FAO and USDA estimates of production and area of cereals for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975	56
27. Cereal production and area: world aggregates of FAO and USDA estimates for the commonly reported countries, 1965, 1970, and 1975	60
28. Cereal production and area: world aggregates of FAO and USDA estimates for all reported countries, 1965, 1970, and 1975	61
29. Cereals: average production growth rates in developing-market-economy countries calculated from FAO and USDA data, 1961 to 1976	62
30. FAO and USDA estimates of production of noncereal crops for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975	63
31. Noncereal production: world aggregates of FAO and USDA estimates for the commonly reported countries, 1965, 1970, and 1975	65
32. Noncereal production: world aggregates of FAO and USDA estimates for all reported countries, 1965, 1970, and 1975	66
33. Wheat imports and exports: aggregates of FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975	67
34. Rice (milled) imports and exports: aggregates of FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975	68
35. Maize imports and exports: aggregates of FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975	69
36. Barley imports and exports: aggregates of FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975	70
37. Oats imports and exports: aggregates of FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975	71
38. Rye imports and exports: aggregates of FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975	72

39. Cereal imports and exports: world aggregates of FAO and USDA data for the commonly reported countries, 1965, 1970, and 1975	73
40. Cereal imports and exports: world aggregates of FAO and USDA data for all reported countries, 1965, 1970, and 1975	74
41. Rice (milled) imports and exports: aggregates of FAO and USDA data for the commonly reported countries classified by type of trade, calendar year 1970	75
42. Wheat imports and exports: six-year averages of aggregate FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965-70 and 1970-75	76

FOREWORD

The setting of priorities for policy research at the International Food Policy Research Institute depends largely on an understanding of basic national and global trends in food production, consumption, and trade. Although IFPRI draws heavily on the analyses by FAO and other agencies for much of this information, it also intensely examines the basic data, not only to carefully adjust its own program but to judge independently the key variables in these trends.

Initially IFPRI worked largely from USDA data, but recent efforts have depended primarily on FAO statistics. This experience with the published data of both agencies has led Leonardo Paulino and Shen Sheng Tseng to undertake this systematic comparative effort. By making these analyses available to the research community at large, we hope to encourage an expanded dialogue on ways of improving the agricultural data base.

Solutions to many of the world's food problems require policies that can only be

debated, agreed upon, and implemented if there is a consensus about the underlying facts. This study points up the uncertainty of some of the basic information on agricultural production and trade. Lack of confidence in such data not only inhibits diagnosis of problems but prejudices the choice of policy instruments. For example, it is unlikely that agreement can be reached on operating rules for global food security schemes based on changes in domestic production as long as doubts about the data exist. Thus, it is imperative that developing countries in particular improve their capacity to assemble more reliable statistics on food production, consumption, and trade so that strides can be made in policy development.

John W. Mellor

Washington, D.C.
October 1980

PREFACE

Researchers and policymakers dealing with world food and agriculture problems generally rely on the Food and Agriculture Organization of the United Nations (FAO) and the United States Department of Agriculture (USDA) for international data. Both FAO and USDA now have computerized data systems that provide information on world agricultural production and trade, and the two agencies continually develop and expand these systems to offer a wider range of agricultural statistics. Data users, however, have long observed differences in the data sets published by the two organizations.

Analysts, especially those involved in food policy problems of developing countries, have often raised questions about these differences and the reasons for them. In an early meeting of the IFPRI Board of Trustees, a recommendation was made to undertake a study of these differences to guide IFPRI researchers in the use of data from these two principal sources. The statistical staffs of FAO and USDA have also expressed interest in reviewing the differences in their data as a basis for possible reconciliations that are consistent with their respective objectives. Toward this end, work has been initiated by the two agencies on the data used in estimating the indexes of agricultural production.

This study attempts to identify the commodities and countries or groups of countries for which major differences in FAO and USDA data on production and trade exist and to indicate the absolute and relative magnitudes of such differences. It also attempts to suggest the possible causes of data divergence by examining the methods used in data collection, the reference periods followed, and some of the definitions employed by FAO and USDA in the presentation

of their assembled statistics. Comparisons in this report are limited to the data on the major staple food crops, especially cereals, which have been the focus of analytical studies and projections on the food situation in developing countries.

The study does not determine whether one data system is better than the other. It uses a simple means of data comparison to measure divergence and to identify commodities and countries where considerable differences exist. As a result of these comparisons, agricultural data users will be in a better position to judge which crop data series are relatively consistent in both systems and which require further verification prior to use. No attempt is made to evaluate the quality of the statistics published by the two agencies; this would require investigations beyond the scope of this analysis and is better assessed by the agencies themselves. It should also be emphasized that FAO and USDA, in the performance of their statistical tasks, mainly gather secondary data from national sources; the collection of primary data and the improvement of their quality are responsibilities of national data-gathering agencies.

The authors wish to thank all those who offered comments and suggestions on the draft of the study and to acknowledge the Basic Data Unit, Statistics Division of the Food and Agriculture Organization of the United Nations and the Grains and Feeds Division, Foreign Agricultural Service of the U.S. Department of Agriculture for the supplementary information provided by these offices regarding the operations of their international data systems. The authors also appreciate the kind assistance they received from those at IFPRI responsible for the computer work for the study.

1

SUMMARY

This comparative study examines the differences between the estimates published by the Food and Agriculture Organization of the United Nations (FAO) and the U.S. Department of Agriculture (USDA) on production and area of major cereal and non-cereal staple food crops and their statistics on cereal trade. It identifies the commodities and major countries for which wide divergences exist and attempts to measure the data differences between countries, geographical regions, economic groups, and world totals.

The FAO data system is an international information network that collects agricultural statistics from member governments and thus includes a wide range of countries and commodities. The USDA international data system covers a relatively smaller number of countries and commodities and appears to emphasize those that are important to U.S. trade. Although USDA reports on only four fifths as many countries as FAO for production and area of cereals, the countries that are reported in common account for nearly all of the FAO world totals. Thus, most of the countries unreported by USDA do not contribute significantly to world aggregates. For the major noncereal staple food crops, however, the difference in the number of countries reported is consequential. USDA covers only half as many countries as FAO, and USDA's published estimates are still limited to production. For cereal trade USDA reports on about two thirds as many countries for imports and about three fourths as many for exports. In 1975 the country coverage of the two data systems for these commodities was:

Nature of Data	Number of Reported Countries and Territories		
	FAO	USDA	Common
Crop production/area			
Cereals	161	124	114
Noncereals	180	92	91
Cereal trade			
Imports	188	126	119
Exports	145	110	93

Differences also occur because the two agencies define their time reference periods in different ways. FAO statistics on crop production and area refer to the calendar year in which the whole or bulk of a crop is harvested, whereas the USDA system uses a split year beginning with harvests in July of the indicated year and ending in June of the following year. Although crop data for most countries are reported under the same production year for both systems, FAO reports in the following year data for those countries where the bulk of crop harvests occur during the second half of USDA's reference period. In the case of data for cereal trade, FAO again uses the calendar year, but USDA uses the "marketing year" (the 12-month period after crop harvests) which, except for rice, generally covers the same July-June reference period as production. The marketing year for data on rice coincides with FAO's January-December designation.

Data divergences not explained by differences in country coverage or definitions of reference periods may arise in part from the modifications made by the two agencies, especially USDA, on official country statistics when these are assessed as being unreliable or historically inconsistent. Such changes are more likely to be made on data for developing countries, which account for a large part of the divergences observed in this study.

FAO and USDA statistics for the countries reported by both agencies are compared for three selected years, 1965, 1970, and 1975. There appears to be closer agreement between data on production and area of cereals for 1965 and 1970 than for 1975 except for rye.

At regional aggregate levels North/Central America, Europe, and the U.S.S.R. are the only regions with totals that diverge by less than 10 percent for production and area of most cereals. The FAO and USDA estimates for the U.S.S.R. are identical for all of the cereals studied. Wide discrepancies between the estimates for a few countries in each region account for the large differences in the aggregates for the other regions.

When statistics are compared by eco-

conomic groups, the totals for the developed countries agree more closely than those for either the developing market or centrally planned economies except for millet and sorghum in 1970.

The world totals on cereal production and area for the countries reported in common are generally close for wheat, rice, maize, oats, and rye but show wide differences for barley, millet, and sorghum. The closest agreement is for rye, whose paired aggregates on production and area differ by less than 0.5 percent for all three years. The world production and area totals for barley differ by about 10 percent, and those for millet and sorghum by 20-40 percent. These ratios are not significantly altered when compared to those of the aggregates for all of the countries reported by the two systems.

For the nonstaple food crops, the regional totals of production show wide differences between the aggregates for the countries reported in common in Africa. The totals for the U.S.S.R, Asia, and North/Central America (except for pulses) differ only slightly, whereas there is no consistent pattern of divergence for the other regions.

For the countries reported in common, the maximum relative differences between the world production aggregates for the noncereals covered in this study are 1 percent for potatoes, 3 percent for sweet potatoes and cassava, 5 percent for pulses, 6 percent for groundnuts, and 19 percent for yams. The divergences of the totals for all reported countries are much wider as a result of USDA's incomplete coverage of countries. However, USDA production figures for yams in 1970 and 1975 for 7 countries exceed those of FAO for 34 countries.

For the data on cereal trade, FAO and USDA statistics are widely divergent at all levels of aggregation. The difference in reference periods is probably a major factor in explaining the large differences between the country figures reported by the two systems. The differences observed between the regional imports are generally large, especially for Africa, Oceania, and the U.S.S.R., although figures agree closely for some cereals in certain years for other regions. Differences in regional export aggregates are even larger and more widespread: about 70 percent diverge by more than 10 percent. As in production and area data, the aggregates for cereal trade of the developed market economies tend to agree more than those of the developing market and centrally

planned economies.

World aggregates of USDA data on cereal trade of the countries reported in common generally exceed FAO totals, except for rice. About two thirds of the paired totals on imports and less than half of those on exports for the three comparison years differ by less than 10 percent. Although rice data diverges less than the other commodities, import and export figures are significantly different despite the common reference period. With some exceptions, the figures on cereal trade for all countries show relative differences that are generally close to those obtained for the countries reported by both systems for each cereal. Data differences decreased for wheat and oats but increased for rice and rye.

FAO separates countries into general trade and special trade categories. This may contribute to differences between FAO and USDA figures on rice trade, but there appears to be no systematic bias toward smaller data divergences in one trade group than in the other. At the world level the figures on imports differ by 2 percent for general trade countries and by 8 percent for special trade countries, but the data on exports diverge by 18 percent for the general trade group and 14 percent for the special trade group. Aggregates by economic group also show that close agreement between FAO and USDA totals is not associated with a particular trade group of countries for either imports or exports.

To minimize the effects of the difference in reference periods and of possible report lags, six-year averages are obtained from the figures on wheat trade published by the two organizations for the periods 1965-70 and 1970-75. Comparisons of these averages still reflect the wide differences between trade statistics observed in single-year data. Relative to those of 1970, for example, the six-year averages show both decreases and increases of data divergence at various levels of comparison. For instance, the use of six-year averages at the regional level appears to reduce the extensive differences in wheat figures for Africa, Oceania, and the U.S.S.R. but increases the data divergence for Asia, the largest wheat-importing region. Comparisons show that either the averaging process failed to remove the divergences caused by the different reference periods, or the differences actually stem from other stronger causes.

Based on the results of this study, some

recommendations can be made. First, as the major sources of international agricultural statistics, FAO and USDA should undertake more joint efforts to reconcile their data. Second, the developing countries need to give increased attention to improving their agricultural statistics, the reliability of which is primarily their responsibility. And third, international agencies (including lending institutions) and developed economies

should increase their assistance to those developing countries that face serious resource constraints in developing and/or improving their agricultural data systems. It may also be desirable for those agencies that directly assist national data systems to coordinate their activities for a more systematic approach to helping solve agricultural data problems in these countries.

2

INTRODUCTION

The comparisons of FAO and USDA data in this report have been limited to the cereal and noncereal crops that were used in IFPRI's 1990 projections of food production and consumption for developing countries.¹ These include wheat, rice, maize, barley, millet, sorghum, oats, and rye for the cereal group, and potatoes, sweet potatoes, cassava, yams, pulses, and groundnuts for the non-cereal items.

Data comparisons for these major staple food crops are made on the production and area harvested of cereals and, because USDA does not publish estimates on area of non-cereals, on production alone of noncereals. Comparisons of trade statistics are limited to the data on imports and exports of cereals.

Table 1 presents the numbers of countries covered by the FAO and USDA data systems on production, area, and trade of the major staple food crops by geographical region and by economic group. Table 20 of the Appendix lists all of the countries reported by either system. These classifications follow those used by FAO in its annual publications on production and trade: Africa, North and Central America, South America, Asia, Europe, Oceania, and the U.S.S.R. for geographical regions and the developed, developing, and centrally planned economies for economic groups.² The countries reported by FAO also include small territories, hence their numbers are generally larger than those reported by USDA. For noncereal production, however, the large difference in the number of countries reported by the two systems must be attributed to more than the inclusion of these territories.

Statistics on production, area, imports, and exports of the major food staples were obtained from the FAO production and trade data tapes for 1975 and 1976 and from the USDA production, supply, and distribution data tape for 1977. In the case of FAO data,

figures for 1965 (one of the reference years selected for comparing estimates) were taken from the 1975 FAO tapes, since the 1976 tapes provide only the averages for the 1961-65 period.

The FAO and USDA data on the commodities covered in this study are compared at four levels: country estimates, regional aggregates, economic group aggregates, and world total. Except for the world total, data comparisons cover only the countries that are reported by both data systems for each commodity. The reference years 1965, 1970, and 1975 are used to compare estimates of the major staples for each country or level of aggregation. In these comparisons the FAO figures serve as the base for measuring the differences between corresponding data.

In country-level comparisons the relative differences between the FAO and USDA figures are distributed according to the percentage of countries that differed for each of the three years that data are compared: 0 (identical estimates), 0-5 percent, 5-10 percent, 10-20 percent, and over 20 percent. At aggregate levels of comparison, the study examines the totals for geographical regions and economic groups for the countries that are reported in common by FAO and USDA. In the case of world totals, comparisons are also made between the aggregates for all reported countries for each of the studied commodities. Comparisons at the aggregate level are presented as ratios of USDA figures to those of FAO, which automatically reflect the relative differences between corresponding totals. Because a uniform indicator of divergence is applied for all commodities, Tables 21 and 22 on the relative distribution of production, imports, and exports of the major food staples included in the Appendix are helpful in gauging the significance of an indicated difference between FAO and USDA aggregates for a given commodity.

¹ International Food Policy Research Institute, *Food Needs of Developing Countries: Projections of Production and Consumption to 1990*, Research Report No. 3 (Washington, D.C.: IFPRI, 1977).

² Food and Agriculture Organization of the United Nations, *FAO Production Yearbook* and *FAO Trade Yearbook* (Rome: FAO, various issues).

Table 1—Number of countries included in FAO and USDA reports on the production of major staple food crops and on cereal trade, 1975

Country Groups ^a	Production				Cereal Trade			
	Cereals ^b		Noncereals		Imports		Exports	
	FAO	USDA	FAO	USDA	FAO	USDA	FAO	USDA
Geographical regions								
Africa	50	36	52	32	54	36	43	25
North/Central America	24	14	27	8	32	14	18	14
South America	13	12	13	10	13	11	13	12
Asia	38	32	14	16	43	33	37	31
Europe	25	26	28	23	27	26	24	25
Oceania	10	3	18	2	18	4	9	2
U.S.S.R.	1	1	1	1	1	1	1	1
Economic groups								
Developed market economies	25	26	28	24	27	26	24	25
Developing market economies	123	86	139	60	148	87	108	73
Centrally planned economies	13	12	13	8	13	13	13	12
World total	161	124	180	92	188	126	145	110

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Note: FAO numbers include territories.

^a The groups are broken down according to the FAO method of classification.

^b Includes data on harvest area.

In addition to comparing the data on cereal production and area harvested, the study also compares the implied average growth rates of production of wheat, rice, maize, and cereals as a group on the basis of FAO and USDA time-series data for the period 1961-76. Problems are inherent in comparing FAO and USDA statistics on cereal trade because the two systems use different reference periods and because FAO classifies countries whereas USDA does not. Despite these known differences, direct comparisons of FAO and USDA data on cereal imports and exports are made for 1965, 1970, and 1975 in order to have a base measure of actual divergence in trade statistics. To obtain an indication of the degree to which these factors cause differences in the data of the two systems, attempts are made to show the effects on the observed divergences of grouping the reported countries according to FAO's trade definitions and of using six-year averages of FAO and USDA trade figures.

Both FAO and USDA undertake the collection and publication of data on crop

production and foreign trade of major staples as part of their mandated functions. An understanding of how each operates its data system—the method of collection, the extent of coverage of countries and commodities, the reference periods used, and the definitions employed—can help explain the observed differences in the data generated by the two organizations.

The FAO Data System

The development of an international data system on food and agriculture was among the initial activities undertaken by FAO after its establishment in 1945. Since then a major responsibility has been to collect and disseminate agricultural information for member countries. The separate yearbooks on production and trade it now publishes were developed from the *Yearbook of Food and Agricultural Statistics*, which continued the international statistical series formerly compiled and published by the

International Institute of Agriculture in Geneva and, later, Rome.³

As FAO's activities expanded over time, the statistical function has continued to remain a distinct and important aspect of the organization's work program. In the late 1960s FAO began to develop the Interlinked Computer Storage and Processing System of Food and Agricultural Data (ICS), which consolidates the food and agriculture statistics gathered from member countries into a consistent body of information. The organization disseminates international data on agriculture in the *FAO Production Yearbook*, the *FAO Trade Yearbook*, and the monthly *Bulletin of Agricultural Economics and Statistics*, which in 1979 became the *Bulletin of Agricultural Statistics*. Time-series data are also made available through FAO's computer tapes on agricultural production and trade.

Method of Data Collection and Coverage

For most of the information in its international data system, FAO relies on member governments to supply official data through replies to annual questionnaires. Information drawn from these questionnaires is supplemented by data from government publications, other reports of member countries to the United Nations, and, in the case of import and export data, estimates from other international and national agencies that compile data on international trade.⁴

FAO normally publishes the official agricultural statistics of its member countries. However, when official data are absent or unavailable in time for publication in the yearbooks, the organization uses statistics from unofficial sources or makes provisional estimates of its own, both of which are duly noted in the published data series. In the second half of the 1960s, FAO began to make wider use of its own estimates. The development of the ICS made it possible to check official statistics on production, trade, and consumption for consistency; and statis-

tics that do not satisfy these checks are replaced by FAO estimates until agreement is reached with the member countries concerned. As national data systems have evolved, member countries themselves have undertaken partial and/or total revisions of their data series; these revisions are entered into the FAO international data system as part of the updating process.

The number of countries and commodities reported in the FAO data system has expanded over the years. The 1947 *Yearbook of Food and Agricultural Statistics*⁵ presented tables on the production of some 45 crops for about 100 member countries; by 1975 the coverage had increased to more than 100 crops for 180 countries and territories. In 1976 the production and area data on minor crops were eliminated, and the number of crops specifically reported by FAO decreased to about 90; however, data on unspecified crops still form part of the grand totals. Data on imports and exports covering about 70 traded agricultural commodities for 42 countries were reported in the 1947 *Yearbook*. FAO trade data for 1975 covered 188 countries and territories and nearly twice the number of initially reported agricultural commodity items. FAO country data on imports and exports are divided into either special trade or general trade categories, depending on the system of recording trade that is used by each country.⁶ Special trade data include imports used for domestic consumption and exports wholly or partly produced in the country. Data do not include imports and exports of goods held in bonded warehouses or free zones. On the other hand, general trade data cover total imports and total exports, including re-exports. FAO trade data for 1975 classify the imports and exports of 75 countries as special trade, the rest are general trade.

Time Reference

Until 1959 crop production and area statistics were designated under single years.

³ Food and Agriculture Organization of the United Nations, *Yearbook of Food and Agricultural Statistics, 1947 and 1948* (Rome: FAO, 1948 and 1949).

⁴ Food and Agriculture Organization of the United Nations, *FAO Production Yearbook* (Rome: FAO, various issues); and Food and Agriculture Organization of the United Nations, *FAO Trade Yearbook* (Rome: FAO, various issues).

⁵ FAO, *Yearbook of Food and Agricultural Statistics, 1947 and 1948*.

⁶ FAO, *FAO Trade Yearbook*, various issues.

For the Northern Hemisphere the annual data pertained generally to harvests during the spring, summer, and autumn of the specified year, but for countries in the more southerly regions of this hemisphere, data included harvests up to the early part of the following year. These were aggregated with annual data for the countries in the Southern Hemisphere, which covered crop harvests from July of the designated year to June of the following year. The same procedure of aggregation was followed for the years from 1960 to 1965, but the single-year designation was replaced by split years reflecting the years actually spanned by global crop harvests. Thus crop data contained in issues of the *FAO Production Yearbook* up to 1965 were considered reports for split years.⁷

In 1966 FAO initiated a major change in crop reporting by shifting the reference period to a calendar year basis.⁸ Production and area data for a particular crop were made to refer to the calendar year in which the entire harvest or the bulk of it took place. The 1966 *Yearbook* included earlier statistical series revised to conform to the new reference period. Depending on the occurrence of the bulk of harvests, the production and area figures previously reported by countries under the split-year designation were assigned to different calendar years in the new series. The FAO data system continues to use the calendar year reference period for crop production and area.

FAO data on imports and exports refer to the calendar year, except for a few countries such as Afghanistan, Australia, Bangladesh, Ethiopia, Gambia, Haiti, Iran, New Zealand, Pakistan, and Papua New Guinea. In addition, trade data for Kuwait and Saudi Arabia are for the slightly shorter Islamic lunar year.⁹

The USDA Data System

USDA maintains an international agricultural data system as part of its global reporting and analysis network which covers world agricultural production, trade, competition, and policy situations affecting U.S.

agriculture. Operation of the system is made possible through agricultural attachés stationed in U.S. foreign service offices around the world. Two USDA agencies share the responsibility of operating the data system—the Foreign Agricultural Service and the Economic Research Service (now a unit of the Economics, Statistics, and Cooperatives Service).

USDA's international data on agriculture are mainly published in *Foreign Agriculture*, *Foreign Agriculture Circular*, and *Foreign Agricultural Trade of the United States (FATUS)*. The *Circular* is issued about 20 times a year and contains data on world supply and distribution of grains, including updated estimates and outlook information for major crops in many countries. *FATUS*, which is published monthly, presents export and import data on U.S. trade in agricultural commodities. International data on world agriculture also form a part of *Agricultural Statistics*, an annual USDA publication that presents the latest three-year estimates on production, area, yield, and trade of major crops in different countries.

USDA operates a production, supply, and distribution (PSD) data base and makes available international data on computer tapes and printouts. In addition, the agency is also developing a world agricultural trade system (WATS) that covers international commodity trade flows.

Method of Data Collection and Coverage

Agricultural attaché offices gather most of USDA's information on world agricultural production and trade. As of 1977 there were about 70 offices around the world responsible for more than 100 countries. The data collected are mostly official statistics released by national governments; other sources include nongovernment contacts and reports of international organizations. The reliability, objectivity, and consistency of the collected statistics are assessed, and, if the agency deems appropriate, the official country fig-

⁷ Food and Agriculture Organization of the United Nations, 1965 *FAO Production Yearbook*, vol. 19 (Rome: FAO, 1966).

⁸ Food and Agriculture Organization of the United Nations, 1966 *FAO Production Yearbook*, vol. 21 (Rome: FAO, 1967).

⁹ Food and Agriculture Organization of the United Nations, 1976 *FAO Trade Yearbook*, vol. 30 (Rome: FAO, 1977).

ures are replaced by USDA estimates. Like the FAO data, the USDA figures are revised as new information becomes available.

The commodity and country coverage of the USDA system appears largely trade oriented. Major attention is given to grains, including wheat, rice, maize, barley, millet, sorghum, oats, and rye; data on grains are available for more than 120 countries. Statistics on other traded commodities, such as oilseeds, sugar, cotton, and tobacco, also are covered widely. However, the number of countries reported for noncereal staple food crops such as roots and tubers, pulses, and groundnuts is much smaller. In 1977 data on production, supply, and distribution covered about 75 agricultural items. In the same year information on international commodity flows was included for about 25 commodities and nearly 130 countries.

Time Reference

Although USDA publishes crop production data under single years, the periods

referred to are generally split years. For example, statistics on world crop output for the world production year 1975 actually refer, in most cases, to the harvests that took place between July 1975 and June 1976. The exceptions are the early harvests of small grains that occurred in May 1976 in some Northern Hemisphere countries that are included in the accounting period beginning July 1976.¹⁰ (The harvest periods of the major staple food crops in the Northern and Southern Hemispheres for a given production year are shown in the Appendix, Table 23.)

The reference period of USDA agricultural statistics on international trade closely relates to that of crop production data. Cereal trade data published by USDA refer to the marketing year which is the 12-month period following crop harvests in each country.¹¹ In most countries the marketing year is July to June for wheat, maize, and other coarse grains, and January to December for rice (see the Appendix, Table 24). Data on cereal trade for these periods, however, also include figures for countries whose marketing years cover other periods.

¹⁰ U.S. Department of Agriculture, "Notes and Explanations on the Data Base," *Foreign Agriculture Circular: Grains* (Washington, D.C.: USDA, various issues).

¹¹ *Ibid.*

3

DATA ON PRODUCTION AND AREA OF STAPLE FOOD CROPS

Cereals

The importance of cereals in world food consumption inevitably focuses more attention on the statistics for this group than on those for other food items. In the 1970s cereals represented about 85 percent of total production of major staple food crops (see the Appendix, Table 21) and about half of total calorie consumption. Their dominant share in the diets of the people of developing countries is indicative of their significant role in meeting the world's food and poverty problems.

Two of the possible causes of divergence between FAO and USDA statistics on production and area of cereals have been mentioned in the previous chapter. One of these is the apparent difference in the reference periods used in the two systems; the FAO data refer to calendar years, while the USDA data refer to July-June years. However, the annual FAO and USDA data on cereals appear to cover the same crop harvests for most countries. The figures for countries where the bulk of a cereal harvest occurs during the second half of the USDA reference period are the exceptions. These are primarily in the Southern Hemisphere. The annual statistics on production and area of cereal for these countries are reported by FAO for the year following the designated world production year of USDA. Thus, if FAO and USDA were to assemble the same annual country figures on cereal production and area, the differences in their published data would be due to the estimates for these countries.

The other apparent cause of discrepancies is the unequal coverage of countries by the two systems. It has been noted that FAO data on cereal output and area harvested cover 161 countries, compared to 121 countries in the USDA system. At country and regional aggregate levels, however, this report examines only the cereal statistics of the countries reported in common by FAO and USDA. Figures including the countries

that are listed by one agency but not the other are compared only at the world aggregate level.

Country-Level Comparisons

FAO publishes production and area estimates for more countries than USDA for all cereal items. The difference in the number of countries reported ranges from as many as 56 for maize to only 7 for rye. Maize, rice, and wheat, the principal grains, are the three most reported cereals in both data systems. For FAO barley and sorghum are next in importance, with an almost equal number of countries reported as growing these food crops, followed by millet and oats. On the other hand, USDA covers nearly as many countries for barley as the three principal grains and lists an equal number of countries for sorghum, millet, and oats. Rye appears to be the least important cereal, considering the relatively small number of countries reported for it by both FAO and USDA.

Of the countries that are reported in common, the frequency with which the FAO and USDA estimates on production and area of cereals agree during the reference years 1965, 1970, and 1975 are presented in Table 2. Countries are distributed according to the magnitude of divergence between the FAO and USDA data, using the FAO estimate as base. These tables indicate that, on the average, about three fifths of these countries have identical estimates of both production and area for the three reference years. As a percentage of the total number of commonly reported countries, those with identical figures on cereal production range from 57 percent (rice and maize) to 84 percent (rye) in 1965, 49 percent (rice and millet) to 85 percent (barley) in 1970, and 31 percent (sorghum) to 79 percent (rye) in 1975. For cereal area the ranges are 62 percent (maize) to 91 percent (rye) in 1965, 49 percent (maize) to 81 percent (rye) in 1970, and 30 percent (millet) to 76 percent (rye) in 1975.

Table 2—Cereal production and area distribution of the commonly reported countries based on the relative difference between FAO and USDA estimates, 1965, 1970, and 1975

Percentage Difference ^a	Wheat		Rice		Maize		Barley		Oats		Millet		Sorghum		Rye	
	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970	1965	1970
Over 20 percent larger	7	2	4	5	9	4	2	2	2	1	2	3	0	3	0	1
10-20 percent larger	3	5	3	8	5	4	2	1	4	3	0	2	3	2	3	0
5-10 percent larger	1	2	4	1	2	3	0	0	2	1	1	1	1	0	0	0
0-5 percent larger	5	3	1	6	2	5	0	0	7	2	1	1	0	0	1	1
0 (identical) ^b	49	40	45	39	47	42	48	52	38	30	31	25	28	20	14	2
0-5 percent smaller	(69)	(67)	(57)	(49)	(57)	(52)	(79)	(86)	(62)	(73)	(76)	(61)	(68)	(49)	(35)	(84)
5-10 percent smaller	2	4	4	9	5	6	0	1	2	1	5	1	0	4	2	(79)
10-20 percent smaller	1	2	5	1	2	1	3	0	1	0	0	0	0	2	0	0
Over 20 percent smaller	1	1	5	2	7	1	2	2	1	0	1	1	1	1	1	0
Over 20 percent smaller	2	3	3	5	5	11	2	2	3	2	0	0	8	8	6	1
Number of countries reported in common	71	73	79	79	82	83	61	61	61	41	41	41	41	41	40	35
Total number of countries reported:																
FAO	94	97	106	108	135	141	76	78	78	54	54	54	65	67	57	77
USDA	71	73	80	80	82	83	61	61	61	41	41	42	42	42	42	36
Area																
Over 20 percent larger	3	1	4	4	5	6	3	3	4	2	2	2	2	2	5	0
10-20 percent larger	0	4	2	1	1	3	1	1	2	1	0	1	0	4	2	1
5-10 percent larger	3	4	3	6	4	1	0	1	2	1	1	0	0	2	1	0
0-5 percent larger	8	5	6	4	7	6	6	4	2	1	1	0	0	1	1	0
0 (identical) ^b	49	50	38	53	48	41	45	42	38	31	28	30	31	23	12	25
0-5 percent smaller	(69)	(68)	(67)	(61)	(52)	(49)	(74)	(69)	(62)	(76)	(68)	(73)	(76)	(56)	(30)	(71)
5-10 percent smaller	3	2	2	3	5	7	2	2	4	2	1	1	1	2	4	2
10-20 percent smaller	4	2	1	0	3	4	0	1	1	0	1	0	0	0	2	0
Over 20 percent smaller	1	2	4	5	1	3	0	4	1	0	3	2	1	1	4	1
Over 20 percent smaller	0	3	6	6	6	10	4	3	7	2	1	3	6	7	7	5
Number of countries reported in common	71	73	74	79	79	86	61	61	61	41	41	41	41	41	40	35
Total number of countries reported:																
FAO	94	97	106	108	135	141	76	78	78	54	54	54	65	67	57	77
USDA	71	73	80	80	82	83	61	61	61	41	41	42	42	42	42	36

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

^a $\frac{\text{FAO estimate} - \text{USDA estimate}}{\text{FAO estimate}} \times 100$.

^b Based on data rounded to thousand hectares. Figures in parentheses indicate percentages of the total number of countries reported in common.

Although it appears that the minimum and/or maximum levels of the indicated ranges of identical production and area data are distributed among different crops during the comparison years, the production and area figures for each cereal generally correspond closely in each of the three years. If production figures are identical for a particular cereal, area figures also are likely to be close. This suggests that the two data systems tend to treat the production and area figures of a particular cereal for each country more as a combined set than as independent estimates.

Based on the percentages of identical country estimates, there appears to be more agreement between the two data systems on production and area of rye, which has the smallest number of reported countries, than on rice, maize, and millet. Production and area figures for barley and oats also reflect a high level of agreement. In the case of wheat, about two thirds of the commonly reported countries have identical estimates on production for all three years of comparison, and on area for the years 1965 and 1970.

The number of countries with identical data on cereal production and area in 1975 is generally much lower than in 1965 and 1970, which may indicate that the data for 1975 are still preliminary in one or both data systems. The small number of identical estimates on production and area of sorghum, millet, and maize for 1975 appears pronounced. In the case of sorghum production, estimates for 13 out of the 31 countries reported in common differ by more than 20 percent. The 1975 production estimates for millet and maize diverge by more than 20 percent for about 30 percent of the commonly reported countries. Area estimates of these three crops for the same year indicate large differences in 30 percent of the countries for millet, 26 percent for sorghum, and 23 percent for maize. The significantly larger number of identical FAO and USDA estimates in 1965 and 1970 than in 1975 suggests that there is a tendency for country-level data in the two systems to agree over time.

Table 3 and Table 25 in the Appendix present aggregate cereal production for the countries with identical data in 1965, 1970, and 1975 and show the ratio of the aggregate to the total production reported by FAO for all the countries reported in common. The close agreement of the figures on rye production is shown by the high percentage of

countries with identical output data (about 80 percent) and their shares of total rye production (about 95 percent) for all three years. Three fourths of the countries have identical estimates on oats in 1965 and 1970 and represent 90 percent of total oat production of the commonly reported countries. For wheat and barley about 75 percent of the total output in 1965 and 1970 is accounted for by those with identical data. Wider divergence of production data is shown for other grains.

Among the cereals rice has the smallest relative share of total production accounted for by identical country estimates for the three years. Although rice and maize have nearly equal percentages of countries with identical output data in 1965 and 1970, their relative shares of the total production in those years differ significantly—about 10 percent for rice and more than 60 percent for maize. This suggests that most of the countries that have identical FAO and USDA estimates for rice output are small; the greater share of production comes from the large rice-producing countries for which the two systems show widely differing estimates.

Regional-Level Comparisons

Estimates on cereal production and area for the countries reported in common are aggregated by geographical regions (following the country groupings used by FAO) and presented in Table 26 of the Appendix. The ratios between these aggregates are shown in Table 4. As would be expected, positive and negative differences between countries offset each other, and this generally reduces the relative differences between the regional totals.

Among regions differences of less than 10 percent between estimates of production of all cereals appear to be limited to North/Central America, the U.S.S.R., and, except for millet, Europe. The FAO and USDA data on production of cereals for the U.S.S.R. are identical. For Asia the output figures on wheat, rice, maize, and rye are also in close agreement, but those on barley, oats, millet, and especially sorghum diverge widely. There are significant differences in the figures for Africa on the production of maize and millet for 1965 and 1970, of wheat and oats in 1975, and of barley in 1970. The production estimates for South America differ by 15-25

Table 3—Number of countries with identical FAO and USDA estimates on cereal production and aggregate production of those countries for 1965, 1970, and 1975

Cereal	Number of Countries with Identical Estimates			Aggregate Production of Countries with Identical Estimates		
	1965	1970	1975	1965	1970	1975
	(1,000 metric tons)					
Wheat	49 (0.69)	49 (0.67)	49 (0.58)	172,667 (0.76)	277,215 (0.87)	213,256 (0.60)
Rice (paddy)	45 (0.57)	39 (0.49)	32 (0.41)	29,400 (0.12)	30,887 (0.10)	19,420 (0.06)
Maize	47 (0.57)	42 (0.51)	32 (0.37)	144,927 (0.65)	159,917 (0.62)	50,229 (0.16)
Barley	48 (0.79)	52 (0.85)	38 (0.62)	79,178 (0.75)	105,340 (0.76)	95,484 (0.61)
Oats	30 (0.73)	31 (0.76)	25 (0.61)	43,225 (0.93)	50,437 (0.91)	34,025 (0.70)
Millet	28 (0.68)	20 (0.49)	14 (0.34)	16,298 (0.45)	15,709 (0.34)	3,179 (0.07)
Sorghum	24 (0.69)	21 (0.58)	11 (0.31)	20,713 (0.59)	10,973 (0.26)	4,454 (0.09)
Rye	27 (0.84)	26 (0.81)	26 (0.79)	33,176 (0.94)	26,570 (0.96)	22,586 (0.95)

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Note: The figures in parentheses denote ratios to the total number of countries reported in common by the two systems or to the total production reported by FAO for these countries. See the Appendix, Table 25 for 1970 data by regions and economic groups.

percent for rice in 1965 and 1970 and for oats in 1975, but even larger divergences are evident for millet for all three reference years and for sorghum for 1965. For Oceania, which has only one or two commonly reported countries (Australia and/or New Zealand), the data on cereal production closely agree for wheat, barley, oats, and rye but diverge widely for rice and maize in 1965 and 1970 and for sorghum in 1970 and 1975.

The regional aggregates of area for wheat, rice, and maize appear to be in closer agreement than the aggregates of production. Except for the data on rice in South America for 1965 and on maize in Asia for 1975, the regional aggregates of area for these cereals differ by less than 12 percent. The extent of divergence of the area data on the other cereals in Asia, on millet in South America and Europe, on oats in Africa, and on sorghum in Oceania correspond to those for production. The estimates on rye area in Africa are widely different, although relatively small and reported in common for only one country, South Africa. The FAO and

USDA figures on cereal area for the U.S.S.R. are again identical.

Although the country-level production and area data of the two systems tend to closer agreement over time, the regional aggregates show no such tendency. The ratios indicate that the differences between regional totals do not tend to narrow as time elapses; in several cases the differences between the 1975 regional aggregates are smaller than those shown in 1965 and 1970. These results suggest that the larger number of countries with identical FAO and USDA estimates for earlier years does not necessarily lead to the convergence of aggregate data. Many of the countries with identical estimates appear to be relatively small producers compared to the countries with wide divergences.

A closer examination of the regional aggregates indicates that differences can be attributed to the estimates for just a few large countries in the region. The following examples for wheat and rice illustrate the effects of the differences in the estimates

Table 4—Cereal production and area: ratios of aggregate FAO and USDA estimates for the commonly reported countries by geographical region, 1965, 1970, and 1975

Region	Year	Cereals								
		Wheat	Rice	Maize	Barley	Oats	Millet	Sorghum	Rye	
Production										
Africa	1965	0.930	1.003	1.109	0.938	0.917	1.553	1.084	...	
	1970	0.992	1.016	1.210	0.891	0.943	1.147	1.031	...	
	1975	0.861	1.043	0.930	1.038	0.774	0.932	0.959	a	
North/Central America	1965	1.008	1.003	0.991	1.000	0.997	...	1.000	a	
	1970	0.989	1.023	0.999	1.000	0.999	...	0.979	a	
	1975	0.997	1.040	1.011	0.987	0.984	...	1.016	0.949	
South America	1965	0.978	0.801	1.049	0.933	1.083	1.355	1.929	1.011	
	1970	0.989	0.771	1.003	0.919	1.002	1.536	1.140	1.005	
	1975	0.963	1.062	0.975	0.919	1.863	1.557	1.024	0.980	
Asia	1965	0.921	0.942	0.923	0.616	0.723	0.669	2.345	0.903	
	1970	0.968	1.032	0.997	0.617	0.624	0.743	2.792	1.079	
	1975	0.963	1.032	1.054	0.540	0.576	0.661	2.450	a	
Europe	1965	0.998	1.001	0.997	1.000	0.999	0.243	1.048	1.000	
	1970	0.997	0.995	0.996	1.000	1.000	2.575	1.005	1.001	
	1975	0.999	0.987	0.998	0.999	1.000	2.750	1.004	0.999	
Oceania	1965	1.006	1.190	0.724	1.008	0.999	a	a	a	
	1970	1.005	1.241	1.247	1.034	1.001	0.853	2.373	a	
	1975	1.019	1.075	1.077	1.003	0.982	1.046	1.248	a	
U.S.S.R.	1965	a	a	a	a	a	a	...	a	
	1970	a	a	a	a	a	a	...	a	
	1975	a	a	a	a	a	a	...	a	
Area										
Africa	1965	1.012	1.015	1.019	1.000	1.572	1.097	1.035	...	
	1970	1.071	0.009	0.970	1.936	0.919	0.968	0.987	...	
	1975	1.006	0.068	0.913	0.977	2.028	1.043	0.937	5.000	
North/Central America	1965	1.002	1.037	0.995	1.000	0.995	...	1.004	a	
	1970	0.994	1.025	1.016	0.999	0.998	...	0.995	a	
	1975	0.998	1.028	1.047	0.987	0.987	...	1.005	0.929	
South America	1965	0.939	0.689	0.997	0.915	1.032	1.200	1.027	a	
	1970	0.998	0.959	1.037	0.945	1.006	1.464	1.056	a	
	1975	1.017	1.108	1.021	0.999	0.959	1.515	0.950	0.985	
Asia	1965	0.967	0.987	1.116	0.711	0.687	0.635	1.498	a	
	1970	0.954	0.979	1.114	0.658	0.611	0.635	1.492	a	
	1975	0.963	1.002	1.210	0.651	0.565	0.599	1.442	a	
Europe	1965	0.998	1.009	0.999	1.001	a	2.605	1.054	0.998	
	1970	1.000	0.980	0.970	0.993	1.040	3.590	1.009	0.993	
	1975	1.000	0.995	1.000	0.990	1.005	a	a	1.000	
Oceania	1965	1.001	1.040	0.999	0.999	a	a	1.250	a	
	1970	0.998	0.950	1.114	1.012	1.001	a	2.140	a	
	1975	1.005	0.987	1.053	0.987	0.991	0.955	0.986	a	
U.S.S.R.	1965	a	a	a	a	a	a	...	a	
	1970	a	a	a	a	a	a	...	a	
	1975	a	a	a	a	a	a	...	a	

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Note: See also the Appendix, Table 22.

^a Identical estimates.

for these countries on the regional aggregates. For the rest of the cereals, the countries that account for the large differences between regional aggregates are indicated.

The regional totals on wheat of both data systems are fairly close, except those of African production for 1975 where the USDA estimate is only 86 percent of the FAO level. This wide divergence in the regional aggregate results from differences in the country estimates for Algeria and Ethiopia. Algerian wheat production in 1975 was estimated at 1,848,000 metric tons by FAO and at only 900,000 metric tons by USDA. For Ethiopia the estimates are 734,000 metric tons and 480,000 metric tons, respectively. Thus, for these two countries FAO estimates exceed USDA estimates by a total of 1,202,000 metric tons, which represents 12.5 percent of the FAO aggregate for Africa. If the figures for Algeria and Ethiopia were identical, the resulting ratio for the region would be 0.986 instead of 0.861.

Data on production and area of rice in South America and Oceania diverge by more than 10 percent for 1965 and 1970. For South America the difference is due largely to the estimates for Brazil:

Year	Production		Area	
	FAO	USDA	FAO	USDA
	(thousand metric tons)		(thousand hectares)	
1965	7,580	5,802	4,619	4,005
1970	7,553	5,394	4,979	4,764

If the data on rice in Brazil were identical, the USDA-FAO ratios for South America as a whole would be 0.980 in both 1965 and 1970 for production, and 1.004 in 1965 and 0.994 in 1970 for area.

Australia is the only country in Oceania that is included for rice. As shown in Table 5, the FAO and USDA time-series data on rice production and area harvested for Australia from 1961 through 1975 indicate a lagged correspondence between these two series. The FAO and USDA data sets have identical numbers assigned to different years in the two systems. This particular case illustrates divergence in data that arises solely from the different reference periods used by the two systems.

Table 5—FAO and USDA data on the production and area harvested of rice in Australia, 1961 to 1975

Year	Production		Area	
	FAO	USDA	FAO	USDA
	(1,000 metric tons)		(1,000 hectares)	
1961	114	134	19	20
1962	134	136	20	22
1963	136	142	22	24
1964	142	153	24	25
1965	153	182	25	26
1966	182	214	26	30
1967	214	221	30	31
1968	221	256	31	34
1969	255	247	34	40
1970	247	299	40	38
1971	299	248	38	41
1972	242	309	40	45
1973	309	410	45	68
1974	409	387	68	76
1975	387	417	76	75

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

The differences in the FAO and USDA regional aggregates of maize for Africa, Asia, and Oceania exceed 10 percent. For Africa differences in the estimates for Rhodesia (now Zimbabwe) and South Africa largely account for the divergence in maize production totals. For Asia figures for the People's Republic of China explain the large gap between FAO and USDA data on area harvested.¹² For Oceania the divergence of maize estimates is once again mainly due to the time lag.

The estimates for Morocco largely account for the difference between the 1970 FAO and USDA production data on barley for Africa, whereas the data on the People's Republic of China causes the divergence of the regional totals for Asia. For oats the data on harvested area in South Africa and on production for Algeria explain the differences in the African regional estimates. In Asia the differences between production and area

¹² In all data comparisons the USDA figures for the Republic of China (Taiwan) have been added to those for the People's Republic of China in order to correspond with FAO statistics.

data can also be attributed to the People's Republic of China data.

The figures on millet for Tanzania differ widely, contributing to the differences between the regional estimates for Africa. In South America the discrepancies can be attributed to the figures for Argentina, which show a one-year lag in correspondence between FAO and USDA data. The wide divergence of Asian data on millet again results from the data for the People's Republic of China, while that for Europe stems from the data for Poland.

The regional aggregates on sorghum for South America, Asia, and Oceania show differences that exceed 10 percent. Data differences for South America can be traced to the estimates for Argentina, whereas those for Asia and Oceania can again be explained by the figures for the People's Republic of China and Australia, respectively.

Economic Group-Level Comparisons

Table 6 shows the ratios of the aggregates of FAO and USDA estimates on cereal production and area for the countries reported in common when grouped according to FAO's economic classification—developed and developing market economies and centrally planned economies (see also the Appendix, Table 26). There appears to be quite close agreement in the aggregates for the developed-market-economy countries, except for the 1970 output of millet and sorghum, which differ by 10 percent and 5 percent, respectively. For production, figures for wheat, barley, oats, and rye agree almost completely for the developed countries in 1965 and 1970 and for millet diverge by only 3.4 percent in 1975. For harvested area the aggregates for millet show both the closest agreement (1970) and the largest difference

Table 6—Cereal production and area: ratios of aggregate FAO and USDA estimates for the commonly reported countries by economic group, 1965, 1970, and 1975

Country Group	Year	Cereals							
		Wheat	Rice	Maize	Barley	Oats	Millet	Sorghum	Rye
Production									
Developed market economies	1965	1.000	0.972	1.004	1.000	1.000	0.984	0.994	1.000
	1970	0.999	0.974	1.018	1.001	0.999	0.900	1.049	1.000
	1975	0.998	0.976	0.995	0.996	0.991	1.034	0.996	0.987
Developing market economies	1965	0.920	1.007	1.017	0.953	0.975	1.082	1.106	0.931
	1970	0.952	0.987	1.018	0.980	^a	1.061	1.011	1.061
	1975	0.935	0.998	1.017	0.985	0.929	0.987	1.018	0.994
Centrally planned economies	1965	0.989	1.005	0.937	0.760	0.948	0.589	1.538	1.000
	1970	1.000	1.058	0.985	0.810	0.948	0.633	1.925	1.001
	1975	1.000	1.102	1.037	0.785	0.922	0.500	0.765	1.000
Area									
Developed market economies	1965	1.001	1.000	0.996	1.002	1.020	0.981	1.023	1.000
	1970	1.012	0.999	0.968	0.997	1.016	^a	1.003	0.984
	1975	1.004	1.001	0.974	0.989	1.012	0.926	0.984	1.013
Developing market economies	1965	0.983	0.994	1.007	0.991	0.969	1.039	1.011	^a
	1970	0.987	0.999	1.032	0.983	0.978	0.987	1.009	1.018
	1975	0.991	1.005	1.037	0.971	0.987	1.023	0.979	0.994
Centrally planned economies	1965	0.985	0.961	1.141	0.812	0.925	0.440	2.353	1.000
	1970	0.975	0.937	1.146	0.791	0.920	0.425	2.215	1.000
	1975	0.977	1.080	1.271	0.838	0.921	0.390	1.046	1.000

Note: Ratios for world total are similar to those in Table 4. See also Table 26.

^a Identical estimates.

(1965) among the cereals. The totals for the developed-market-economy countries on harvested area for other grains, particularly rice, differ only slightly.

There appears to be less agreement in totals for the developing-market-economy countries. For 1965 output data for sorghum diverge by as much as 11 percent. Wheat, millet, and rye also show wide differences. However, the rice production totals for the developing countries are close in all three years, and oats output totals are identical for 1970. Aggregates on harvested area agree more closely than on production, with the largest difference between totals being 4 percent for millet in 1965.

Of the three economic groups, the aggregates of data for the centrally planned economies diverge the most. There are large differences in the totals for production and area of barley, millet, and sorghum, and area of maize. The USDA aggregates of both production and area in all three years are below FAO levels by 15-25 percent for barley and by 40-60 percent for millet but, except in 1975, are one and one half to more than two times larger than the FAO aggregates for sorghum. Although totals of maize output in this group vary by less than 10 percent, those of maize area diverge by 15-30 percent. For the rest of the cereals, rice and oats in production and area and wheat in area differ by 10 percent at most. Rye figures for all three years and wheat production figures for 1970 and 1975 agree.

Comparisons of World Totals

World aggregates generally agree for wheat, rice, maize, oats, and rye, but large differences exist for barley and especially for millet and sorghum. The wide divergences between FAO and USDA data on millet and sorghum may be traced in part to the reporting methods of national systems; some countries, especially in Africa, make no distinction between the two grains in their reports to FAO.¹³

Paired totals of the estimates on production and area of rye differ by less than 0.5 percent and those on wheat by less than 2 percent (see Table 7 and Tables 27 and 28 in the Appendix). Differences between the ag-

gregates for rice and oats for 1965 and 1970 are also small; however, those for 1975 diverge by about 4 percent. Although output totals for maize differ by only 1 percent for each of the three years, the area aggregates vary 3-6 percent.

Of the three cereals with the largest differences, barley is less divergent than millet and sorghum. Both the production and area aggregates for barley reflect differences of about 11 percent in the three years. The aggregates for millet diverge by 17-28 percent for production and 26-29 percent for area, whereas those for sorghum differ by 31-39 percent for output and 16-26 percent for area. Compared to USDA aggregates, FAO totals on both production and area are consistently larger for millet but smaller for sorghum.

The estimates for all the countries reported in each system are also aggregated for each cereal. The paired totals for all of the countries appear to follow the relative differences of the countries reported in common. Because the countries reported by FAO that are not reported by USDA make relatively small contributions, the overall results are not significantly altered.

Production and area of rye for all reported countries are in almost complete agreement in the three comparison years, while the world totals for the other cereals diverge by 2 percent for wheat, 3 percent for rice and maize, 4 percent for oats, 10 percent for barley, and as much as 30-35 percent for millet and sorghum.

Based on the absolute levels of the cereal estimates published by the two data systems, the USDA figures are lower than the FAO data on the production and area of wheat, barley, oats, and millet but exceed the corresponding FAO figures on sorghum in all three years. Except for maize production, the comparative levels of the FAO and USDA aggregates on the production and area of the other cereals are not consistent in all three comparison years.

Growth Rates of Cereal Production

Some comparisons are also made of the average annual production growth rates obtained from the available FAO and USDA

¹³ Food and Agriculture Organization of the United Nations, "Notes," *FAO Production Yearbook*, various issues.

Table 7—Cereal production and area: ratios of the world totals of FAO and USDA estimates for 1965, 1970, and 1975

Cereal	Year	Commonly Reported Countries			All Reported Countries			
		Number	USDA/FAO		Number		USDA/FAO	
			Production	Area	FAO	USDA	Production	Area
Wheat	1965	71	0.981	0.989	94	71	0.978	0.985
	1970	73	0.990	0.987	97	73	0.988	0.984
	1975	74	0.985	0.989	97	75	0.982	0.985
Rice (paddy)	1965	79	1.003	0.984	106	80	0.991	0.969
	1970	79	1.014	0.980	108	80	1.003	0.971
	1975	79	1.036	1.029	108	80	1.024	1.020
Maize	1965	82	0.994	1.029	135	82	0.979	0.999
	1970	83	1.011	1.029	141	83	0.997	1.005
	1975	86	1.008	1.056	143	87	0.994	1.026
Barley	1965	61	0.894	0.903	76	61	0.890	0.899
	1970	61	0.908	0.893	78	61	0.905	0.890
	1975	61	0.899	0.902	78	61	0.895	0.900
Oats	1965	41	0.984	0.983	54	41	0.982	0.977
	1970	41	0.979	0.972	54	41	0.977	0.967
	1975	41	0.961	0.963	54	42	0.960	0.958
Millet	1965	41	0.792	0.743	66	42	0.745	0.718
	1970	41	0.834	0.722	67	42	0.794	0.702
	1975	41	0.720	0.712	67	42	0.710	0.692
Sorghum	1965	35	1.353	1.263	77	36	1.272	1.176
	1970	36	1.386	1.234	77	38	1.347	1.157
	1975	35	1.307	1.162	78	39	1.237	1.072
Rye	1965	32	0.998	1.000	39	32	0.996	0.997
	1970	32	1.002	0.998	40	32	1.001	0.997
	1975	33	0.997	1.002	40	33	0.996	1.004

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Note: See also the Appendix, Tables 27 and 28.

data series for wheat, rice, maize, and cereals as a group for the period 1961-76 in the developing-market-economy countries.¹⁴ These comparisons, however, are limited to the estimates of the production growth rates and, except for an illustrative case, do not involve statistical measures.

Although the cereal production growth rates estimated from FAO and USDA data show close agreement for some developing market economies, large differences are reflected for most of them. Table 8 indicates those countries whose growth rate estimates correspond closely and those that deviate

widely. The lists are based only on data for developing market economies with available matching estimates for two of the three major cereals, wheat, rice, and maize. Estimates show relatively close correspondence for all three major cereals in Pakistan; for wheat and rice in Afghanistan, Egypt, and India; and for rice and maize in the Republic of Korea, Panama, and Thailand.

Large differences occur for wheat and rice in Guatemala, Mozambique, Saudi Arabia, and Tanzania and for rice and maize in Cuba and Morocco. Where growth-rate correspondence is poor, even the directions of

¹⁴ The cereal production growth rates for this group of countries were calculated from FAO data in Kenneth L. Bachman and Leonardo Paulino, *Rapid Food Production Growth in Selected Developing Countries: A Comparative Analysis of Underlying Trends, 1961-76*, Research Report No. 11 (Washington, D.C.: International Food Policy Research Institute, 1979). Growth rates (in terms of b) were calculated using the logarithmic trend equation $\ln Y = a + bt$, where b is the average growth rate and Y is the production in period t. The growth rate estimates are given in the Appendix, Table 29.

Table 8—Cereal production: close and poor agreement for growth rates derived from FAO and USDA data for the developing-market-economy countries, 1961 to 1976

Cereal	Countries
Close Correspondence of Estimates^a	
Wheat	Afghanistan, Argentina, Bolivia, Egypt, India, Pakistan, Uruguay
Rice	Afghanistan, Algeria, Bangladesh, Burma, Colombia, Egypt, India, Ivory Coast, Republic of Korea, Nepal, Nicaragua, Pakistan, Panama, Senegal, Thailand, Turkey
Maize	Brazil, Costa Rica, Guatemala, Republic of Korea, Pakistan, Panama, Philippines, Thailand
All cereals ^b	Brazil, Burma, Egypt, Guatemala, India, Republic of Korea, Mali, Nepal, Nicaragua, Pakistan, Philippines, Senegal
Poor Correspondence of Estimates^a	
Wheat	Angola, Brazil, Burma, Colombia, Ethiopia, Guatemala, Mozambique, Paraguay, Saudi Arabia, Tanzania, Venezuela
Rice	Cuba, Guatemala, Honduras, Jamaica, Morocco, Mozambique, Saudi Arabia, Tanzania
Maize	Algeria, Angola, Cuba, Ecuador, Iran, Ivory Coast, Lebanon, Morocco, Uruguay
All cereals ^b	Algeria, Angola, Cuba, Ethiopia, Haiti, Iran, Jamaica, Lebanon, Saudi Arabia

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

^a Based on the difference between the estimates of average annual production growth rates (in terms of b) calculated from FAO and USDA data shown in Table 25. "Close" correspondence denotes a difference of less than 0.25 percent and "poor" correspondence denotes a difference of more than 1.75 percent.

^b These include sorghum, millet, rye, and oats in countries for which production data are reported by the two systems.

change in output appear to be in conflict in a number of cases. For example, opposite signs of the estimates are noted for wheat in Ethiopia; for rice in Morocco, Mozambique, and Saudi Arabia; and for maize in Algeria.

Where data differences between the FAO and USDA systems primarily result from a lag in production data, as in the Southern Hemisphere countries, a difference in the estimated output growth rates will arise from the effects of the different figures at the start of the FAO series and at the end of the USDA series. Although the growth-rate estimates calculated from the two series are not expected to differ widely, the difference can occasionally be significant because the regression line is sensitive to extreme values at both ends of the observation period. The simultaneous occurrence of extreme values at the ends of the FAO and USDA series would tend to widen the difference between the calculated growth rates.

As an illustration of the differences in the statistics of the regression equations resulting from the use of lagged production figures, Table 9 shows the FAO and USDA estimates of maize production in South Africa for the reference period 1961-76. It can be easily observed that for most of the series the FAO figures on production are a year behind the USDA figures and, except for minor differences in some years, the two series differ only because of the figures for 1961 and 1976, respectively. The statistics of the regression equations that are fitted to these data are:

FAO	USDA
a = 8.4744	a = 8.479
b = 0.0346	b = 0.0385
T = 2.32	T = 2.52
R ² = 0.278	R ² = 0.312

Table 9—FAO and USDA data on maize production in South Africa, 1961 to 1976^a

Year	Maize Production in South Africa	
	FAO	USDA
	(1,000 metric tons)	
1961	5,275	6,002
1962	6,002	6,100
1963	6,100	4,279
1964	4,279	4,583
1965	4,490	5,118
1966	5,135	9,762
1967	9,762	5,316
1968	5,316	5,340
1969	5,340	6,132
1970	6,132	8,600
1971	8,600	9,483
1972	9,438	4,160
1973	4,360	11,105
1974	11,105	9,140
1975	9,140	7,314
1976	7,312	9,914

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

^a From the regression equation $\ln Y = a + bt$ fitted to these data where Y is production and t is time, the statistics for FAO are $a = 8.474$, $b = 0.0346$, $T = 2.32$, $R^2 = 0.278$, and for USDA are $a = 8.479$, $b = 0.0385$, $T = 2.52$, $R^2 = 0.312$.

The values of a from the regression equations differ by only 0.005 and those of b by 0.004. The T -value of b from the equation fitted to the USDA series is slightly higher and, correspondingly, yields a slightly higher R^2 , the portion of the variations in production explained by the trend variable t .

Noncereals

Based on FAO data, world production of root crops, pulses, and groundnuts accounts for 15 percent of the total production of major staple food crops. Although relatively less significant than cereals, these noncereals

form an important part of the diet of populations in developing countries. This is especially true for Africa, where these commodities constitute about one third of the production of major staple foods (see the Appendix, Table 21).

Divergences of FAO and USDA statistics on production of noncereal crops are likely to arise more from the difference in country coverage than from the difference in reference periods. FAO reports output data on the noncereal crops covered in this study for 180 countries and territories, whereas USDA covers only half as many. This large difference suggests that USDA excludes not only territories but also a significant number of countries growing these commodities, possibly because of their lesser importance in trade. Data differences resulting from the highly uneven coverage of countries are particularly evident when comparisons are made for the aggregates of noncereal production in all of the countries reported by both data systems.

Country-Level Comparisons

The percentage differences between corresponding FAO and USDA estimates of production for the noncereal crops included for 1965, 1970, and 1975 were calculated for the countries reported by both systems. The frequency with which the data agree based on the percentage differences between the FAO and USDA estimates for these countries is shown in Table 10. The table also includes data on the total number of countries listed for the noncereal crops during the comparison years.

Among the noncereals the difference in the number of countries reported ranges from 126 in pulses to 7 in yams. Pulses are the most reported noncereal staple food crop in the FAO system with 147 countries, compared to only 21 countries reported by USDA. The least reported crop in both systems is yams, for which USDA lists 7 countries or about one fifth the number reported by FAO. The largest number of countries reported by USDA is 70 for potatoes, for which FAO lists more than 120 countries. FAO's country coverage for groundnuts is about twice that of USDA.

Identical estimates in 50 percent or more of the countries reported in common occur in only a few cases—for potatoes and

Table 10—Production of root crops, pulses, and groundnuts: distribution of the commonly reported countries based on the relative difference between FAO and USDA estimates, 1965, 1970, and 1975

Percentage Difference ^a	Potatoes			Sweet Potatoes			Cassava			Yams			Pulses			Groundnuts		
	1965	1970	1975	1965	1970	1975	1965	1970	1975	1965	1970	1975	1965	1970	1975	1965	1970	1975
Over 20 percent larger	5	6	4	2	3	4	5	4	6	1	2	2	5	4	4	3	3	11
10-20 percent larger	3	1	1	2	1	1	1	2	2	0	0	1	3	2	2	4	7	3
5-10 percent larger	1	3	5	0	0	1	2	0	2	0	0	0	1	3	2	4	1	3
0-5 percent larger	4	8	9	2	4	2	0	1	1	1	0	0	1	0	1	1	4	5
0 (identical) ^b	44	39	34	19	11	9	18	16	10	1	2	0	4	5	3	24	25	18
	(64)	(57)	(49)	(63)	(37)	(30)	(49)	(43)	(27)	(14)	(29)	(0)	(19)	(24)	(14)	(52)	(54)	(39)
0-5 percent smaller	7	4	6	1	3	2	3	1	1	2	0	0	1	2	3	4	1	0
5-10 percent smaller	1	5	4	0	0	2	1	2	3	0	0	0	0	0	0	0	0	2
10-20 percent smaller	2	1	0	0	2	1	0	3	2	1	2	2	1	0	2	0	2	4
Over 20 percent smaller	2	2	6	4	6	8	7	8	10	1	1	2	5	5	4	6	2	0
Number of countries reported in common	69	69	69	30	30	30	37	37	37	7	7	7	21	21	21	46	46	46
Total number of countries reported:																		
FAO	119	124	125	101	105	104	79	90	90	34	34	34	193	146	147	91	91	91
USDA	70	70	70	31	31	31	38	38	38	7	7	7	21	21	21	46	46	46

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

^a $\frac{\text{FAO estimate} - \text{USDA estimate}}{\text{FAO estimate}} \times 100$.

^b Based on data rounded to thousand metric tons; figures in parentheses indicate corresponding percentages based on the total number of countries compared.

groundnuts in 1965 and 1970 and for sweet potatoes in 1965. Excluding the reports for 1975 when the number of identical FAO and USDA country figures appears to have drastically declined from the levels of earlier comparison years, differences of at most 5 percent are shown by about three fourths of the commonly reported countries for potatoes, two thirds for sweet potatoes and groundnuts, and slightly more than one half for cassava. The number of countries reported for yams and pulses is relatively small and may not provide a fair indication of proportions.

For the geographical regions the country totals for Africa show the widest divergence (see Table 11 and the Appendix, Table 29). Regional totals agree closely for Asia, and, except for the figures on sweet potatoes and cassava for 1975, for South America. Approximate agreement is indicated for the U.S.S.R. for all three years of comparison. Except for the estimates on pulses, the regional totals for the commonly reported countries in North/Central America differ by at most 3 percent. In Europe potato output data agree almost totally, but data for pulses for 1965 and 1975 diverge widely. Although the output estimates on pulses in Oceania for 1970 are identical, the figures for 1965 and 1975 deviate extensively.

As in cereal data, the large percentage of differences can be attributed to a few countries in each region. The difference of more than 8 percent between FAO and USDA totals on the production of potatoes in Oceania largely results from the divergent estimates for New Zealand. Output totals of sweet potatoes in Africa and South America indicate differences of more than 10 percent. The wide divergence in the African totals for 1965 and 1970 can be explained by the data for Uganda, whereas most of the data discrepancy in South America for 1975 results from the estimates for Brazil. The difference of 8 percent between FAO and USDA regional totals of cassava output in Africa for 1965 is mainly caused by the divergent estimates for Tanzania.

Comparative data on yams for countries reported in common are available only for Africa. The differences of about 15 percent in 1970 and 19 percent in 1975 may be attributed to the data for Nigeria, which accounts for 80 percent of the total output of yams in Africa. The USDA figures for yam production in Nigeria of 14.7 million tons in 1970 and 17.6 million tons in 1975 exceed

the FAO estimates by about 2.5 million tons for each of these years.

The large differences in the regional totals on the output of pulses may be explained by divergent country data for Nigeria, Czechoslovakia, New Zealand, and Jamaica. Production estimates for Nigeria, the Sudan, and Brazil largely account for deviations in the regional totals of the production of groundnuts in Africa and South America.

Economic-Group and World Totals

Ratios of FAO and USDA totals show quite close agreement on potatoes for the three economic groups and on groundnuts for the developed market economies in the three comparison years. The aggregates on sweet potatoes for the developed and developing market economies and those on cassava for the developing market economies indicate differences of less than 4 percent, with near agreement between the FAO and USDA data in some years. Differences of less than 4 percent are also reflected by totals on groundnuts for the developing market economies in 1965 and 1970, but data diverges by 7 percent in 1975.

The marked difference between the output totals on pulses is clearly indicated by the ratios for the developed market economies and, except in 1965, the developing market economies. It should be noted, however, that for the countries reported in common by the two systems, the production of pulses in the developed market economies is only 20-30 percent of that in the developing market economies. For the centrally planned economies, data are available only for potatoes and pulses, both of which show very close agreement. In the case of yams, the ratios presented earlier for Africa also represent those for the developing market economies as a whole.

As shown in Table 12, the ratios of world aggregates of the commonly reported countries indicate almost complete agreement of the figures for potatoes in all three years and for cassava in 1975 (see also the Appendix, Tables 30, 31, and 32). Differences of 1-3 percent are reflected by the totals for sweet potatoes in the three comparison years, for cassava and pulses in 1965 and 1970, and for groundnuts in 1965; the aggregates for pulses and groundnuts in other years differ

Table 11—Production of root crops, pulses, and groundnuts: ratios of aggregate FAO and USDA estimates for the commonly reported countries by geographical region and economic group, 1965, 1970, and 1975

Country Group	Year	Root Crops				Pulses	Groundnuts
		Potatoes	Sweet Potatoes	Cassava	Yams		
Geographical region							
Africa	1965	0.990	1.109	0.916	1.054	0.912	0.964
	1970	0.970	1.085	1.033	1.152	0.816	0.806
	1975	1.033	1.017	1.005	1.192	0.867	0.865
North/Central America	1965	1.007	0.996	1.031	...	2.500	0.995
	1970	0.993	a	0.978	...	a	...
	1975	0.966	0.994	0.995	...	0.833	0.991
South America	1965	1.006	a	1.017	...	...	0.983
	1970	0.971	1.012	1.002	...	1.006	1.003
	1975	0.980	1.192	0.989	...	...	0.877
Asia	1965	0.998	1.008	1.002	...	1.019	0.994
	1970	a	0.995	1.003	...	1.042	0.993
	1975	1.007	0.995	1.017	...	0.951	0.978
Europe	1965	1.003	...	...	...	0.932	...
	1970	0.994	...	...	...	0.983	...
	1975	0.989	...	...	...	0.863	...
Oceania	1965	0.915	...	...	...	2.708	a
	1970	1.003	...	...	...	a	a
	1975	1.017	...	...	...	0.536	a
U.S.S.R.	1965	a	...	...	...	a	a
	1970	a	...	...	...	1.001	...
	1975	a	...	...	...	1.000	...
Economic group							
Developed market economies	1965	1.000	0.984	...	...	0.867	0.999
	1970	0.999	0.968	...	...	0.878	0.993
	1975	0.989	0.998	...	...	0.817	0.992
Developing market economies	1965	1.008	1.036	0.997	1.054	0.951	0.980
	1970	0.979	1.028	1.014	1.152	0.880	0.927
	1975	0.999	1.036	1.033	1.192	0.884	0.932
Centrally planned economies	1965	1.002	...	...	...	1.003	...
	1970	a	...	...	...	1.008	...
	1975	0.998	...	...	...	0.987	...

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Note: See also the Appendix, Table 29.

^a Identical estimates.

by 4-6 percent. As in the totals for geographical and economic groups, the widest divergence of the data on noncereal output is for yams, whose world totals deviate by 15 percent in 1970 and 19 percent in 1975.

If the FAO and USDA data on the output of noncereal staples are aggregated for all

the countries reported by the two organizations, the resulting changes in the ratios for the commonly reported countries provide indications of data divergence that may be attributed to the smaller coverage by USDA of the countries that grow these crops. As shown in Table 12, FAO world totals of

Table 12—Production of root crops, pulses, and groundnuts: ratios of world totals of FAO and USDA country estimates for 1965, 1970, and 1975

Crop	Year	Commonly Reported Countries		All Reported Countries		
		Number	USDA/FAO	Number		USDA/FAO
				FAO	USDA	
Potatoes	1965	69	1.002	119	70	0.889
	1970	69	1.995	124	70	0.875
	1975	69	0.993	125	70	0.843
Sweet Potatoes	1965	30	1.020	101	31	0.162
	1970	30	1.016	105	31	0.135
	1975	30	1.031	104	31	0.117
Cassava	1965	37	0.967	89	38	0.884
	1970	37	1.014	90	38	0.929
	1975	37	1.003	90	38	0.926
Yams	1965	7	1.054	34	7	0.993
	1970	7	1.152	34	7	1.078
	1975	7	1.192	34	7	1.116
Pulses	1965	21	0.987	139	21	0.225
	1970	21	0.980	146	21	0.230
	1975	21	0.954	147	21	0.181
Groundnuts	1965	46	0.983	91	46	0.787
	1970	46	0.936	91	46	0.757
	1975	46	0.940	91	46	0.762

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Note: See also the Appendix, Tables 30, 31, and 32.

noncereal production in all of the countries that it reports greatly exceed USDA totals except for yams; USDA's aggregates of yam production for 7 countries are equal to or larger than FAO's totals for 34 countries. Relative to FAO totals, USDA world aggregates of other noncereal items are about 90

percent for cassava, 85 percent for potatoes, 75 percent for groundnuts, 20 percent for pulses, and only 15 percent for sweet potatoes. For yams, it appears that the differences due to other causes more than offset those arising from the lesser coverage of countries by USDA.

DATA ON IMPORTS AND EXPORTS OF CEREALS

Differences in the reference periods of cereal trade data pose more problems than those for production and harvest area because the reference period of the USDA data on cereal trade varies according to crop and country. Moreover, the designated period for the marketing year has changed over time in a number of countries. But for most of the countries reported by USDA, the marketing year reference period is July to June for wheat, maize, and other coarse grains, and January to December for rice.¹⁵ This study uses these reference periods. (For countries that employ other marketing year periods, USDA makes available data for these periods as well.) Although the reference periods of FAO and USDA annual data on cereal trade do not coincide, except for rice, the import and export figures that are assigned to the years 1965, 1970, and 1975 are directly compared in order to obtain base measures of data differences.

As in the previous comparisons, the relative differences between the FAO and USDA data on cereal trade are reflected by ratios that use the FAO figure as base. The relative importance of the difference between the aggregates of country data for a given cereal may also be gauged by either its number of reported countries or its share in the total cereal trade of the country group concerned (as indicated in the Appendix, Table 22).

Country-Level Comparisons

As shown in Table 1, the total number of countries that FAO lists for cereal trade exceeds that of USDA by 62 for imports and 35 for exports, and these differences are almost wholly accounted for by developing market economies. The difference in country coverage of import data for the six cereals ranges from 20 countries for rye to 78 countries for rice; for cereal exports, the difference ranges from 3 for rye to 37 for rice

(see Table 13). There are more countries reported in common for wheat, rice, and maize than for barley, oats, and rye. The former group includes approximately 90 to 100 countries on imports and 55 to 70 countries on exports; only one third to one half as many countries are reported for barley, oats, and rye.

The commonly reported countries with zero reports for 1965, 1970, and 1975 also present more problems in the comparison of data on cereal trade than on production and area. Zero reports generally refer to unreported countries or those that do not grow these crops. For trade data, however, countries with zero reports include those that did not import and/or export cereals during those particular years, although they actually trade in the commodities.

For the countries reported in common, about three fifths of more than 1,200 pairs of country data on cereal imports in 1965, 1970, and 1975 diverge by more than 20 percent (Table 13). Based on the average number of countries reported in common for each cereal in those three years, the percentages of FAO and USDA reports that differ by this magnitude are 44 percent for rice, 63-66 percent for wheat, maize, barley, and oats, and 73 percent for rye. In comparison, those that indicate a divergence of 10 percent or less are 45 percent for rice and 20-25 percent for the other cereals. These include more than 120 pairs of identical figures, many of which are zero reports.

The above results clearly suggest the generally wide divergence of the data on cereal imports. Except for rice, differences can be traced in part to the difference in the reference periods of the trade data on cereals. Rice, the only cereal with trade data having the same reference period in both systems, has the lowest percentage of reports that differ by more than 20 percent and the highest percentage of reports that diverge by no more than 10 percent. Although import figures on rice deviate less than those of other cereals, the differences are

¹⁵ See *Foreign Agriculture Circular: Grains*, and the Appendix, Table 21.

Table 13—Cereal imports and exports: distribution of the commonly reported countries based on the relative difference between FAO and USDA data, 1965, 1970, and 1975

Percentage Difference ^a	Wheat			Rice			Maize			Barley			Oats			Rye		
	1965	1970	1975	1965	1970	1975	1965	1970	1975	1965	1970	1975	1965	1970	1975	1965	1970	1975
Over 20 percent larger	14	10	18	24	26	13	35	29	43	20	17	19	13	9	14	14	8	9
10-20 percent larger	5	9	8	8	3	6	2	6	8	2	1	3	3	0	5	1	2	1
5-10 percent larger	2	3	8	3	2	4	3	3	2	1	2	1	1	1	2	0	1	1
0-5 percent larger	3	2	4	3	21	21	3	3	8	0	2	2	1	1	0	0	0	0
0 (identical) ^b	5	9	9	1	11	11	8	11	7	7	9	8	2	6	7	5	6	4
	(5)	(8)	(8)	(1)	(12)	(12)	(9)	(12)	(7)	(13)	(16)	(14)	(6)	(17)	(19)	(19)	(22)	(15)
0-5 percent smaller	1	6	1	6	17	16	2	5	4	1	2	4	0	1	0	0	0	1
5-10 percent smaller	3	4	8	4	1	3	2	6	4	1	1	1	1	1	1	0	0	0
10-20 percent smaller	9	9	12	10	3	0	4	3	3	3	6	5	1	3	1	0	0	0
Over 20 percent smaller	65	55	39	32	7	17	35	28	15	21	16	13	14	14	6	7	10	11
Number of countries reported in common	107	107	107	91	91	91	94	94	94	56	56	56	36	36	36	27	27	27
Total number of countries reported:																		
FAO	147	147	147	176	176	176	155	155	155	111	111	111	96	96	96	50	50	50
USDA	114	114	114	98	98	98	100	100	100	59	59	59	37	37	37	30	30	30
Over 20 percent larger	21	11	14	30	16	16	34	27	25	19	20	21	14	15	12	10	8	8
10-20 percent larger	0	1	0	6	4	4	3	1	0	1	0	0	1	1	1	0	0	2
5-10 percent larger	0	2	0	2	1	3	0	3	1	1	1	1	0	1	1	1	0	0
0-5 percent larger	2	3	2	0	14	7	0	0	3	0	3	1	1	1	1	1	1	0
0 (identical) ^b	6	13	21	6	15	18	6	15	20	5	12	13	2	3	3	4	5	5
	(11)	(23)	(37)	(9)	(25)	(28)	(8)	(21)	(28)	(10)	(17)	(18)	(7)	(11)	(11)	(19)	(24)	(24)
0-5 percent smaller	0	1	2	1	8	9	0	2	2	2	0	0	0	0	0	0	0	0
5-10 percent smaller	1	1	2	1	1	1	2	3	2	0	0	0	0	2	0	0	0	0
10-20 percent smaller	1	3	1	3	1	1	2	0	4	0	1	2	1	1	3	0	1	1
Over 20 percent smaller	26	22	15	15	4	5	24	17	7	19	11	10	9	4	7	5	5	5
Number of countries reported in common	57	57	57	64	64	64	71	71	71	48	48	48	28	28	28	21	21	21

Table 13—Continued

Percentage Difference ^a	Wheat		Rice		Maize	
	1965	1970	1975	1965	1970	1975
Total number of countries reported:						
FAO	77	77	77	113	113	113
USDA	73	73	73	76	76	76
				108	108	108
				72	72	72
				46	46	46
				29	29	29
				66	66	66
				49	49	49
				25	25	25
				22	22	22

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook, Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook, Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

^a Equal to $\frac{\text{FAO report} - \text{USDA report}}{\text{FAO report}} \times 100$.

^b Based on data rounded to thousand metric tons; figures in parentheses indicate percentages of the number of countries reported in common.

still significant, indicating other important causes of data divergence.

An examination of the distribution of relative differences between the FAO and USDA figures suggests a tendency for the cereal import figures to diverge less in later years than in earlier ones. From 1965 to 1975 the number of countries with data differing by more than 20 percent progressively declines and, conversely, the number of countries with figures differing by 10 percent or less increases, especially between 1965 and 1970. This tendency seems in contrast to that observed in the comparisons of data on production and area.

The matched pairs of country data on cereal exports for the three comparison years number less than 900, but percentage-wise the spread of relative differences between the FAO and USDA figures is generally similar to that for cereal imports. The distribution of countries reported in common, presented in Table 13, indicates that about 60 percent of the paired country reports differ by more than 20 percent, and slightly over 30 percent differ by no more than 10 percent of the FAO figure. However, the total number of identical figures on cereal exports exceeds that on cereal imports, which again includes zero reports in both systems. Among the cereals included, the spread of relative differences averaged over the three comparison years closely follows that of the data on imports, except for the percentage of paired reports that differ by more than 20 percent for oats and rye.

The tendency of data on cereal imports to diverge less in later years is also evident for exports. The large decrease in the number of paired country reports that diverge by more than 20 percent and the consequent increase in the number that differ by at most 10 percent is clearly shown, especially between 1965 and 1970. For rice the pairs of figures with more than a 20 percent difference decrease to less than half between these years, while those that differ by 10 percent or less increase almost four times.

Regional Data Comparisons

The ratios of about 240 matched regional totals of cereal imports and exports of the

countries reported in common for the comparison years indicate that 4 out of every 10 pairs differ by 10 percent or less of the FAO figures (see Table 14 and the Appendix, Tables 33 to 38).¹⁶ Differences of 10-50 percent between the matched figures occur in another 40 percent of the aggregates, with the rest diverging by more than 50 percent. Taken as subgroups, the totals for wheat, rice, and maize, the three most reported cereals, and those for barley, oats, and rye show approximately the same spread of differences as those cited for the whole group.

More than 40 percent of the regional aggregates of cereal imports differ by 10 percent or less. USDA totals of wheat imports for the three comparison years generally exceed FAO totals, except for Asia in 1970 and 1975, Oceania in 1975, and the U.S.S.R. in 1970. About half of the matched aggregates of wheat differ by 10-15 percent. Although differences as small as 5 percent occur between the wheat totals for South America and Asia, there are wide divergences of the aggregates for Africa, Oceania, and the U.S.S.R. The spread of the magnitude of differences for aggregates of maize imports is similar to that of wheat imports. As shown in Table 14, maize import totals for South America in 1975 agree closely. Differences of 8-10 percent are indicated for Europe in all three years and for Asia in 1975; however, wider data divergence is shown for the other regions.

A significant number of FAO and USDA aggregates on barley, oats, and rye imports differ 10 percent or less, but these include many identical pairs of zero totals for Africa, Oceania, and the U.S.S.R. The totals of barley imports for Europe in 1970 and 1975 almost agree, but those for Africa in 1965, Oceania in 1970, and the U.S.S.R. in 1975 diverge widely. Vast differences between the import totals of oats are also shown in some years for North/Central America, South America, and the U.S.S.R. The aggregates of rye imports for North/Central America, Asia, and Europe, the three regions with significant imports of this cereal, also diverge widely. All of the identical pairs of data on rye imports are zero totals.

The regional aggregates for rice imports show the closest agreement. Nearly half of the paired totals reflect differences of less

¹⁶ These include those cases where the FAO and USDA aggregates are both zero for some years, especially in the totals for barley, oats, and rye.

Table 14—Cereal imports and exports: ratios of aggregate FAO and USDA data for the commonly reported countries by geographical region, 1965, 1970, and 1975

Region	Year	Cereals					
		Wheat	Rice	Maize	Barley	Oats	Rye
Imports							
Africa	1965	1.970	1.297	2.043	0.517	0.667	a
	1970	2.138	0.912	0.580	0.929	a	c
	1975	1.160	1.064	0.836	0.722	a	a
North/Central America	1965	2.904	1.306	1.175	0.897	1.038	1.552
	1970	1.764	0.966	0.786	0.819	0.796	0.533
	1975	1.319	0.969	0.671	0.797	1.423	1.278
South America	1965	1.060	2.220	1.309	0.818	1.063	a
	1970	1.060	0.897	1.613	0.877	1.828	...
	1975	1.415	1.012	0.987	0.899	1.308	a
Asia	1965	1.497	0.926	0.813	0.877	a	1.239
	1970	0.955	0.953	0.799	0.867	1.348	1.562
	1975	0.920	1.113	0.924	0.779	1.085	0.815
Europe	1965	1.180	1.015	1.100	1.113	1.069	1.119
	1970	1.143	0.983	1.075	1.006	1.412	1.590
	1975	1.154	0.937	0.933	0.999	0.854	1.264
Oceania	1965	1.169	a	c	a	...	a
	1970	b	0.500	a	1.643	...	a
	1975	0.860	c	2.000	a	...	2.000
U.S.S.R.	1965	1.341	1.035	c	a	a	a
	1970	0.262	a	0.891	a	a	a
	1975	1.104	a	2.217	2.847	1.896	a
Exports							
Africa	1965	0.763	0.968	1.443	1.516	a	...
	1970	1.780	1.015	0.729	0.502	0.857	...
	1975	1.889	1.027	1.175	b	3.917	...
North/Central America	1965	1.279	1.283	1.108	1.099	1.194	1.714
	1970	1.116	0.973	0.930	1.355	0.888	1.946
	1975	1.039	0.971	1.191	1.163	1.079	1.204
South America	1965	1.188	1.774	1.056	0.518	0.501	0.521
	1970	0.706	0.915	1.103	1.125	0.996	c
	1975	1.771	0.810	0.785	2.643	1.345	0.750
Asia	1965	3.433	0.951	1.695	0.710	...	0.919
	1970	1.325	0.770	1.188	0.035	...	...
	1975	4.914	0.746	1.175	c	...	...
Europe	1965	1.441	0.938	1.063	1.310	1.137	1.553
	1970	0.962	1.479	1.159	0.856	1.123	1.515
	1975	1.346	1.005	1.263	1.054	0.879	1.408
Oceania	1965	0.989	1.161	c	0.615	0.686	a
	1970	1.369	0.860	b	1.780	2.539	a
	1975	1.001	1.095	b	1.110	1.333	a
U.S.S.R.	1965	1.582	0.500	0.407	0.954	a	a
	1970	1.485	a	0.940	1.229	1.111	a
	1975	0.186	c	c	c	c	a

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Note: See also the Appendix, Tables 33 to 38.

^a Identical data.

^b More than 5.0.

^c One of the paired aggregates equals zero.

than 5 percent, with identical nonzero totals for Oceania in 1970 and the U.S.S.R. in 1970 and 1975. Rice import totals almost agree for South America in 1975 and Europe in 1965 and 1970. The only large percentage differences are shown by the aggregates for South America in 1965 and a relatively minor importing region, Oceania, in 1970 and 1975.

The FAO and USDA regional totals of cereal exports appear to be more divergent than the figures on cereal imports. Only about 30 percent of the totals for the years 1965, 1970, and 1975 reflect differences of 10 percent or less, and one fourth of the paired aggregates diverge by more than 50 percent. Although differences of less than 5 percent are shown in some years by the wheat aggregates for North/Central America, Europe, and Oceania, which are the major wheat exporters, data divergence among regions is generally wide. For example, the USDA aggregate of wheat exports for Asia is almost five times the FAO figure in 1975, whereas the reverse is indicated by the totals for the U.S.S.R. About three fourths of the paired regional totals of maize exports for the three comparison years differ by more than 10 percent, but differences of 10 percent or less are shown for North/Central America and the U.S.S.R. in 1970, for South America in 1965 and 1970, and for Europe in 1965. Extremely large relative differences between the maize aggregates occur for Oceania and the U.S.S.R., but their export levels are relatively small compared to those of other regions.

North/Central America and Europe are the major exporters of barley, but significant levels of barley exports are also recorded for the U.S.S.R. in 1965 and Oceania in 1970 and 1975. The aggregates of barley exports for these regions reflect differences ranging from about 5 percent in the U.S.S.R. and Europe, to nearly 80 percent in Oceania; for North/Central America alone the totals diverge by 10-35 percent in the three comparison years. Exports of oats are concentrated in North/Central America, Europe, and Oceania, with relatively smaller quantities reported for South America in 1965 and 1970. The totals of oat exports for North/Central America and Europe differ by 8-19 percent and 12-14 percent, respectively, for the three years of data comparison; much wider differences are shown by the aggregates for Oceania and, except in 1970, for South America. For rye, the export totals for the main exporting regions of North/Central

America and Europe diverge by 20 percent or more.

The regional aggregates of rice exports for the three years are in closer agreement than those of the other cereals but agree less than the totals of rice imports. About one third of the paired aggregates differ by 5 percent or less, but the totals for Asia, the largest rice exporter, diverge by more than 20 percent in 1970 and 1975. Ten of the 21 aggregates on rice exports diverge by more than 10 percent.

Comparisons by Economic Groups

Table 15 presents the ratios between the FAO and USDA totals of cereal trade data for the commonly reported countries grouped according to FAO's economic classes (see also the Appendix, Tables 33 to 38). Of the 108 paired totals, slightly more than a third differ by 10 percent or less, about half by 10-50 percent, and the rest by more than 50 percent. The data on cereal imports again indicate closer agreement than the figures on cereal exports; of the paired totals that differ by no more than 10 percent, 24 are for imports and 14 are for exports.

Cereal import aggregates of USDA data on wheat, barley, oats, and rye generally tend to be larger than those of FAO. Differences between totals are relatively smaller for the developed-market-economy countries than for the developing-market-economy and centrally planned countries. All of the FAO and USDA paired aggregates for wheat and maize and more than half of those for rice, barley, and oats in the developed market economies differ by less than 10 percent. The matched totals for rye imports of these countries show differences of 13 percent or more. The totals of cereal imports in the developing market economies show differences of less than 10 percent for wheat in 1975, for rice in all three years, and for maize and barley in 1970. Identical data for 1965 and 1975 on rye imports for this economic group are zero totals. (The FAO and USDA totals of rice imports for the developing market economies, which account for two thirds or more of world rice imports, diverge by less than 5 percent in two of the three comparison years.) The aggregates of cereal imports in the centrally planned economies show close agreement for wheat in 1975, rice in 1970, and barley, oats, and rye in 1965. In the rest of the cases,

Table 15—Cereal imports and exports: ratios of aggregate FAO and USDA data for the commonly reported countries by economic group, 1965, 1970, and 1975

Country Group	Year	Cereals					
		Wheat	Rice	Maize	Barley	Oats	Rye
Imports							
Developed market economies	1965	1.070	1.594	1.076	1.106	1.059	1.172
	1970	1.072	0.906	0.987	1.149	1.309	1.366
	1975	1.086	0.940	0.942	1.046	0.975	1.126
Developing market economies	1965	1.255	0.892	1.177	0.772	1.204	a
	1970	1.297	0.960	0.988	0.953	1.180	c
	1975	1.089	1.044	0.830	0.500	1.217	a
Centrally planned economies	1965	2.012	0.846	0.832	1.038	a	1.034
	1970	0.855	0.990	0.834	0.456	b	1.679
	1975	1.026	1.440	1.512	1.403	1.351	1.329
Exports							
Developed market economies	1965	1.260	1.243	1.125	1.159	1.044	1.643
	1970	1.133	1.065	0.963	1.110	1.294	1.790
	1975	1.109	0.981	1.164	1.091	1.090	1.314
Developing market economies	1965	1.141	0.995	1.119	0.665	0.508	0.357
	1970	0.752	0.904	1.137	0.442	0.996	c
	1975	1.794	0.996	0.933	b	1.300	0.750
Centrally planned economies	1965	1.812	0.927	0.891	0.998	1.154	1.371
	1970	1.422	0.585	0.894	1.566	0.750	1.020
	1975	0.397	0.576	2.167	0.245	0.677	1.256

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Note: See also the Appendix, Tables 33 to 38.

^a Identical data.

^b More than 5.0.

^c One of paired aggregates equals zero.

the USDA aggregates range from 85 percent (rice, 1970) to more than five times the FAO totals (oats, 1970).

The USDA aggregates of cereal exports appear consistently larger than the FAO totals for wheat, barley, oats, and rye in the developed market economies, and for rye in the centrally planned countries. Relative differences between paired aggregates of cereal exports in the developed market economies are generally smaller than those in the two other economic groups, except for the widely diverging rye export totals. Two thirds of the ratios on rice exports indicate a divergence of less than 10 percent, with those for the developing market econ-

omies showing almost complete agreement between FAO and USDA totals in 1965 and 1975. Divergences of more than 50 percent in 1975 are reflected for wheat and barley in the developing market economies, and for wheat, maize, and barley in the centrally planned economies. On the whole, there appears to be less agreement between the aggregates of exports than of imports. Despite the higher level of aggregation, none of the paired totals for wheat show a difference of less than 10 percent, and more than one fifth of the economic-group aggregates of cereal exports reported by the two systems in the three comparison years diverge by more than 50 percent.

Comparison of World Totals

World aggregates of USDA data on cereal imports of the countries reported in common exceed the FAO totals for wheat, oats, and rye in all three years of data comparison, for rice in 1975, and for maize and barley in 1965 and 1975 (see Table 16 and the Appendix, Tables 39 and 40). The paired totals of rice, maize, and barley imports in each of the three years diverge less than 10 percent, as do the aggregates for wheat and oat imports in some years. In the case of rice, for which FAO and USDA trade figures have similar reference periods, there is almost complete agreement of import totals in 1965. But wide differences are indicated for wheat in 1965, for oats in 1970, and for rye in the three comparison years.

If the data on cereal imports are aggregated for all the countries reported by the two systems, the resulting ratios are generally close to those of the commonly reported countries, except the ratios for wheat in 1965 and for rice and oats in all three years. The inclusion of import figures for the countries that are not reported in common by both systems significantly reduces differences between the aggregates for wheat and oats. For rice, on the other hand, the import data for these additional countries widens the divergence of the world totals of imports from less than 10 percent to about 15 percent. This suggests that the significant divergence for rice arises because there are important differences in the coverage of countries by the two systems.

Like the data on imports, the USDA world totals of cereal exports of the commonly reported countries in the three comparison years are generally larger than the FAO aggregates, except for rice in 1970 and 1975 and oats in 1965 (see Table 16 and the Appendix, Tables 39 and 40). Nearly one half of the FAO and USDA totals on cereal exports for these countries differ by 10 percent or less; these include the aggregates for two of the comparison years for maize, barley, and oats, and for wheat in 1975 and rice in 1965. Almost complete agreement in world export totals is registered for maize in 1970. Unlike the results shown by import data for the countries reported in common, however, the aggregates for rice exports

differ by as much as 17 percent. But the maximum divergence is for rye, whose totals for 1970 and 1975 differ by more than 30 percent. Rye export levels are, however, only a small fraction of wheat and maize exports.

The addition to cereal exports of the countries that are not reported in common does not significantly change the ratios discussed above except those for rice and rye in 1965. For the small quantities of rye exports, the relative difference between the totals rose from 11 percent to 26 percent. For rice exports the USDA total decreased from 3 percent above to 7 percent below the FAO total.

Comparisons by Type of Trade

As mentioned earlier, FAO classifies countries under either general or special trade categories according to the method of data reporting used by each country.¹⁷ The USDA data on cereal trade, which appear to be consistent with FAO's general trade classification, are direct accounts of inflows and outflows of these commodities among countries. To determine if the FAO classification by country and type of trade contributes any systematic bias to data reporting that might help to explain the wide divergence between figures on cereal trade, comparisons are made of the aggregates of the 1970 data on rice imports and exports of the commonly reported countries that belong to each of the FAO trade groups. Rice is chosen because both FAO and USDA figures on rice trade refer to the calendar year, January to December. Thus a difference in the reference period cannot obscure indications of differences arising from FAO's trade classifications.

Ratios of the aggregate FAO and USDA data on rice imports and exports for the commonly reported countries that belong to each type of trade are presented in Table 17. (See also the Appendix, Table 41.) For purposes of this analysis, the data on rice imports and exports are aggregated only for economic groups and the world.

Based on the world totals of rice imports in 1970, the aggregates of FAO and USDA data for the 43 commonly reported countries that belong to FAO's general trade category

¹⁷ See Chapter 2 of this report for the FAO definitions of general trade and special trade countries.

Table 16—Cereal imports and exports: ratios of world totals of FAO and USDA data, 1965, 1970, and 1975

Cereal	Year	Commonly Reported Countries		All Reported Countries		
		Number	FAO/USDA	Number		FAO/USDA
				FAO	USDA	
Imports						
Wheat	1965	107	1.368	147	114	1.223
	1970	107	1.096	147	114	1.107
	1975	107	1.072	147	114	1.072
Rice	1965	91	0.998	176	98	0.862
	1970	91	0.955	176	98	0.832
	1975	91	1.064	176	98	0.846
Maize	1965	94	1.066	155	100	1.058
	1970	94	0.977	155	100	0.974
	1975	94	1.047	155	100	1.037
Barley	1965	56	1.074	111	59	1.067
	1970	56	0.980	111	59	0.970
	1975	56	1.082	111	59	1.075
Oats	1965	36	1.063	96	37	1.007
	1970	36	1.390	96	37	1.322
	1975	36	1.096	96	37	1.055
Rye	1965	27	1.156	50	30	1.142
	1970	27	1.526	50	30	1.526
	1975	27	1.216	50	30	1.199
Exports						
Wheat	1965	57	1.263	77	73	1.261
	1970	57	1.146	77	73	1.146
	1975	57	1.082	77	73	1.082
Rice	1965	64	1.033	113	76	0.927
	1970	64	0.880	113	76	0.880
	1975	64	0.835	113	76	0.813
Maize	1965	71	1.109	108	72	1.096
	1970	71	1.012	108	72	1.010
	1975	71	1.156	108	72	1.152
Barley	1965	48	1.067	66	49	1.061
	1970	48	1.105	66	49	1.104
	1975	48	1.043	66	49	1.040
Oats	1965	28	0.935	46	29	0.935
	1970	28	1.237	46	29	1.236
	1975	28	1.086	46	29	1.085
Rye	1965	21	1.111	25	22	1.257
	1970	21	1.408	25	22	1.408
	1975	21	1.304	25	22	1.304

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Note: See also the Appendix, Tables 39 and 40.

show a much closer agreement than those for the 50 countries in the special trade group. The totals for the general trade countries vary by only 1 percent, compared to the 8 percent divergence for the special

trade countries. These indications alone appear to confirm the view that USDA data on cereal trade are more in line with the FAO figures under the general trade method of reporting. At economic-group levels import

Table 17—Rice imports and exports: ratios of aggregate FAO and USDA data for the commonly reported countries classified by type of trade, calendar year 1970

Country Group	Imports			Exports		
	General Trade Number of Countries	USDA/FAO	Special Trade Number of Countries	General Trade Number of Countries	USDA/FAO	Special Trade Number of Countries
Developed market economies	9	0.788	10	6	0.978	9
Developing market economies	27	1.013	38	16	0.866	27
Centrally planned economies	7	0.990	1 ^a	6	0.538	1 ^a
World total	43	0.987	49	28	0.816	37

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Notes: General trade data cover total imports and exports including re-exports. Special trade data include imports used for domestic consumption and exports wholly or partly produced in the country, but not goods held in bonded warehouses or free zones. The absolute levels of rice imports and exports are presented in the Appendix, Table 46.

^a Identical; based on data rounded to thousand metric tons.

aggregates of the developing market and centrally planned economies in the general trade group reflect only slight differences, while those of the developed market economies in the same group show totals that diverge by a substantial 21 percent. On the other hand, aggregates of data on imports for the developed market economies in the special trade category differ by 6 percent, whereas the import totals for the developing market economies differ by 9 percent. Although figures were identical for the import total of special trade countries with centrally planned economies, these represent an extremely low level of rice imports. The large difference in the figures for the developed market economies classified as general trade countries suggests that although the FAO definition of general trade tends to conform with the USDA reporting method, the closer agreement of data for general trade countries than for special trade countries is not consistent.

Of the number of countries reported in common by FAO and USDA for rice exports, 28 are in the general trade category and 37 are in special trade. Rice export totals for the world diverge by 18 percent for general trade and 14 percent for special trade countries. This degree of divergence suggests that factors other than FAO's classification according to type of trade must account for the large differences in the data on cereal exports. As seen earlier, the FAO and USDA world aggregates of rice exports for the commonly reported countries differ by 12 percent. In contrast with rice imports, FAO and USDA totals for rice exports of the special trade countries show a smaller difference than those of the general trade countries. Moreover, the export aggregates for general trade countries with developed market economies now reflect very close agreement, while the corresponding totals for the special trade countries diverge widely. The totals for rice exports of the general trade countries in the other two economic groups show large differences, especially in the centrally planned economies whose paired aggregates deviate by about 50 percent.

Therefore, although FAO's grouping of countries by types of trade may contribute to differences between FAO and USDA data on rice trade, there appears to be no systematic bias that leads to the closer agreement of figures for one trade group than for the other. For both world and economic group aggregates, the data on rice trade show small

differences for imports in one trade group and for exports in the other. And there is no consistent pattern of differences between the totals for all three economic groups within a particular trade group for either imports or exports.

Comparisons of Six-Year Averages

In sum, the FAO and USDA annual data on imports and exports of cereals differ greatly. Except for rice, part of these divergences can be attributed to the difference in the reference periods. But despite the common reference period for rice trade, significant differences between the reports on rice imports and exports still exist, both at the country and aggregate levels. For the other cereals, however, differences in single-year comparisons occur partly because January-December figures from FAO are matched to July-June data from USDA.

To minimize the effect of the difference in reference periods on the divergence of trade data, six-year averages of the FAO and USDA annual figures on imports and exports of wheat are used in the comparisons for the periods 1965-70 and 1970-75. The averaging process should remove the effects of lagged trade reports. However, as shown earlier in the comparisons of cereal production data for Australia and South Africa, the effects of the differences between the initial year of the FAO series and the last year of the USDA series would still remain.

In Table 18 the countries reported in common are distributed according to the degree of divergence of wheat trade data in the six-year averages. These distributions again indicate that USDA trade figures on wheat exceed those of FAO in the majority of the commonly reported countries. USDA's import figures are larger for 80-85 percent of the countries and the export figures are larger for 65-75 percent of the countries. Although the six-year averages indicate some tendency toward improved data agreement in imports, comparisons of country-level data on wheat trade still reflect the wide divergences shown by the single-year comparisons for 1965, 1970, and 1975. About half of the paired country averages on wheat imports continue to disagree by more than 20 percent. This represents an improvement, however, over the distribution of single-year data for, say, 1970 which shows two

Table 18—Wheat imports and exports: distribution of the commonly reported countries based on the relative differences between the six-year average of FAO and USDA data for the periods 1965-70 and 1970-75

Percentage Difference ^a	Number of Commonly Reported Countries			
	Wheat Imports		Wheat Exports	
	1965-70 Average	1970-75 Average	1965-70 Average	1970-75 Average
Over 20 percent larger	3	2	10	13
10 - 20 percent larger	5	6	1	3
5 - 10 percent larger	4	4	1	1
0 - 5 percent larger	6	9	2	1
0 (identical) ^b	0	1	0	3
0 - 5 percent smaller	10	16	0	3
5 - 10 percent smaller	7	6	4	4
10 - 20 percent smaller	16	15	9	3
Over 20 percent smaller	56	48	30	26
Total	107	107	57	57

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

^a Equal to $\frac{\text{FAO report} - \text{USDA report}}{\text{FAO report}} \times 100$.

^b Based on data rounded to thousand metric tons.

thirds of the FAO and USDA country figures differing by this magnitude. In addition, the differences in import data appear to narrow somewhat for a number of countries when six-year averages are used. Of the paired averages of country data on wheat imports, 25 percent in 1965-70 and about 45 percent in 1970-75 have differences of no more than 10 percent of the FAO figures; for the 1970 data alone the share was 15 percent. But this does not hold true for the six-year averages of wheat exports. The number of paired country averages that diverge by no more than 10 percent is even less than that observed in the distribution of export data for 1970. Moreover, about 70 percent of the averages of the FAO and USDA country reports on wheat exports differ by more than 20 percent, which is about the same percentage as the 1970 distribution.

The 1965-70 and 1970-75 regional averages of wheat imports for the countries reported by both systems show differences of less than 10 percent for Asia, Europe, and the U.S.S.R. However, they still indicate large divergences of data for Africa and North/Central America (see Table 19 and the

Appendix, Table 42). Average annual imports for South America and Oceania differ by less than 10 percent for 1965-70 but diverge widely for 1970-75. Compared with the results that were obtained by matching single-year data for 1970, the averaging procedure appears to reduce the wide differences between the FAO and USDA figures for Africa, Oceania, and especially the U.S.S.R. but to increase the data divergence for Asia, the largest wheat importing region. The difference between the FAO and USDA import data for Europe, another major wheat importer, is also decreased. The use of six-year averages of import totals also seems to reduce divergence of the figures for the three economic groups. There is close agreement of the data for both the developed market and centrally planned countries. But a difference of more than 20 percent, equivalent to 5-6 million tons, is still reflected by six-year averages for the developing market economies. At the world level, the average of USDA data on wheat imports exceeds FAO figures by 9-12 percent. The relative difference between the FAO and USDA averages for 1970-75 is just slightly less than the

Table 19—Wheat imports and exports: ratios of the six-year average of aggregate FAO and USDA data for the commonly reported countries by economic group and geographical region for the periods 1965-70 and 1970-75

Country Group	USDA/FAO			
	Wheat Imports		Wheat Exports	
	1975-70 Average	1970-75 Average	1965-70 Average	1970-75 Average
Economic group				
Developed market economies	1.049	1.025	1.165	1.120
Developing market economies	1.272	1.234	1.111	1.131
Centrally planned economies	1.012	0.956	1.201	0.852
Geographical region				
Africa	1.646	1.429	1.743	1.114
North/Central America	2.093	1.418	1.108	1.070
South America	1.027	1.128	1.083	1.131
Asia	1.084	1.065	1.757	1.280
Europe	1.077	1.034	1.374	1.323
Oceania	1.098	1.471	1.190	1.057
U.S.S.R.	0.930	0.934	1.188	0.835
World total	1.124	1.087	1.165	1.093

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Note: See also the Appendix, Table 42.

divergence shown by the 1970 data.

In the case of wheat exports, the six-year averages of regional totals reflect a 7-11 percent divergence of the data for North/Central America. This region accounted for about 60 percent of world wheat exports during the decade ending in 1975. Although this represents the smallest divergence observed for the seven regions, the difference is not far below the 12 percent divergence in the single-year figures for 1970. Compared with the 1970 indications, the export averages for South America, Oceania, and the U.S.S.R. appear to move significantly closer to agreement; data differences decrease to less than 10 percent for South America in 1965-70 and Oceania in 1970-75. But the export averages for Europe during the two periods diverge by more than 30 percent, a far wider difference than that obtained for 1970 alone. Relative differences of more than 70 percent are indicated by the averages for Africa and Asia, but these two regions export only minor quantities of wheat.

Data for economic groups show that

none of the paired six-year averages of the FAO and USDA totals on wheat exports diverges by 10 percent or less for both the 1965-70 and 1970-75 periods. The smallest differences between averages are reflected by the developing market economies with 11-13 percent, whereas those for the developed market economies and the centrally planned countries diverge by 12-16 percent and 15-20 percent, respectively. The large difference between the FAO and USDA data for the developed market economies is significant because this group exported 16 times as much wheat from 1965 to 1975 as the developing market economies and 8 times as much as the centrally planned economies. The averages of wheat exports at the world level differ by 17 percent for 1965-70, decreasing to about 9 percent for 1970-75. Although this represents an improvement over the observed difference between the export figures for 1970 alone, it is nevertheless equivalent to 5.6 million tons of wheat.

5

CONCLUSIONS AND RECOMMENDATIONS

Causes of Divergence

Although it is widely assumed that the differences in countries covered and reference periods used by the two data systems bring about divergences in the data, the difference in the number of countries covered by FAO and USDA for data on production and area of cereals generally does not appear to cause major disagreements between the global figures for these commodities, except possibly for barley and millet. Although USDA covers only about four fifths of the countries that FAO covers, the countries that are reported in common account for nearly all of the FAO world totals of production and area of cereals; most of the countries that USDA does not report do not contribute significantly to world aggregates. However, uneven country coverage does not explain the differences between the data on sorghum, where USDA estimates from a smaller number of countries exceed those of FAO.

For the noncereal crops the difference in the number of countries covered appears to lead to wide divergences of the world aggregates reported by the two data systems. Except for yams, a case similar to that cited for sorghum, the difference in the coverage of countries for these commodities is clearly a major cause of large dissimilarities between the FAO and USDA data.

For cereal trade the world totals of USDA figures on imports and exports for all reported countries generally exceed those of FAO despite the smaller number of countries covered by the USDA data system. Exceptions are the USDA data on rice imports and exports which are mostly below the FAO figures in the three comparison years. Thus it is likely that the observed differences between the statistics on cereal trade, except possibly those on rice, result from other factors.

The difference in the reference periods appears to be more important in explaining the divergence of the statistics on trade than those on production and area. Although

FAO uses the calendar year and USDA the split year for the annual figures on the production and area of noncereal staple food crops, the published data for these reference periods generally cover the same crop harvests. With the exception of estimates for some countries in the Southern Hemisphere, data divergences must stem from other causes. The study indicates, however, that the figures on cereal trade are a different matter. Compared to rice trade, which has a common reference period in the two systems, the much wider divergence of the annual figures on trade for wheat, maize, barley, oats, and rye suggests that the different reference periods contribute significantly to differences between the data on cereal imports and exports. The relatively smaller but still significant divergences of the data on imports and exports of rice must be attributed to other causes.

Because of the common reference period for the annual FAO and USDA figures on rice trade, any differences brought about by FAO's classification of countries by type of trade should be easily observed. Although FAO's grouping of countries into general trade and special trade may contribute to data divergence, this study finds no evidence of a bias toward either group of countries.

The figures resulting from averaging wheat imports and exports over six-year periods still exhibit wide divergences, especially of export data, which show even larger differences than those exhibited by country and aggregate data for 1970 alone. The generally unchanged degree of differences between the statistics on wheat suggests that either the averaging process fails to remove the divergences caused by the disparate reference periods or there are other stronger factors influencing the data.

Thus, considering that the agricultural statistics published by FAO and USDA appear to come from the same general sources, variances in country coverage and reference periods do not explain adequately the divergences of their figures on output, area harvested, and, especially, trade. The FAO and USDA international data systems for agriculture operate independently, and many

other possible causes of data divergence could be cited. However, only those factors that can be inferred on the basis of information regarding how these data systems operate are discussed in this report.

Some of the observed divergences may arise from the objectives of the two organizations and, consequently, from the statistical procedures employed in generating the data they need to pursue them. FAO operates an international data system to support its efforts to assist member countries in solving food and agriculture problems. Possibly because of the time and physical resources needed to operate its large information network, FAO tends to limit its data system to the development of historical statistics. On the other hand, USDA maintains an international data system for agriculture as part of its trade-related functions in the service of U.S. agriculture. In line with its objectives, the USDA data system appears to emphasize statistics on present and future world agricultural supply and demand conditions, for which timeliness of data is important. The historical series of agricultural statistics in the USDA data system may be largely an outcome of the organization's outlook activities.

This study shows that a large part of the unexplained differences between FAO and USDA estimates on cereal production and harvest area can be attributed to only a few, mostly developing, countries, and developed-country data on cereal trade generally agrees more closely than developing country data. What may largely account for the unexplained differences between the data examined in this study is the extent to which USDA modifies official country figures—data FAO normally publishes. USDA makes changes in these statistics depending on its assessment of their reliability and historical consistency: on this basis the country estimates that are most likely to be modified are those of developing countries with poor national data systems. The FAO statistical office in Rome also generates and publishes preliminary figures in lieu of doubtful official data. It is likely that some of these preliminary estimates are ultimately adopted as the official country figures. Thus the larger differences between FAO and USDA data for developing countries may be related to the extent that the two data systems, especially USDA, modify the official statistics of these countries.

In addition, divergences may also be

caused by differences in the choice of unofficial sources and in the statistical treatment of unofficial information for the reported countries that lack official data. The FAO and USDA time-series data for the People's Republic of China is an example; these widely divergent sets of data have been gathered largely from unofficial sources.

Another likely cause of divergence is the extent to which the two data systems undertake revisions of historical data. Both organizations revise their preliminary figures as new information becomes available. But changes in country data observed in FAO publications and data tapes suggest that the agency also makes revisions of historical data for as far back as the early 1960s, possibly involving the whole statistical series of some countries, as improvements are made in national data systems. The USDA emphasis on current situations and future outlook may result in relatively less attention to changes in historical data and more attention to revisions of current data as these become part of the historical series.

Recommendations

Based on the findings of this study, it seems appropriate to offer recommendations for making FAO and USDA historical data on the major staple foods more consistent. Although complete agreement of the agricultural statistics that are published by the two systems is not possible, minimizing the existing discrepancies in their data would be helpful to researchers and policymakers who rely on this information.

As the major sources of international statistics on agriculture, FAO and USDA should undertake more joint efforts to reconcile their country data. The two agencies are now in the process of examining their figures on agricultural production indexes. But attention should also be given to the widely divergent figures on cereal trade and on production and harvest area of cereal and noncereal staple food crops of some countries. Although both FAO and USDA aim for reliability in the statistics they collect, collaborative efforts to achieve this common objective can be of mutual benefit to the two data systems.

Because the reliability of statistics is

primarily the responsibility of national governments, the developing countries need to improve their data collection systems. There is reason to believe that the unexplained divergences between the published FAO and USDA data on agriculture in developing countries stem from weaknesses in the national data systems of these countries. The importance of reliable data for policy and investment decisions regarding food and agriculture in developing countries has often been pointed out, but government attention and support for their agricultural data systems still seem to be lacking. Unless the governments in many developing countries make determined efforts to improve their agricultural data systems, development planning and policymaking of these countries will continue to be based on doubtful information.

The international assistance agencies and the developed economies need to increase support for the development and/or improvement of the food and agricultural data systems of developing countries that have few or no resources for these activities. Improving the reliability of data should also concern regional and international lending institutions because improved data can lead to better decisions on investment in the

agricultural development of Third World countries. FAO and USDA have been independently involved in projects for the improvement of agricultural statistics in some countries, but unfortunately these activities are reportedly declining. Along with the expansion of international aid to strengthen agricultural data systems in developing countries, it may also be desirable for these major agencies, and others that are similarly involved, to coordinate their activities for a more systematic approach toward solving agricultural data problems.

Finally, further comparisons of the international data on agriculture would be useful. Studies of national statistics and other international statistical series on cereal trade besides the FAO and USDA data sets used here could shed light on the causes of the unexplained differences observed between the FAO and USDA figures. The factors that appear to account for these divergences have been largely inferred in this study. Data comparisons using official country figures could reveal the extent to which these data have been modified. The quarterly figures for cereal trade currently being prepared by FAO will make possible comparisons with USDA data for similar reference periods.

APPENDIX SUPPLEMENTARY TABLES

Table 20—FAO and USDA countries with reports on production and area of the major staple food crops and on cereal trade, 1975

Region/Country	Production and Area Data				Cereal Trade Data			
	Cereals		Noncereals		Imports		Exports	
	FAO	USDA	FAO	USDA ^a	FAO	USDA	FAO	USDA
Africa								
Algeria	x	x	x	x	x	x	x	x
Angola	x	x	x	x	x	x	x	x
Benin	x	x	x	x	x	x	x	x
Botswana	x		x		x		x	
Burundi	x	x	x	x	x		x	
Cameroon	x	x	x	x	x	x	x	
Cape Verde	x		x		x		x	
Central African Empire	x		x		x		x	
Chad	x	x	x		x	x	x	
Comoros	x		x		x			
Congo	x		x		x		x	
Djibouti					x		x	
Egypt	x	x	x	x	x	x	x	x
Equatorial Guinea		x	x		x			
Ethiopia	x	x	x	x	x	x	x	x
Gabon	x		x		x			
Gambia	x	x	x		x	x		
Ghana	x	x	x	x	x	x	x	x
Guinea	x	x	x	x	x	x	x	x
Guinea-Bissau	x		x		x	x	x	x
Ivory Coast	x	x	x	x	x	x	x	x
Kenya	x	x	x	x	x	x	x	x
Lesotho	x		x		x		x	
Liberia	x	x	x	x	x	x	x	
Libya	x	x	x	x	x	x	x	x
Madagascar	x	x	x	x	x	x	x	x
Malawi	x	x	x	x	x	x	x	x
Mali	x	x	x	x	x	x	x	x
Mauritania	x		x		x		x	
Mauritius	x		x		x	x	x	
Morocco	x	x	x	x	x	x	x	x
Mozambique	x	x	x		x	x	x	x
Namibia	x		x					
Niger	x	x	x	x	x	x	x	
Nigeria	x	x	x	x	x	x	x	x
Reunion	x		x		x	x		
Rhodesia	x	x	x	x	x	x	x	x
Rwanda	x	x	x	x	x		x	
St. Helena					x			
São Tomé & Príncipe			x		x			
Senegal	x	x	x	x	x	x	x	x
Seychelles			x		x			
Sierra Leone	x	x	x	x	x	x	x	x
Somalia	x		x		x	x		
South Africa	x	x	x	x	x	x	x	x
Sudan	x	x	x	x	x	x	x	x
Swaziland	x		x		x		x	
Tanzania	x	x	x	x	x	x	x	x
Togo	x	x	x	x	x	x	x	x
Tunisia	x	x	x	x	x	x	x	x
Uganda	x	x	x	x	x	x	x	x
Upper Volta	x	x	x	x	x	x	x	x
Western Sahara	x				x			
Zaire	x	x	x	x	x	x	x	x
Zambia	x	x	x	x	x	x	x	x
Total	50	36	52	32	54	36	43	25

Table 20—Continued

Region/Country	Production and Area Data				Cereal Trade Data			
	Cereals		Noncereals		Imports		Exports	
	FAO	USDA	FAO	USDA ^a	FAO	USDA	FAO	USDA
North/Central America								
Antigua			X		X			
Bahamas					X			
Barbados	X		X		X		X	
Belize	X		X		X		X	
Bermuda			X		X			
Canada	X	X	X	X	X	X	X	X
Costa Rica	X	X	X	X	X	X	X	X
Cuba	X	X	X		X	X		X
Dominica	X		X		X			
Dominican Republic	X	X	X	X	X	X	X	X
El Salvador	X	X	X		X	X	X	X
Greenland					X			
Grenada	X		X		X		X	
Guadeloupe	X		X		X		X	
Guatemala	X	X	X	X	X	X	X	X
Haiti	X	X	X		X	X	X	X
Honduras	X	X	X		X	X	X	X
Jamaica	X	X	X	X	X	X	X	X
Martinique			X		X		X	
Mexico	X	X	X	X	X	X	X	X
Montserrat	X		X		X			
Netherlands Antilles	X				X			
Nicaragua	X	X	X		X	X	X	X
Panama	X	X	X		X	X	X	X
Puerto Rico	X		X					
St. Kitts-Nevis-Anguilla			X		X			
St. Lucia	X		X		X			
St. Pierre & Miquelon					X			
St. Vincent	X		X		X			
Trinidad & Tobago	X	X	X	X	X	X	X	X
United States	X	X	X	X	X	X	X	X
Virgin Islands (U.K.)					X			
Virgin Islands (U.S.)					X			
Total	24	14	27	8	32	14	18	14
South America								
Argentina	X	X	X	X	X	X	X	X
Bolivia	X	X	X	X	X	X	X	X
Brazil	X	X	X	X	X	X	X	X
Chile	X	X	X	X	X	X	X	X
Colombia	X	X	X	X	X	X	X	X
Ecuador	X	X	X	X	X	X	X	X
French Guiana	X		X		X		X	
Guyana	X	X	X		X	X	X	X
Paraguay	X	X	X	X	X	X	X	X
Peru	X	X	X	X	X	X	X	X
Surinam	X	X	X	X	X	X	X	X
Uruguay	X	X	X	X	X	X	X	X
Venezuela	X	X	X	X	X	X	X	X
Total	13	12	13	10	13	11	13	12
Asia								
Afghanistan	X	X	X		X	X		
Bahrain			X		X		X	
Bangladesh	X	X	X		X	X		X
Bhutan	X		X		X		X	
Brunei	X		X		X		X	
Burma	X	X	X	X	X	X	X	X
China	X	X	X	X	X	X	X	X
Cyprus	X	X	X	X	X	X	X	X
East Timor	X		X		X		X	
Hong Kong	X	X	X		X	X	X	X

Table 20—Continued

Region/Country	Production and Area Data				Cereal Trade Data			
	Cereals		Noncereals		Imports		Exports	
	FAO	USDA	FAO	USDA ^a	FAO	USDA	FAO	USDA
India	x	x	x	x	x	x	x	x
Indonesia	x	x	x	x	x	x	x	x
Iran	x	x	x		x	x	x	x
Iraq	x	x	x		x	x	x	x
Israel	x	x	x	x	x	x	x	x
Japan	x	x	x	x	x	x	x	x
Jordan	x	x	x	x	x	x	x	x
Kampuchea, Democratic	x	x	x		x	x	x	x
Korea, Democratic Peoples								
Republic of	x	x	x		x	x	x	x
Korea, Republic of	x	x	x	x	x	x	x	x
Kuwait	x	x	x		x	x	x	x
Laos	x	x	x		x	x	x	x
Lebanon	x	x	x	x	x	x	x	x
Macao			x		x		x	
Malaysia	x	x	x	x	x	x	x	x
Maldives	x		x		x		x	
Mongolia	x		x		x	x	x	x
Nepal	x	x	x		x	x	x	x
Oman	x		x		x			
Pakistan	x	x	x		x	x	x	x
Philippines	x	x	x	x	x	x	x	x
Qatar					x		x	
Saudi Arabia	x	x	x		x	x		
Sikkim	x		x		x			
Singapore		x	x		x	x	x	x
Sri Lanka	x	x	x	x	x	x	x	x
Syria	x	x	x	x	x	x	x	x
Thailand	x	x	x	x	x	x	x	x
Turkey	x	x	x	x	x	x	x	x
United Arab Emirates		x			x			
Viet Nam	x	x	x		x	x	x	x
Yemen, Arab Republic of	x	x	x		x	x	x	x
Yemen, Peoples Democratic								
Republic of	x	x	x		x	x	x	x
Total	38	33	41	16	43	33	37	31
Europe								
Albania	x	x	x		x	x	x	x
Austria	x	x	x	x	x	x	x	x
Belgium-Luxembourg	x	x	x	x	x	x	x	x
Bulgaria	x	x	x	x	x	x	x	x
Czechoslovakia	x	x	x	x	x	x	x	x
Denmark	x	x	x	x	x	x	x	x
Faeroe Islands			x		x			
Finland	x	x	x	x	x	x	x	x
France	x	x	x	x	x	x	x	x
Germany, Democratic Republic of	x	x	x	x	x	x	x	x
Germany, Federal Republic of	x	x	x	x	x	x	x	x
Greece	x	x	x	x	x	x	x	x
Hungary	x	x	x	x	x	x	x	x
Iceland		x	x		x	x		
Ireland	x	x	x	x	x	x	x	x
Italy	x	x	x	x	x	x	x	x
Liechtenstein			x					
Malta	x	x	x		x	x	x	x
Netherlands	x	x	x	x	x	x	x	x
Norway	x	x	x	x	x	x	x	x
Poland	x	x	x	x	x	x	x	x
Portugal	x	x	x	x	x	x	x	x
Romania	x	x	x	x	x	x	x	x
Spain	x	x	x	x	x	x	x	x
Sweden	x	x	x	x	x	x	x	x

Table 20—Continued

Region/Country	Production and Area Data				Cereal Trade Data			
	Cereals		Noncereals		Imports		Exports	
	FAO	USDA	FAO	USDA ^a	FAO	USDA	FAO	USDA
Switzerland	x	x	x	x	x	x	x	x
United Kingdom	x	x	x	x	x	x	x	x
Yugoslavia	x	x	x	x	x	x	x	x
Total	25	26	28	23	27	26	24	25
Oceania								
American Samoa			x		x			
Australia	x	x	x	x	x	x	x	x
Cook Islands			x		x			
Fiji	x	x	x		x	x	x	
French Polynesia			x		x			
Gilbert Islands			x		x			
Guam	x		x		x		x	
Nauru					x			
New Caledonia	x		x		x			
New Hebrides	x		x		x		x	
New Zealand	x	x	x	x	x	x	x	x
Niue Island			x		x	x		
Norfolk Island								
Papua New Guinea	x		x		x	x	x	
Pacific Islands	x		x		x			
Samoa	x		x		x		x	
Solomon Islands	x		x		x		x	
Tokelau			x		x			
Tonga			x		x			
Wallis and Futuna Islands			x					
Total	10	3	18	2	18	4	9	2
U.S.S.R.	x	x	x	x	x	x	x	x
World totals	161	124	180	92	188	126	145	110

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Note: (x) denotes the countries with reports on the indicated information in the data system.

^a Production data only.

Table 21 — Relative distribution of production among major staple food crops by economic group and geographical region, 1970

Country Group	Wheat	Rice	Maize	Barley	Oats	Millet	Sorghum	Rye	Potatoes	Sweet Potatoes	Cassava	Yams	Pulses	Groundnuts
	(percent)													
Economic group	26.3	3.6	34.9	14.4	8.3	0.0	4.7	1.6	4.4	0.2	...	0.0	1.0	0.5
Developed market economies	16.8	27.4	17.9	4.1	0.3	6.0	6.7	0.2	1.1	1.1	7.3	1.1	6.2	3.7
Developing market economies	29.6	15.8	10.7	13.0	4.3	4.8	0.0	4.1	8.1	5.3	0.0	...	3.6	0.6
Centrally planned economies														
Geographical region														
Africa	9.7	5.6	23.0	5.3	0.2	12.1	11.2	0.0	0.7	1.4	13.7	5.1	5.7	6.3
North/Central America	20.3	1.4	50.0	7.6	7.9	...	8.7	0.6	1.5	0.1	0.0	0.0	1.1	0.7
South America	13.4	10.3	41.0	1.5	0.9	0.2	6.5	0.3	2.8	1.2	15.7	0.0	4.3	1.9
Asia	16.7	38.9	10.4	6.4	0.6	7.5	2.0	0.1	2.1	6.3	1.4	0.0	5.2	2.3
Europe	31.9	0.5	17.7	21.2	8.0	0.0	0.2	5.9	13.0	0.0	...	...	1.6	0.0
Oceania	58.6	1.2	1.8	18.1	12.0	0.2	3.9	0.2	1.5	0.9	0.4	0.3	0.7	0.3
U.S.S.R.	48.8	0.4	4.6	18.7	6.9	1.0	0.0	6.3	9.5	...	...	...	3.7	...
World	24.8	15.6	20.3	10.8	4.3	3.7	3.5	2.1	4.9	2.5	2.2	0.3	3.6	1.5

Source: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975, Rome, 1976.

Notes: Totals may not equal 100 due to rounding. Based on FAO data. For purposes of this aggregation, rice is in milled form and the noncereal food crops are converted to cereal equivalent on the basis of their calorie content relative to wheat.

Table 22—Relative distribution of world cereal imports and exports by economic group and geographical region, 1970

Country Group	Imports						Exports					
	Wheat	Rice	Maize	Barley	Rye	Oats	Wheat	Rice	Maize	Barley	Rye	Oats
	(percent)											
Economic group												
Developed market economies	34.9	1.7	45.8	14.3	0.6	2.6	55.8	4.0	25.9	12.2	0.5	1.7
Developing market economies	64.4	22.2	10.3	2.7	...	0.4	16.1	23.4	55.2	3.7	0.2	1.5
Centrally planned economies	65.7	10.5	9.4	12.6	1.4	0.3	56.6	21.8	11.6	7.2	2.5	0.3
Geographical region												
Africa	66.3	16.2	13.3	4.0	...	0.1	2.1	29.6	58.6	9.3	...	0.3
North/Central America	27.2	12.6	49.3	8.0	0.9	2.1	57.4	3.6	29.4	8.4	0.3	0.9
South America	88.3	0.9	6.9	2.9	...	1.0	23.6	3.9	68.8	1.1	0.3	2.3
Asia	56.6	17.5	21.1	4.2	0.2	0.4	2.0	71.3	23.6	3.1	...	...
Europe	37.8	1.8	38.5	18.1	1.0	2.7	41.6	2.8	25.7	25.2	1.5	3.2
Oceania	14.7	72.2	0.9	12.2	...	...	87.6	1.6	...	8.0	...	2.8
U.S.S.R.	74.6	13.1	12.3	...	...	...	83.0	0.1	5.2	8.6	3.0	0.2
World	49.0	9.1	29.1	10.7	0.6	1.6	49.6	8.8	29.1	10.4	0.6	1.5

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976.
 Note: Totals may not equal 100 due to rounding.

Table 23—FAO and USDA reference periods for the production estimates of major staple food crops and for the trade data on cereals

Crop	FAO	USDA
Wheat, maize, and coarse grains	<p>The production year for any particular crop refers to the calendar year in which the entire harvest or the bulk of it takes place.</p>	Refers to the 12-month period beginning July 1 of the indicated world production year. Thus 1979 production data include all harvests occurring from July to June 1979/80 except for small grain crops from the early-harvesting Northern Hemisphere areas which are moved forward; i.e., the May 1979 harvests in such areas as India, North Africa, and the southern United States are actually included in the 1979/80 accounting period.
Rice		Output for, say, the 1977 world production year includes crops grown and harvested in late 1977 and early 1978 in the Northern Hemisphere, plus crops grown and harvested in early 1978 in the Southern Hemisphere.
Potatoes		The production year refers to the year of harvest in the Northern Hemisphere and includes the harvest immediately following in the Southern Hemisphere.
Peanuts		The Southern Hemisphere peanut crop, which is harvested from April to June, is combined with that of the Northern Hemisphere, which is harvested from September through December of the same year.

Sources: Food and Agriculture Organization of the United Nations, 1976 *FAO Production Yearbook*, vol. 30 (Rome: FAO, 1977); U.S. Department of Agriculture, Foreign Agricultural Service, *Foreign Agriculture Circular Grains*, FG-5, February 1980 and FG-20, December 1979; and U.S. Department of Agriculture, *Agricultural Statistics, 1977* (Washington, D.C.: USDA, 1977).

Table 24—Number of countries using each marketing year period for USDA trade data on cereals, 1965, 1970, and 1975

Marketing Year Period	Wheat			Rice			Maize			Other Coarse Grains		
	1965	1970	1975	1965	1970	1975	1965	1970	1975	1965	1970	1975
January–December	3	3	9	89	83	82	3	3	8	4	4	10
April–March	1	1	4	3	5	5	4	4	6	1	1	3
May–April	0	0	0	0	0	0	1	1	1	2	2	1
June–May	1	1	2	0	0	0	0	0	0	1	1	2
July–June	103	97	88	7	7	11	88	80	75	98	91	89
August–July	1	7	8	2	3	2	1	7	8	1	7	8
September–August	0	0	1	1	5	3	1	1	2	0	0	1
October–September	0	0	2	1	1	2	1	2	5	0	0	2
November–October	0	0	1	3	3	3	1	2	2	1	2	1
December–November	4	4	3	0	0	0	0	0	0	2	2	2
Total	113	113	118	106	107	108	100	100	107	110	110	119

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, *Foreign Agriculture Circular: Grains*, FG-9, May 1976, FG-4, March 1978, FG-20, November 1978, and FG-20, December 1979; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 25—Cereal production: totals of identical FAO and USDA estimates by economic group and geographical region, 1970

Country Group	Wheat	Rice	Maize	Barley	Oats	Millet	Sorghum	Rye
(1,000 metric tons)								
Economic group								
Developed market economies	88,083 (0.849)	5,307 (0.240)	116,772 (0.840)	49,378 (0.845)	30,495 (0.936)	16 (0.320)	763 (0.041)	5,948 (0.969)
Developing market economies	42,092 (0.653)	23,221 (0.143)	24,267 (0.363)	9,202 (0.583)	978 (0.898)	13,591 (0.635)	10,210 (0.421)	192 (0.228)
Centrally planned economies	147,040 (0.994)	12,575 (0.104)	18,878 (0.359)	46,760 (0.711)	18,961 (0.880)	2,102 (0.087)	0 (. . .)	20,376 (0.991)
Geographical region								
Africa	6,348 (0.796)	3,408 (0.486)	3,433 (0.200)	2,419 (0.553)	175 (1)	1,226 (0.146)	1,312 (0.151)	0 (. . .)
North/Central America	45,809 (0.944)	4,683 (0.932)	108,814 (0.914)	18,186 (0.999)	18,801 (1)	0 (. . .)	254 (0.012)	1,416 (1)
South America	5,145 (0.585)	958 (0.092)	2,473 (0.092)	771 (0.788)	466 (0.808)	0 (. . .)	205 (0.048)	192 (0.901)
Asia	63,597 (0.815)	29,092 (0.104)	17,691 (0.380)	6,391 (0.226)	476 (0.160)	12,376 (0.355)	9,456 (0.986)	0 (. . .)
Europe	48,692 (0.727)	1,683 (0.946)	18,078 (0.486)	37,050 (0.831)	14,700 (0.874)	7 (0.210)	205 (0.537)	11,908 (0.966)
Oceania	7,890 (0.964)	0 (. . .)	0 (. . .)	2,351 (0.931)	1,613 (0.965)	0 (. . .)	547 (1)	22 (1)
U.S.S.R.	99,734 (1)	1,279 (1)	9,428 (1)	38,172 (1)	14,203 (1)	2,100 (1)	0 (. . .)	12,972 (1)
World total	277,215 (0.871)	30,887 (0.100)	159,917 (0.621)	105,340 (0.760)	50,434 (0.911)	15,709 (0.345)	10,973 (0.256)	26,570 (0.961)

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Notes: Figures in parentheses are ratios of the totals of identical estimates to the FAO estimates of total production for countries reported in common in 1970.

Table 26—FAO and USDA estimates of production and area of cereals for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975

Country Group	Year	Number of Countries		Production		Area		Number of Countries	Production		Area	
		FAO	USDA	FAO	USDA	FAO	USDA		FAO	USDA		
Wheat												
Economic group				(1,000 metric tons)		(1,000 hectares)			Rice (Paddy)		(1,000 hectares)	
Developed market economies	1965	24	111,798	111,818	61,100	61,141	9	20,962	20,376	4,287	4,285	
	1970	24	103,739	103,605	49,822	50,437	9	22,138	21,555	4,022	4,019	
	1975	24	142,653	142,148	65,942	65,214	9	24,993	24,381	4,280	4,283	
Developing market economies	1965	38	50,779	45,728	51,232	50,367	63	127,432	128,330	81,681	81,178	
	1970	40	64,437	61,360	57,343	56,581	63	162,524	160,463	87,280	87,223	
	1975	41	80,967	75,708	62,384	61,796	63	187,262	186,911	94,328	84,769	
Centrally planned economies	1965	9	104,274	103,151	105,103	104,007	7	105,081	105,577	39,306	37,781	
	1970	9	149,990	149,984	101,848	99,250	7	120,712	127,687	41,836	39,204	
	1975	9	131,132	131,305	100,274	97,974	7	131,982	145,486	42,316	45,699	
Geographical region												
Africa	1965	13	6,566	6,108	8,087	8,186	20	5,440	5,669	3,148	3,195	
	1970	14	7,974	7,911	8,663	9,275	20	7,014	7,127	3,783	3,817	
	1975	15	9,617	8,277	8,372	8,450	20	7,577	7,904	4,310	4,604	
North/Central America	1965	4	55,165	55,605	32,310	32,383	13	4,481	4,502	1,260	1,306	
	1970	5	48,521	47,987	23,601	23,449	13	5,025	5,323	1,390	1,424	
	1975	5	78,024	77,770	38,487	38,414	13	7,759	8,049	1,957	2,011	
South America	1965	10	8,785	8,587	7,056	6,626	12	9,740	7,801	5,589	4,966	
	1970	10	8,799	8,706	7,047	7,030	12	10,396	8,019	5,960	5,714	
	1975	10	12,167	11,714	9,703	1,865	12	11,669	12,397	6,456	7,152	
Asia	1965	17	61,872	56,956	64,214	62,089	23	232,148	218,659	114,709	113,205	
	1970	17	78,037	75,514	70,564	67,348	23	279,366	285,822	121,224	118,711	
	1975	17	99,618	95,938	75,146	72,344	23	312,957	323,007	127,253	127,556	
Europe	1965	24	67,460	67,341	23,911	28,862	9	1,323	1,324	326	329	
	1970	24	67,011	66,836	27,535	27,534	9	1,780	1,771	400	392	
	1975	24	77,099	76,985	25,506	25,301	9	1,909	1,885	372	370	
Oceania	1965	2	7,317	7,359	7,162	7,169	1	153	182	25	26	
	1970	2	8,177	8,216	6,586	6,575	1	241	299	40	38	
	1975	2	12,183	12,409	8,611	8,655	1	388	417	76	75	
U.S.S.R.	1965	1	59,686	59,686	70,205	70,205	1	583	583	217	217	
	1970	1	99,734	99,734	65,230	65,230	1	1,279	1,279	350	350	
	1975	1	66,224	66,224	61,985	61,985	1	2,009	2,009	500	500	

	Maize		Barley	
	(1,000 metric tons)	(1,000 hectares)	(1,000 metric tons)	(1,000 hectares)
Economic group				
Developed market economies				
1965	125,347	32,839	46,607	18,392
1970	137,970	35,456	57,086	23,565
1975	187,746	40,110	67,376	25,577
Developing market economies				
1965	53,418	45,023	15,569	15,963
1970	66,852	49,915	15,703	15,543
1975	71,042	50,815	17,866	15,611
Centrally planned economies				
1965	45,321	18,689	43,684	34,993
1970	52,652	19,373	65,771	37,847
1975	61,378	19,656	70,603	50,670
Geographical region				
Africa				
1965	14,098	13,134	3,619	4,902
1970	17,134	14,931	4,374	5,227
1975	22,731	16,762	3,863	4,126
North/Central America				
1965	116,590	32,353	13,505	6,413
1970	119,114	33,028	18,188	8,164
1975	161,575	36,382	18,320	8,293
South America				
1965	20,150	14,469	946	953
1970	26,967	16,586	978	947
1975	27,510	16,048	1,165	1,031
Asia				
1965	38,859	22,472	28,643	22,693
1970	47,177	25,157	28,222	22,629
1975	52,769	26,528	33,693	23,655
Europe				
1965	26,158	11,040	37,788	13,685
1970	37,192	11,614	44,595	16,523
1975	47,768	12,136	59,474	19,488
Oceania				
1965	199	90	1,055	965
1970	251	88	2,524	2,056
1975	338	76	3,512	2,447
U.S.S.R.				
1965	8,030	3,177	20,304	19,737
1970	9,428	3,353	38,172	21,297
1975	7,328	2,652	35,808	32,548

Table 26—Continued

Country Group	Year	Number of Countries		Production		Area		Number of Countries		Production		Area	
		FAO	USDA	FAO	USDA	FAO	USDA	FAO	USDA	FAO	USDA	FAO	USDA
Oats													
(1,000 metric tons)													
(1,000 hectares)													
Economic group													
Developed market economies	1965	23	32,917	32,912	18,117	18,485	19	6,710	6,709	3,783	3,786		
	1970	23	32,600	32,563	17,169	17,436	19	6,176	6,173	3,122	3,073		
	1975	23	27,568	27,331	13,721	13,890	20	5,011	4,948	2,311	2,342		
Developing market economies	1965	9	1,316	1,217	1,176	1,140	5	1,047	975	1,093	1,093		
	1970	9	1,089	1,089	947	926	5	843	894	1,029	1,047		
	1975	9	1,257	1,168	983	970	5	1,052	1,046	896	891		
Centrally planned economies	1965	9	12,268	11,634	11,094	10,258	8	27,643	27,634	22,121	22,113		
	1970	9	21,537	20,417	14,237	13,092	8	20,557	20,575	14,559	14,558		
	1975	9	20,115	18,552	16,848	15,516	8	17,652	17,654	11,746	11,750		
Rye													
(1,000 metric tons)													
(1,000 hectares)													
Geographical region													
Africa	1965	3	144	132	404	635	0	...	...	...	...
	1970	3	175	165	346	664	0	...	...	...	...
	1975	3	212	164	327	663	1	4	4	20	100		
North/Central America	1965	3	19,749	19,688	10,972	10,917	2	1,299	1,299	919	919		
	1970	3	18,801	18,773	10,382	10,364	2	1,416	1,416	913	914		
	1975	3	14,100	13,870	7,977	7,802	2	977	927	649	603		
South America	1965	5	654	708	624	644	4	272	275	363	363		
	1970	5	577	578	487	490	4	213	214	397	397		
	1975	5	671	651	562	539	4	302	296	331	326		
Asia	1965	3	2,577	1,864	2,662	1,828	1	775	700	730	730		
	1970	3	2,976	1,858	2,947	1,800	1	630	680	650	650		
	1975	3	3,418	1,967	3,073	1,737	1	750	750	565	565		
Europe	1965	24	16,047	16,031	7,690	7,690	23	16,811	16,805	8,934	8,919		
	1970	24	16,813	16,810	7,198	7,482	23	12,323	12,338	6,707	6,657		
	1975	24	16,748	16,742	6,497	6,527	23	12,607	12,596	5,368	5,369		
Oceania	1965	2	1,147	1,146	1,541	1,541	1	11	11	26	26		
	1970	2	1,671	1,673	1,573	1,575	1	22	22	41	41		
	1975	2	1,206	1,185	1,009	1,000	1	11	11	20	20		
U.S.S.R.	1965	1	6,186	6,186	6,628	6,628	1	16,228	16,228	16,030	16,030		
	1970	1	14,203	14,203	9,250	9,250	1	12,972	12,972	10,020	10,020		
	1975	1	12,495	12,495	12,107	12,107	1	9,064	9,064	8,010	8,010		

Economic group	Millet			Sorghum							
	(1,000 metric tons)	(1,000 hectares)	(1,000 metric tons)	(1,000 metric tons)	(1,000 hectares)	(1,000 hectares)					
Developed market economies	1965	5	62	61	51	7	17,934	17,817	5,861	5,993	
	1970	5	50	45	58	58	7	18,682	19,598	6,319	6,340
	1975	4	29	30	27	25	7	21,108	21,032	7,254	7,135
Developing market economies	1965	32	14,903	16,123	33,030	34,301	27	17,423	19,266	30,561	30,886
	1970	32	21,297	22,597	35,869	35,384	28	24,256	24,515	32,879	33,176
	1975	32	20,650	20,375	35,057	34,847	27	27,573	38,058	32,939	32,238
Centrally planned economies	1965	4	21,242	12,506	32,286	14,217	1	7	10,768	4	9,410
	1970	4	24,135	15,268	32,020	13,616	1	8	15,398	4	8,860
	1975	4	25,140	12,572	32,825	12,793	1	19	14,542	7	7,322
Geographical region Africa	1965	22	7,406	8,556	12,353	13,552	13	7,770	8,421	11,140	11,532
	1970	22	8,375	9,553	14,330	13,864	13	8,716	8,983	11,792	11,639
	1975	22	9,678	9,023	14,110	14,712	13	9,100	8,728	12,689	11,890
North/Central America	1965	0	...	...	...	...	7	18,090	18,087	5,842	5,864
	1970	0	...	...	...	...	8	20,436	20,016	6,738	6,702
	1975	0	...	...	...	...	7	22,555	22,913	7,712	7,754
South America	1965	1	155	186	115	163	5	1,153	2,224	886	910
	1970	1	125	183	132	151	5	4,282	4,882	2,227	2,352
	1975	1	194	294	75	231	5	6,076	6,224	2,444	2,321
Asia	1965	11	26,382	17,638	49,590	31,492	6	8,009	18,770	18,341	27,479
	1970	11	24,866	25,915	50,718	32,221	6	8,577	23,948	17,994	26,038
	1975	11	34,038	22,479	49,880	39,898	6	10,069	24,664	16,721	24,103
Europe	1965	5	37	83	32	84	3	147	154	56	59
	1970	5	33	85	27	88	3	382	384	106	107
	1975	4	12	33	49	49	3	467	469	123	123
Oceania	1965	1	22	22	25	25	1	195	195	140	175
	1970	1	34	29	49	49	1	547	1,298	238	552
	1975	1	22	23	22	21	1	901	1,124	511	504
U.S.S.R.	1965	1	2,205	2,205	3,253	3,253	0	...	...	...	...
	1970	1	2,102	2,102	2,691	2,691	0	...	...	...	...
	1975	1	1,125	1,125	2,774	2,774	0	...	...	...	...

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 27—Cereal production and area: world aggregates of FAO and USDA estimates for the commonly reported countries, 1965, 1970, and 1975

Cereals	Year	Number of Countries	Production		Area	
			FAO	USDA	FAO	USDA
			(1,000 metric tons)		(1,000 hectares)	
Wheat	1965	71	226,851	261,697	217,945	215,515
	1970	73	318,166	314,949	209,013	206,268
	1975	74	354,932	349,431	227,610	224,984
Rice (paddy)	1965	79	253,475	254,283	125,274	123,244
	1970	79	205,374	309,705	133,138	130,446
	1975	79	344,237	356,778	140,924	144,951
Maize	1965	82	224,086	222,673	96,551	99,376
	1970	83	257,474	260,316	194,744	107,823
	1975	86	320,066	322,609	110,581	116,739
Barley	1965	61	105,860	94,639	69,551	62,652
	1970	61	138,560	125,810	76,955	68,721
	1975	61	155,845	140,149	91,858	82,894
Oats	1965	41	46,494	45,763	30,387	29,883
	1970	41	55,216	54,069	32,353	31,454
	1975	41	48,940	47,051	31,552	30,376
Millet	1965	41	36,207	28,690	65,368	48,569
	1970	41	45,482	37,910	67,947	49,058
	1975	40	45,819	32,977	66,911	47,665
Sorghum	1965	35	35,364	47,861	36,426	46,019
	1970	36	42,946	59,511	39,202	48,376
	1975	35	48,700	63,632	40,200	46,695
Rye	1965	32	35,400	35,318	27,002	26,992
	1970	32	27,576	27,642	18,710	18,678
	1975	33	23,715	23,648	14,953	14,983

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 28—Cereal production and area: world aggregates of FAO and USDA estimates for all reported countries, 1965, 1970, and 1975

Cereals	Year	Number of Reported Countries		Production		Area	
		FAO	USDA	FAO	USDA	FAO	USDA
				(1,000 metric tons)		(1,000 hectares)	
Wheat	1965	94	71	267,597	261,697	218,709	215,515
	1970	97	73	318,948	314,949	209,738	206,268
	1975	97	75	355,824	349,433	228,356	224,987
Rice (paddy)	1965	106	80	256,808	254,363	217,277	123,304
	1970	108	80	308,681	309,740	134,376	130,476
	1975	108	80	348,570	356,813	142,085	144,989
Maize	1965	135	82	277,465	222,673	99,440	99,376
	1970	141	83	261,178	260,316	107,291	107,823
	1975	143	87	324,670	322,729	113,858	116,859
Barley	1965	76	61	106,302	94,639	69,680	62,652
	1970	78	61	139,057	125,810	77,183	68,721
	1975	78	61	156,691	140,149	92,100	82,894
Oats	1965	54	41	46,615	45,763	30,580	29,883
	1970	54	41	55,346	54,069	32,476	31,456
	1975	54	42	49,010	47,053	31,723	30,378
Millet	1965	66	42	38,597	28,755	67,893	48,764
	1970	67	42	47,813	37,982	70,198	49,273
	1975	67	42	46,580	33,057	69,280	47,915
Sorghum	1965	77	36	37,637	47,868	39,314	46,231
	1970	77	38	44,841	60,285	41,992	48,586
	1975	78	39	52,097	64,425	43,768	46,905
Rye	1965	39	32	35,451	35,318	27,079	26,993
	1970	40	32	27,627	27,642	18,739	18,679
	1975	40	33	23,739	23,648	14,979	14,983

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 29—Cereals: average production growth rates in developing-market-economy countries calculated from FAO and USDA data, 1961 to 1976

Country	Total Cereals		Wheat		Rice		Maize	
	FAO	USDA	FAO	USDA	FAO	USDA	FAO	USDA
	(percent)							
Asia								
Bangladesh	1.39	1.54	10.71	12.14	1.35	1.44	...	...
Burma	1.14	1.27	2.23	5.83	1.14	1.26	2.44	1.83
India	2.69	2.90	7.49	7.48	2.04	2.07	2.33	2.90
Indonesia	4.72	3.02	...	...	5.40	3.80	1.03	-0.18
Korea, Republic of	2.07	1.97	-4.00	-3.05	2.19	1.97	9.36	9.44
Nepal	1.16	1.05	7.45	6.23	1.13	1.29	-0.47	-0.73
Pakistan	5.45	5.39	5.84	5.97	6.79	6.82	3.57	3.63
Philippines	3.93	3.99	...	...	3.33	3.02	5.54	5.65
Thailand	3.02	3.67	...	...	2.10	2.35	10.50	10.51
North Africa/Middle East								
Afghanistan	1.32	1.04	1.69	1.55	1.99	1.78	0.53	-0.24
Algeria	-0.50	2.79	-0.66	0.46	-10.55	-10.70	2.05	-0.28
Egypt	2.44	2.44	2.06	2.05	3.18	3.22	2.76	2.92
Iran	4.16	2.72	4.57	3.61	4.34	2.62	2.25	8.21
Iraq	0.48	0.18	3.49	2.80	2.76	1.09	19.35	17.79
Lebanon	-2.75	-0.31	-1.10	-1.72	...	...	-23.44	-21.42
Morocco	4.13	5.11	3.90	5.49	-2.68	0.49	1.85	3.74
Saudi Arabia	2.23	4.82	-1.13	0.65	-0.41	2.29	...	...
Turkey	2.19	1.92	3.42	2.72	1.00	0.95	1.50	1.18
Sub-Saharan Africa								
Angola	0.12	1.92	-5.69	-2.51	0.88	-0.80	0.06	2.86
Ethiopia	0.37	5.74	1.34	-1.06	...	...	2.68	0.94
Ghana	6.60	5.33	...	...	7.30	6.85	7.33	6.21
Ivory Coast	3.89	4.62	...	...	5.62	5.67	0.56	4.63
Kenya	2.93	1.69	3.51	3.05	...	...	3.19	1.95
Madagascar	1.41	2.04	...	...	1.52	2.32	0.05	-0.49
Mali	-2.16	-2.38	...	...	-4.08	-3.25	-0.02	-1.33
Mozambique	0.57	-0.79	-2.78	-5.23	1.33	-2.62	0.15	-0.46
Nigeria	0.52	-0.03	...	...	5.13	3.59	1.08	2.38
Senegal	1.22	1.44	...	...	-0.58	-0.68	2.18	1.91
Tanzania	2.80	1.87	12.36	9.31	4.09	7.87	2.69	3.02
Zaire	6.42	5.57	...	...	11.15	12.08	5.22	4.05
Latin America								
Argentina	3.31	2.84	-0.21	-0.43	5.50	4.59	4.92	3.49
Bolivia	2.14	1.79	2.52	2.70	6.79	7.23	1.29	0.67
Brazil	3.97	4.22	11.46	20.64	1.72	1.23	4.29	4.11
Chile	0.62	-0.61	-0.64	-2.30	-3.60	-1.90	3.98	2.69
Colombia	4.36	3.42	-4.29	-8.00	7.54	7.69	-0.02	-0.73
Costa Rica	2.25	2.50	...	...	4.08	5.69	-1.14	-1.19
Cuba	4.70	0.96	...	...	9.55	6.59	-1.30	-19.19
Dominican Republic	4.15	4.68	...	...	4.69	5.41	0.94	0.60
Ecuador	2.45	1.35	-2.62	-1.70	3.37	2.79	4.96	2.14
El Salvador	5.08	5.71	...	...	3.61	5.20	5.49	6.34
Guatemala	2.94	2.99	3.89	1.25	6.53	12.35	2.61	2.52
Haiti	1.61	-0.14	...	...	4.15	2.81	0.81	-0.82
Honduras	0.14	0.89	...	...	4.06	1.79	0.29	1.33
Jamaica	-1.56	1.88	...	...	-22.06	-7.08	4.77	5.04
Mexico	4.16	4.50	3.54	3.24	3.93	4.35	1.94	2.81
Nicaragua	3.76	3.91	...	...	6.94	7.04	3.33	3.95
Panama	0.87	0.38	...	...	2.78	2.84	-3.12	-2.95
Paraguay	7.19	6.51	14.49	12.32	8.83	9.52	6.38	5.76
Trinidad and Tobago	3.44	2.35	...	...	3.46	2.12	3.16	2.86
Uruguay	2.15	2.77	-0.78	-0.71	8.07	8.37	1.84	3.98
Venezuela	3.70	3.08	-5.38	-0.25	7.40	7.06	2.00	1.76

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Note: Data are presented only for the developing-market-economy countries for which matching FAO and USDA estimates are available for two of the three cereal commodities, wheat, rice, and maize.

Table 30—FAO and USDA estimates of production of noncereal crops for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975

Country Group	Year	Number of Countries	Production		Number of Countries	Production	
			FAO	USDA		FAO	USDA
			Potatoes			Sweet Potatoes	
			(1,000 metric tons)			(1,000 metric tons)	
Economic group							
Developed market economies	1965	24	83,716	83,698	3	5,787	5,693
	1970	24	85,965	85,049	3	3,323	3,215
	1975	24	70,431	69,000	3	2,076	2,072
Developing market economies	1965	38	16,233	16,359	27	12,662	13,124
	1970	38	18,620	18,231	27	13,782	14,167
	1975	38	21,686	21,674	27	13,247	13,721
Centrally planned economies	1965	7	152,118	152,439	...	...	...
	1970	7	169,182	169,182	...	...	...
	1975	7	151,034	150,672	...	...	...
Geographical region							
Africa	1965	16	2,077	2,056	17	2,822	3,129
	1970	16	2,701	2,621	17	3,421	3,713
	1975	16	3,478	3,593	17	3,556	3,616
North/Central America	1965	7	15,691	15,083	2	782	779
	1970	7	17,683	17,560	2	695	695
	1975	7	18,053	17,438	2	707	703
South America	1965	9	7,995	8,044	4	2,286	2,286
	1970	9	9,050	8,790	4	2,849	2,884
	1975	9	8,352	8,186	4	2,370	2,824
Asia	1965	11	10,355	10,333	7	12,559	12,623
	1970	11	10,615	10,615	7	10,140	10,090
	1975	11	13,212	13,308	7	8,690	8,650
Europe	1965	23	126,439	126,821	...	...	...
	1970	23	135,923	135,077	...	...	...
	1975	23	110,397	109,146	...	...	...
Oceania	1965	2	834	763	...	...	...
	1970	2	1,012	1,015	...	...	...
	1975	2	956	972	...	...	...
U.S.S.R.	1965	1	88,676	88,676	...	...	...
	1970	1	96,783	96,783	...	...	...
	1975	1	88,703	88,903	...	...	...
			Cassava			Yams	
			(1,000 metric tons)			(1,000 metric tons)	
Economic group							
Developing market economies	1965	37	76,717	74,174	7	15,349	16,184
	1970	37	86,299	87,517	7	16,295	18,770
	1975	37	93,378	93,680	7	18,917	22,539
Geographical region							
Africa	1965	23	30,255	27,713	7	15,349	16,184
	1970	23	32,880	33,986	7	16,295	18,770
	1975	23	36,526	36,710	7	18,917	22,539
North/Central America	1965	3	164	169	...	...	...
	1970	3	185	181	...	...	...
	1975	3	182	181	...	...	...

Table 30—Continued

Country Group	Year	Number of Countries	Production		Number of Countries	Production	
			FAO	USDA		FAO	USDA
South America	1965	6	28,205	28,676	...	...	...
	1970	6	33,330	33,382	...	...	...
	1975	6	30,204	39,862	...	...	...
Asia	1965	5	18,093	18,125	...	...	...
	1970	5	19,904	19,968	...	...	...
	1975	5	26,466	26,927	...	...	...
			Pulses (1,000 metric tons)			Groundnuts (1,000 metric tons)	
Economic group							
Developed market economies	1965	3	605	526	5	1,442	1,441
	1970	3	580	509	5	1,855	1,842
	1975	3	458	374	5	2,142	2,124
Developing market economies	1965	11	1,414	1,344	41	11,403	11,180
	1970	11	1,743	1,534	41	12,937	11,998
	1975	11	1,934	1,709	41	13,755	12,815
Centrally planned economies	1965	7	7,835	7,856	...	...	...
	1970	7	8,468	8,533	...	...	...
	1975	7	6,088	6,009	...	...	...
Geographical region							
Africa	1965	6	968	833	29	5,140	4,955
	1970	6	1,282	1,046	29	4,612	3,719
	1975	6	1,226	1,045	29	4,747	4,104
North/Central America	1965	1	2	5	3	1,209	1,203
	1970	1	5	5	3	1,516	1,502
	1975	1	6	5	3	1,911	1,878
South America	1965	...	...	...	4	1,202	1,203
	1970	...	...	...	4	1,181	1,185
	1975	...	...	...	4	834	731
Asia	1965	5	721	735	9	5,283	5,249
	1970	5	707	737	9	7,440	7,391
	1975	5	868	825	9	8,373	8,194
Europe	1965	7	1,448	1,349	...	...	...
	1970	7	1,138	1,119	...	...	...
	1975	7	1,004	866	...	...	...
Oceania	1965	1	24	65	1	11	11
	1970	1	50	50	1	43	43
	1975	1	56	30	1	43	32
U.S.S.R.	1965	1	6,689	6,689	...	...	...
	1970	1	7,609	7,619	...	...	...
	1975	1	5,320	5,321	...	...	...

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 31—Noncereal production: world aggregates of FAO and USDA estimates for the commonly reported countries, 1965, 1970, and 1975

Crop	Year	Number of Countries	Production	
			FAO	USDA
			(1,000 metric tons)	
Potatoes	1965	69	252,067	252,496
	1970	69	273,767	272,462
	1975	69	243,151	241,346
Sweet potatoes	1965	30	18,449	18,817
	1970	30	17,105	17,382
	1975	30	15,323	15,793
Cassava	1965	37	76,717	74,174
	1970	37	86,299	87,517
	1975	37	93,378	93,680
Yams	1965	7	15,349	16,184
	1970	7	16,295	18,770
	1975	7	18,917	22,539
Pulses	1965	21	9,852	9,726
	1970	21	10,791	10,576
	1975	21	8,480	8,092
Groundnuts	1965	46	12,845	12,621
	1970	46	14,792	13,840
	1975	46	14,897	14,939

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 32—Noncereal production: world aggregates of FAO and USDA estimates for all reported countries, 1965, 1970, and 1975

Crop	Year	Number of Reported Countries		Production	
		FAO	USDA	FAO	USDA
				(1,000 metric tons)	
Potatoes	1965	119	70	285,019	253,433
	1970	124	70	312,568	273,494
	1975	125	70	286,773	242,012
Sweet potatoes	1965	101	31	116,452	18,857
	1970	105	31	129,088	17,432
	1975	104	31	135,855	15,838
Cassava	1965	89	38	83,485	74,215
	1970	90	38	94,240	87,563
	1975	90	38	101,702	93,728
Yams	1965	34	7	16,300	16,184
	1970	34	7	17,415	18,770
	1975	34	7	20,198	22,539
Pulses	1965	139	21	43,250	9,726
	1970	146	21	46,030	10,576
	1975	147	21	44,793	8,092
Groundnuts	1965	91	46	16,033	12,621
	1970	91	46	18,278	13,840
	1975	91	46	19,598	14,939

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 33—Wheat imports and exports: aggregates of FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975

Country Group	Year	Imports			Exports		
		Number of Countries	FAO	USDA	Number of Countries	FAO	USDA
		(1,000 metric tons)			(1,000 metric tons)		
Economic group							
Developed market economies	1965	23	16,126	17,256	22	40,412	50,903
	1970	23	18,503	19,844	22	41,937	47,503
	1975	23	18,426	20,016	22	60,947	67,613
Developing market economies	1965	71	17,331	21,754	27	7,764	8,862
	1970	71	17,086	22,159	27	2,544	1,912
	1975	71	30,584	33,295	27	1,899	3,406
Centrally planned economies	1965	13	10,507	21,141	7	1,940	3,516
	1970	13	12,464	10,659	7	5,660	8,046
	1975	13	17,291	17,743	7	4,454	1,767
Geographical region							
Africa	1965	24	2,319	4,569	10	240	183
	1970	24	2,947	6,301	10	50	89
	1975	24	7,728	8,967	10	18	34
North/Central America	1965	13	583	1,693	4	30,268	38,705
	1970	13	917	1,618	4	28,232	31,513
	1975	13	1,356	1,789	4	42,036	43,692
South America	1965	11	3,258	3,454	2	6,742	8,007
	1970	11	3,614	3,831	2	2,302	1,625
	1975	11	4,537	6,421	2	1,826	3,234
Asia	1965	31	15,154	22,682	16	97	333
	1970	31	20,860	19,925	16	151	200
	1975	31	27,453	25,269	16	35	172
Europe	1965	25	16,109	19,010	21	5,392	7,772
	1970	25	17,853	20,401	21	7,603	7,315
	1975	25	15,911	18,361	21	12,844	17,283
Oceania	1965	2	166	194	2	5,715	5,650
	1970	2	15	102	2	6,952	9,516
	1975	2	171	147	2	7,860	7,871
U.S.S.R.	1965	1	6,375	8,549	1	1,663	2,631
	1970	1	1,846	484	1	4,852	7,203
	1975	1	9,146	10,100	1	2,681	500

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 34—Rice (milled) imports and exports; aggregates of FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975

Country Group	Year	Imports		Exports			
		Number of Countries	FAO	USDA	Number of Countries	FAO	USDA
			(1,000 metric tons)			(1,000 metric tons)	
Economic group							
Developed market economies	1965	19	1,076	1,715	15	1,517	1,885
	1970	19	901	816	15	2,975	3,167
	1975	19	1,021	960	15	2,933	2,877
Developing market economies	1965	62	5,281	4,713	43	4,591	4,569
	1970	62	5,741	5,509	43	3,673	3,321
	1975	62	4,911	5,126	43	2,313	2,303
Centrally planned economies	1965	10	546	462	6	1,387	1,286
	1970	10	524	519	6	2,161	1,264
	1975	10	604	870	6	3,096	1,784
Geographical region							
Africa	1965	21	525	681	11	375	363
	1970	21	647	590	11	736	747
	1975	21	579	616	11	111	114
North/Central America	1965	14	373	487	10	1,213	1,556
	1970	14	381	368	10	1,766	1,719
	1975	14	445	431	10	2,144	2,081
South America	1965	7	50	111	7	239	424
	1970	7	39	35	7	377	345
	1975	7	165	167	7	348	282
Asia	1965	27	4,932	4,569	20	5,314	5,055
	1970	27	4,949	4,716	20	5,287	4,069
	1975	27	4,064	4,522	20	4,941	3,686
Europe	1965	19	791	803	14	292	274
	1970	19	825	811	14	509	753
	1975	19	1,004	941	14	613	616
Oceania	1965	2	1	1	1	56	65
	1970	2	2	1	1	129	111
	1975	2	1	0	1	169	185
U.S.S.R.	1965	1	230	238	1	6	3
	1970	1	323	323	1	8	8
	1975	1	279	279	1	15	0

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 35—Maize imports and exports: aggregates of FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975

Country Group	Year	Imports		Exports			
		Number of Countries	FAO	USDA	Number of Countries	FAO	USDA
		(1,000 metric tons)		(1,000 metric tons)			
Economic group							
Developed market economies	1965	24	20,958	22,551	21	17,412	19,580
	1970	24	24,309	23,988	21	19,497	18,785
	1975	24	33,608	31,670	21	42,075	48,975
Developing market economies	1965	58	1,286	1,514	38	5,864	6,559
	1970	58	2,664	2,632	38	8,680	9,865
	1975	58	6,854	5,688	38	7,388	6,892
Centrally planned economies	1965	11	1,472	1,224	9	1,458	1,299
	1970	11	1,797	1,498	9	1,162	1,039
	1975	11	10,761	16,266	9	1,298	2,813
Geographical region							
Africa	1965	23	376	768	15	569	821
	1970	23	595	345	15	1,475	1,076
	1975	23	1,193	997	15	3,097	3,640
North/Central America	1965	13	808	949	9	16,604	18,390
	1970	13	1,648	1,295	9	14,452	13,441
	1975	13	4,238	2,845	9	33,517	39,910
South America	1965	9	68	89	7	3,371	3,559
	1970	9	282	455	7	6,727	7,420
	1975	9	545	538	7	5,047	3,963
Asia	1965	21	4,340	3,529	14	918	1,556
	1970	21	7,746	6,191	14	1,685	2,001
	1975	21	11,061	10,225	14	2,449	2,877
Europe	1965	24	18,125	19,929	20	2,715	2,885
	1970	24	18,195	19,560	20	4,701	5,448
	1975	24	28,636	26,717	20	6,554	8,279
Oceania	1965	2	0	2	2	1	0
	1970	2	1	1	2	1	22
	1975	2	1	2	2	1	11
U.S.S.R.	1965	1	0	23	1	558	227
	1970	1	304	271	1	299	281
	1975	1	5,548	12,300	1	95	0

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 36—Barley imports and exports: aggregates of FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975

Country Group	Year	Imports		Exports			
		Number of Countries	FAO	USDA	Number of Countries	FAO	USDA
				(1,000 metric tons)		(1,000 metric tons)	
Economic group							
Developed market economies	1965	22	5,671	6,274	20	5,082	5,888
	1970	22	7,568	8,694	20	9,164	10,170
	1975	22	7,568	7,915	20	11,443	12,483
Developing market economies	1965	24	483	373	17	796	529
	1970	24	617	588	17	572	253
	1975	24	1,433	716	17	33	201
Centrally planned economies	1965	9	1,931	2,037	7	2,144	2,140
	1970	9	2,405	1,096	7	724	1,134
	1975	9	3,452	4,842	7	902	221
Geographical region							
Africa	1965	6	89	46	5	31	47
	1970	6	198	184	5	235	118
	1975	6	230	166	5	5	27
North/Central America	1965	3	242	217	3	2,115	2,324
	1970	3	270	221	3	4,146	5,619
	1975	3	488	389	3	4,015	4,668
South America	1965	6	55	45	3	305	158
	1970	6	65	57	3	112	126
	1975	6	69	62	3	28	74
Asia	1965	13	932	845	10	466	331
	1970	13	1,506	1,306	10	255	9
	1975	13	2,945	2,293	10	0	118
Europe	1965	24	6,767	7,531	20	2,669	3,497
	1970	24	8,539	8,587	20	4,607	3,944
	1975	24	7,720	7,713	20	5,752	6,064
Oceania	1965	2	0	0	2	369	227
	1970	2	14	23	2	631	1,123
	1975	2	0	0	2	1,760	1,954
U.S.S.R.	1965	1	0	0	1	2,068	1,973
	1970	1	0	0	1	503	618
	1975	1	1,001	2,850	1	818	0

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 37—Oats imports and exports: aggregates of FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975

Country Group	Year	Imports		Exports			
		Number of Countries	FAO	USDA	Number of Countries	FAO	USDA
			(1,000 metric tons)			(1,000 metric tons)	
Economic group							
Developed market economies	1965	19	1,396	1,478	17	1,379	1,439
	1970	19	1,395	1,826	17	1,246	1,612
	1975	19	774	755	17	1,128	1,230
Developing market economies	1965	8	49	59	6	356	181
	1970	8	61	72	6	231	230
	1975	8	60	73	6	30	39
Centrally planned economies	1965	7	37	37	5	13	15
	1970	7	34	173	5	32	24
	1975	7	342	462	5	31	21
Geographical region							
Africa	1965	2	15	10	3	4	4
	1970	2	4	4	3	7	6
	1975	2	0	0	3	12	47
North/Central America	1965	4	79	82	3	671	801
	1970	4	54	43	3	463	411
	1975	4	26	37	3	416	449
South America	1965	5	16	17	3	353	177
	1970	5	29	53	3	225	224
	1975	5	39	51	3	29	39
Asia	1965	1	13	13	...	...	...
	1970	1	135	182	...	...	...
	1975	1	141	153	...	...	...
Europe	1965	21	1,358	1,452	17	343	390
	1970	21	1,267	1,789	17	587	659
	1975	21	760	649	17	454	399
Oceania	1965	...	...	...	1	366	251
	1970	...	...	...	1	219	556
	1975	...	...	...	1	267	356
U.S.S.R.	1965	1	0	0	1	12	12
	1970	1	0	0	1	9	10
	1975	1	211	400	1	9	0

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 38—Rye imports and exports: aggregates of FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965, 1970, and 1975

Country Group	Year	Imports			Exports		
		Number of Countries	FAO	USDA	Number of Countries	FAO	USDA
			(1,000 metric tons)			(1,000 metric tons)	
Economic group							
Developed market economies	1965	19	437	512	13	227	373
	1970	19	322	440	13	347	621
	1975	19	309	348	13	481	632
Developing market economies	1965	1	0	0	2	140	50
	1970	1	0	11	2	26	0
	1975	1	0	0	2	4	3
Centrally planned economies	1965	7	58	60	6	70	96
	1970	7	265	445	6	247	252
	1975	7	246	327	6	78	98
Geographical region							
Africa	1965	1	0	0	...	...	...
	1970	1	3	0	...	...	...
	1975	1	0	0	...	...	...
North/Central America	1965	2	29	45	2	175	300
	1970	2	30	16	2	149	290
	1975	2	18	23	2	274	330
South America	1965	1	0	0	1	96	50
	1970	1	0	1	1	76	0
	1975	1	0	0	1	4	3
Asia	1965	1	46	57	1	74	68
	1970	1	73	114	1	...	...
	1975	1	54	44	1	...	...
Europe	1965	20	420	470	15	85	132
	1970	20	481	765	15	272	412
	1975	20	481	608	15	284	400
Oceania	1965	1	0	0	1	0	0
	1970	1	0	0	1	0	0
	1975	1	2	4	1	0	0
U.S.S.R.	1965	1	0	0	1	37	37
	1970	1	0	0	1	171	171
	1975	1	0	0	1	0	0

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 39—Cereal imports and exports: world aggregates of FAO and USDA data for the commonly reported countries, 1965, 1970, and 1975

Country Group	Year	Imports			Exports		
		Number of Countries	FAO	USDA	Number of Countries	FAO	USDA
			(1,000 metric tons)			(1,000 metric tons)	
Wheat	1965	107	43,963	60,151	57	50,116	63,281
	1970	107	48,053	52,662	57	50,141	57,461
	1975	107	66,301	71,054	57	67,300	72,786
Rice (milled)	1965	91	6,903	6,890	64	7,495	7,740
	1970	91	7,166	6,844	64	8,810	7,752
	1975	91	6,536	6,956	64	8,341	6,964
Maize	1965	94	23,716	25,289	71	24,734	27,438
	1970	94	28,770	28,118	71	29,339	29,689
	1975	94	51,222	53,624	71	50,760	58,680
Barley	1965	56	8,086	8,684	48	8,022	8,557
	1970	56	10,593	10,378	48	10,460	11,557
	1975	56	12,454	13,473	48	12,378	12,905
Oats	1965	36	1,481	1,574	28	1,748	1,635
	1970	36	1,490	2,071	28	1,509	1,866
	1975	36	1,177	1,290	28	1,188	1,290
Rye	1965	27	495	572	21	467	519
	1970	27	587	896	21	620	873
	1975	27	555	675	21	562	733

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 40—Cereal imports and exports: world aggregates of FAO and USDA data for all reported countries, 1965, 1970, and 1975

Cereal	Year	Imports			Exports				
		Number of Countries		FAO	Number of Countries		FAO		
		FAO	USDA		FAO	USDA			
				(1,000 metric tons)		(1,000 metric tons)			
Wheat	1965	147	114	49,929	61,066	77	73	50,193	63,293
	1970	147	114	48,804	54,023	77	73	50,151	57,484
	1975	147	114	67,438	72,323	77	73	67,304	72,798
Rice (milled)	1965	176	98	8,250	7,109	113	76	8,378	7,763
	1970	176	98	9,042	7,523	113	76	8,876	7,811
	1975	176	98	8,291	7,014	113	76	8,610	6,996
Maize	1965	155	100	23,950	25,339	108	72	25,033	27,438
	1970	155	100	28,976	28,225	108	72	29,432	29,714
	1975	155	100	51,819	53,719	108	72	50,932	58,683
Barley	1965	111	59	8,146	8,691	66	49	8,062	8,557
	1970	111	59	10,723	10,402	66	49	10,469	11,557
	1975	111	59	12,555	13,498	66	49	12,412	12,910
Oats	1965	96	37	1,563	1,574	46	29	1,749	1,636
	1970	96	37	1,567	2,071	46	29	1,510	1,866
	1975	96	37	1,223	1,290	46	29	1,189	1,290
Rye	1965	50	30	501	572	25	22	467	587
	1970	50	30	587	896	25	22	620	873
	1975	50	30	563	675	25	22	562	733

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Table 41—Rice (milled) imports and exports: aggregates of FAO and USDA data for the commonly reported countries classified by type of trade, calendar year 1970

Country Group	Imports						Exports					
	General Trade			Special Trade			General Trade			Special Trade		
	Number of Countries	FAO	USDA	Number of Countries	FAO	USDA	Number of Countries	FAO	USDA	Number of Countries	FAO	USDA
Developed market economies	9	387	305	10	514	511	6	2,471	2,417	9	504	750
Developing market economies	27	2,883	2,920	38 ^a	2,858	2,589	16	2,613	2,262	27 ^a	1,060	1,059
Centrally planned economies	7	523	518	1	1	1	6	1,984	1,086	1	178	178
World total	43	3,793	3,743	49	3,373	3,101	28	7,068	5,765	37	1,742	1,987

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

Note: General trade data cover total imports and exports including re-exports. Special trade data include imports used for domestic consumption and exports wholly or partly produced in the country, but not goods held in bonded warehouses or free zones.

^a Includes part of Malaysia.

Table 42—Wheat imports and exports: six-year averages of aggregate FAO and USDA data for the commonly reported countries by economic group and geographical region, 1965-70 and 1970-75

Country Group	Imports				Exports			
	1965-70 Average		1970-75 Average		1965-70 Average		1970-75 Average	
	FAO	USDA	FAO	USDA	FAO	USDA	FAO	USDA
	(1,000 metric tons)							
Economic group								
Developed market economies	16,543	17,361	18,466	18,935	38,980	45,411	52,093	58,338
Developing market economies	17,835	22,683	22,794	28,134	3,321	3,689	2,324	2,629
Centrally planned economies	12,424	12,575	16,682	15,940	5,664	6,802	6,140	5,231
Geographical region								
Africa	3,331	5,484	1,115	7,309	74	129	158	176
North/Central America	773	1,618	1,503	2,131	27,594	30,580	36,635	39,190
South America	4,118	4,228	4,415	4,979	2,942	3,187	1,905	2,154
Asia	19,521	21,159	22,877	24,363	173	304	353	452
Europe	16,289	17,541	17,414	18,009	6,838	9,397	9,598	12,697
Oceania	82	90	68	100	5,887	7,008	7,152	7,557
U.S.S.R.	2,686	2,498	6,550	6,118	4,458	5,298	4,757	3,972
World total	46,802	52,618	57,942	63,009	47,966	55,901	60,556	66,198

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1975," Rome, 1976; Food and Agriculture Organization of the United Nations, "Trade Yearbook Tape, 1976," Rome, 1977; and U.S. Department of Agriculture, Foreign Agricultural Service, "Production, Supply and Distribution Tape, 1977," Washington, D.C., 1977.

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Leonardo A. Paulino directs the Trends and Statistics Program. Before joining IFPRI in 1977, he was the director of the Bureau of Agricultural Economics at the Philippine Department of Agriculture.

Shen Sheng Tseng, a research analyst, came to IFPRI in 1978. He is a doctoral candidate in economics.

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