GENERAL AGREEMENT ON TARIFFS AND TRADE

Group on Cereals

Original: English

NOTE BY THE EXECUTIVE SECRETARY OF THE INTERNATIONAL WHEAT COUNCIL

At the meeting of the Group on 16 July I was invited to submit a paper for consideration at the next meeting on some of the technical issues raised by item (iii) of TN.64/Ce/W/1. This paper is attached. In compiling this document the Secretariat of the International Wheat Council has drawn widely on the information on patterns of trade, freight rates and transportation costs available to it, and has supplemented this by specific enquiries in certain instances. Notwithstanding this, however, the paper may here and there be deficient or inaccurate because no external body can hope to be so fully informed on all matters of detail as those directly concerned with the administration or trade of a commodity within each exporting country.

AREAS OF JOINT STUDY, ITEM III*

Alternative Bases for Fixing an International Price

I.   Introduction

1.   This paper sets out to consider in some detail various factors affecting the choice of a basing point for a reference wheat or, in other words, the terms in which a world price (or price range) would be expressed. It also examines the considerations which may be relevant to the choice of a particular type of wheat for this purpose. The framework and the basic points are those covered in the preliminary review of these questions at the Group's meeting on 16 July 1965 (TN.64/Ce/3. 2 August 1965) and the present paper provides some evidence to assist in the clarification of these two problems.

2.   In considering both questions, it is important to emphasize again the fact that the paper is addressed to the concept of an international price and considers the significance of the relevant technical factors which have to be taken into account in establishing a world minimum price, or a price range with a maximum and a minimum.

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*TN.64/Ce/W/1.

II. Choice of a basing point

There appear to be three possible alternative approaches to this question which deserve consideration. On the hypothesis that the international price is to be expressed in terms of a selected wheat (the reference wheat), with the prices of other wheats to be derived from it, the alternative basing points are:

(i) an interior point in the country concerned;

(ii) f.o.b. at a named ocean port;

(iii) c.i.f. at a named destination.

These alternatives will now be examined in detail:

(i) An interior point in the country concerned

3. This is the system adopted in the present Wheat Agreement with the base point in store Fort William/Port Arthur for Canadian No. 1 Manitoba Northern. In that it has been used for some fifteen years it must be regarded as a thoroughly workable system but experience has shown that it is not without some disadvantages. Under such a system Canadian internal transportation costs are an important element in the calculation (this would apply similarly to the selection of an interior point in any other country). These internal costs, from the "in store" position Fort William/Port Arthur at the head of the Great Lakes[1] to the "f.o.b." position at the open sea ports of the St. Lawrence River are subject to two different variable elements. Firstly, because the Lakes, connecting canals and the St. Lawrence River are frozen over for more than four months of the year the cost by lake freight in the open water season is much lower than the cost by rail in the closed navigation season. Secondly, the actual open and closed costs vary from year to year. To a considerable extent at the maximum and universally at the minimum both these changes in costs affect the prices for Canadian and the derived or equivalent prices for other wheats when converted to f.o.b. terms.

4. The effect of the higher winter rates is to raise the minimum prices during this period, not only for Canadian wheat but also for all other wheats, and to a considerable extent but not universally this holds good for maximum prices. The result can be seen for Canadian wheat in Graph 1[2] and five other export points in Graph 2.[2] The system is logical given the choice of a Canadian interior point as the basing point but it may be pertinent to consider whether it is entirely desirable that these higher costs should influence the whole international price structure.

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[1]Traditionally the Lakehead has been a major pricing point for Canadian western wheat because the larger part of it must pass through the Lakehead to be exported. Vancouver and Churchill are also important outlets but over the last fifteen years some 53 per cent of all wheat exports went through Fort William/ Port Arthur.

[2]The graph is reproduced separately in document TN.64/Ce/4/Add.1.

5. A second, but subsidiary, aspect of this question is the fact that both the summer and winter costs vary from year to year and this too affects not only the level of Canadian prices but also those of other wheats at the f.o.b. point. The following Table I shows the extent of these cost changes over the last ten years.

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Table I

Canadian Inland Transportation and Fobbing Costs

1955-1965

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YEAR	US$ per metric ton	
	St. Lawrence Ports (June)[a]	West St. John/Halifax (January)[ab]
1955	6.95	8.73
1956	7.90	8.48
1957	8.55	10.07
1958	8.52	10.09
1959	6.40	10.31
1960	6.47	10.13
1961	6.31	10.05
1962	5.86	9.40
1963	4.95	8.93
1964	5.11	9.05
1965	4.98	9.29

[a] The rate generally remains the same throughout the whole season, but in terms of US$ per metric ton the monthly figures vary slightly within each season with the fluctuations in the Canadian exchange rate.

[b] Basis Lake and Rail.

6. The Lakehead in Canada is clearly one of the most important interior points but there are also others which should be considered. For example, both Kansas City and to a smaller extent Minneapolis are very important terminal markets for the large surrounding wheat growing areas. Kansas City in particular is a very important internal pricing point in the United States and each day prices for a considerable range of wheats are determined there. From this market wheat moves to other parts of the United States including southward on the Mississippi and Missouri rivers often as far as the Gulf ports for export. A standard cost structure is not readily available for transportation and other costs from Kansas City to the Gulf but it may generally be taken to be between 35-45 cents per bushel. Although the Missouri/Mississippi is an important waterway for grain, however, a very substantial part of United States wheat exports from Gulf ports never physically go through the Kansas City market largely because much of the wheat goes direct to Gulf ports both from the adjacent growing areas of Texas and Oklahoma and from other areas farther to the north-west and north-east. Owing to the much more varied pattern of United States internal movement to ocean ports neither Kansas City nor other major markets have the same predominant position as the Lakehead in Canada as an interior point, and although the problem of higher costs during the closed navigation season would not apply other problems would certainly be encountered.

7. In one form or another similar difficulties arise with possible internal points in other countries. In Argentina the up-river ports of Rosario/ S.Lorenzo/Villa. Constitucion handle between one and two fifths of total exports while the bulk is divided between Bahia Blanca and Necochea (together about one half) and Buenos Aires (one tenth). Neither the position of the wheat growing areas nor the traditional export pattern has produced a predominant internal point but Buenos Aires is the main pricing market for export wheat. In Australia, where the wheat growing areas are widely spread through five States across the whole continent, there is no special inland market through which a significant volume of wheat for export passes. In France the markets in the Chartres region are important as the centre of the French wheat growing area but the wheat is exported in all directions from Channel ports, from the south through the canals and the Rhine to the east, and overland.

8. The conclusion to be drawn from this brief survey would appear to be that while the traditional Canadian interior point has the drawback of the substantially higher costs in the winter season the possible points in other countries do not sufficiently dominate the pattern of internal movement to justify their selection as the key point in an international pricing system.

(ii) F.o.b. terms

9. The fixing of the international price in f.o.b. terms requires first a choice between two possibilities:

(a) A system which provides that any two wheats of identical quality and characteristics coming from different sources can be landed c.i.f. in any importing country in the world at the same price, or

(b) A system which allows the benefits of geographical proximity to markets to operate by fixing a common price, subject to quality differentials, at each exporting point e.g. $1.50 f.o.b. Buenos Aires, Gulf, St. Lawrence, Australian ports and so on.

10. The mechanism of the system referred to in (a) above would work in the following way. Suppose the base point is f.o.b. Gulf, the price $15.0 per bushel ($55.12 per metric ton), and the destination the United Kingdom. The system must allow United States, Argentine and Canadian wheat, for example, to compete on level terms in the United Kingdom so far as prices are concerned, subject only to quality differentials. The formula for calculating the derived f.o.b. prices would start from the basic price f.o.b. Gulf, add the current freight rate to the United Kingdom, then deduct the current freight rate Buenos Aires/United Kingdom or St. Lawrence/United Kingdom to give the derived f.o.b. price for Argentina and Canada. On the basis of mid-August freight rates the calculations would be as follows:

TABLE II

	Argentina		Canada	
	$ per bushel	$ per ton	$ per bushel	$ per ton
Price f.o.b. Gulf	1.50	55.12	1.50	55.12
Add freight to UK	+0.28	+10.32	+0.28	+10.32
Price c. & f. UK	1.78	65.44	1.78	65.44
Deduct freight UK/ Argentina (St. Lawrence)	-0.37	-13.45	-0.24	- 8.96
Price f.o.b. Argentina (Canada)	1.41	51.99	1.54	56.48

11. A further example of the working of this formula is given in Table III which takes France as the exporting country and extends the destinations to include the United Arab Republic and Japan as well as the United Kingdom.

TABLE III

	United Kingdom		UAR		Japan	
	$ per bushel	$ per ton	$ per bushel	$ per ton	$ per bushel	$ per ton
Price f.o.b. Gulf	1.50	55.12	1.50	55.12	1.50	55.12
Add freight to destination	0.28	10.32	0.24	8.85	0.36	13.30
Price c. & f. destination	1.78	65.44	1.74	63.97	1.86	68.42
Deduct freight France/destination	0.08	3.08	0.19	6.98	0.32	11.76
Price f.o.b. France	1.70	62.36	1.55	56.99	1.54	56.66

12. This is the system used to a considerable extent but not universally under the existing Wheat Agreement by which derived prices or "price equivalents" for various origins are worked out starting from the Agreement price for the reference wheat at its base point. There are possible variations in the method. For example, in the present Agreement instead of working to the country of destination in each case, the formula in respect of certain wheats makes the calculation to the United Kingdom alone. The rationale behind this may originally have rested on the argument that since at the time the United Kingdom was the largest commercial market the price c. & f. United Kingdom should set the level of international prices at the minimum of the price range. The effect of choosing only one destination as the basis of the formula is to fix one f.o.b. price for each exporting point regardless of the ultimate destination of the wheat. Thus having equated the prices of Argentine and Canadian wheat c. & f. United Kingdom (as in Table II), the prices c. & f. other destinations would be different. For example to South Africa and Japan they would be calculated as follows:

TABLE IV

	Argentina		Canada	
	$ per bushel	$ per ton	$ per bushel	$ per ton
To Japan				
Price f.o.b. (as Table II)	1.41	51.99	1.54	56.48
Add freight to Japan	0.46	16.87	0.35	13.04
Price c. & f. Japan	1.87	68.86	1.89	69.52
To South Africa				
Price f.o.b. (as Table II)	1.41	51.99	1.54	56.48
Add freight to South Africa	0.28	10.32	0.28	10.32
Price c. & f. South Africa	1.69	62.31	1.82	66.80

Thus under such a formula the price c. & f. in Japan for Argentine wheat (before allowance for quality) would be $1.87 (68.86) but for Canadian would be $1.89 (69.52). Similarly to South Africa the figures would be $1.69 (62.31) and $1.82 (66.80).

13. The problems posed by this particular variation in the formula become acute for an exporter very close to the selected single destination and in the 1962 negotiations European exporters secured a change in the formula at the minimum so that for them the derived f.o.b. prices were worked out on a c. & f. country of destination basis. This may in fact be the more logical basis for all exporters.

14. The second alternative (b) above whereby the international price would be the same at each exporting point in f.o.b. terms would give the benefits of geographical proximity to markets to each exporter but it could lead to the serious distortion of existing patterns of trade. It would confer benefits on countries near the big commercial markets and similarly work to the disadvantage of suppliers more distant from these markets. The following examples (Table V) for the United States, Canadian, Australian and French wheat in the United Kingdom and Japanese markets may indicate the kind of result which such a system would produce. The figures are given before allowance for quality differentials.

TABLE V

	United States (Gulf)		Canada (St. Lawrence)	
	$ per bushel	$ per ton	$ per bushel	$ per ton
Common f.o.b. price	1.50	55.12	1.50	55.12
Add freight to UK	0.28	10.32	0.24	8.96
Price c. & f. UK	1.78	65.44	1.74	64.08
Common f.o.b. price	1.50	55.12	1.50	55.12
Add freight to Japan	0.22[1]	8.12[1]	0.22[1]	8.12[1]
Price c. & f. Japan	1.72	63.24	1.72	63.24

	Australia (West)		France	
	$ per bushel	$ per ton	$ per bushel	$ per ton
Common f.o.b. price	1.50	55.12	1.50	55.12
Add freight to UK	0.36	13.08	0.08	3.08
Price c. & f. UK	1.86	68.20	1.58	58.20
Common f.o.b. price	1.50	55.12	1.50	55.12
Add freight to Japan	0.24	8.96	0.32	11.76
Price c. & f. Japan	1.74	64.08	1.82	66.88

[1]From North Pacific Ports.

(iii) C.i.f. terms

15. When in this and the succeeding paragraphs the possibility of expressing the international price on a c.i.f. basis is examined this does not include the conversion of an f.o.b. price to its c.i.f. equivalent but it is concerned with a system which would ignore f.o.b. prices and fix the international price purely in c.i.f. terms, e.g. c.i.f. Rotterdam, c.i.f. United Kingdom or c.i.f. elsewhere. Such a system has one obvious disadvantage in that fluctuations in freight rates must be carried entirely by the exporter. A somewhat extreme example will make the point. If a c.i.f. price range of $2.00 to $2.50 per bushel ($73.49 to $91.86 per metric ton) were fixed any variation in freight rates which exceeded 50 cents per bushel could move the price from the minimum to the maximum or vice versa without any change in export (f.o.b.) prices. As an indication of the potential extent of this problem in

practice the experience of 1955/56 is illuminating. In 1953/54 freights to the United Kingdom from Australia were about $9.65 per metric ton and from St. Lawrence about $6.20 per metric ton, for a time during the Suez crisis these rates rose to $30.28 and $19.29 respectively. Increases of this magnitude would, if repeated, raise prices from the bottom to near the top or above the top of any price range likely to be adopted without any change in f.o.b. prices.

16. It may be felt, however, that an example based on exceptional conditions in the freight market is not an entirely reliable guide to the merits or demerits of a formula expressed in c.i.f. terms. In the following table therefore (Table VI) much more recent and less abnormal experience has been used to show in approximate terms the impact on four major exporting countries of an international price fixed on a c.i.f. basis. The table starts with a hypothetical international price (which might be a minimum price or the minimum of a price range) of $1.75 per bushel c.i.f. Rotterdam, before allowance for quality differentials. Given such c.i.f. price the table then goes on to show the variations in the equivalent f.o.b. returns for four exporting countries in the different freight conditions existing in August 1963, November 1963 and August 1965.

TABLE VI

	Argentina Plate Ports		Australia West		Canada St. Lawrence		USA Gulf	
	$ per bushel	$ per ton	$ per bushel	$ per ton	$ per bushel	$ per ton	$ per bushel	$ per ton
Price c.i.f. Rott.	1.75	64.30	1.75	64.30	1.75	64.30	1.75	64.30
August, 1963 Deduct freight to Rotterdam	0.25	9.30	0.25	9.30	0.11	3.93	0.13	4.67
Price f.o.b.	1.50	55.00	1.50	55.00	1.64	60.37	1.62	59.63
November, 1963 Deduct freight to Rotterdam	0.36	13.23	0.37	13.60	0.21[1]	7.72[1]	0.23	8.45
Price f.o.b.	1.39	51.07	1.38	50.70	1.54	56.58	1.52	55.85
August, 1965 Deduct freight to Rotterdam	0.32	11.72	0.34	12.42	0.15	5.40	0.17	6.14
Price f.o.b.	1.43	52.58	1.41	51.88	1.60	58.90	1.58	58.16

[1]West St. John/Halifax.

17. It is arguable that while the policing of any system of international prices coul: work with either c.i.f. or f.o.b. prices it would act more quickly and effectively by operating at the c.i.f. end of the transaction. Even if this argument is accepted, however, it does not follow that the international price must therefore be expressed in rigid c.i.f. terms. It is possible to convert an agreed system of f.o.b. prices to a c.i.f. (or c & f) basis using current freight rates, and thus avoid the effect of rises and falls in the freight market on the net commodity return to the exporting country.

III. Choice of the reference wheat

18. There are various criteria which can be applied to the choice of the type and grade of wheat to be adopted as the reference wheat but the following four postulates seem to be particularly relevant:

    (i)   the wheat should be regularly traded on international markets;

    (ii) it should be widely traded;

    (iii) as part of a Grains Agreement, it should have a definable price
          relationship with the principal coarse grains;

    (iv) the wheat chosen must be capable of precise definition as regards
          quality so that differentials in relation to other wheats can be set.

These criteria are examined in some detail in the succeeding paragraphs.

(i) Regularity of trade

19. Statistics are not available over a long period to show the quantities of the major grades of wheat exported commercially from each country. The following Table VII gives detailed figures for recent years and less specific information for earlier years.

20. It is clear that in terms of their total exports all the exporters shown in this table engage regularly in international trade on a substantial scale. When the analysis is extended to an examination of types, however, it seems that Canadian Manitoba wheat has a predominant position. While United States commercial exports are important in total, they are divided between five major classes of wheat (and "mixed") and within some of those classes there are several sub-divisions both for protein levels, e.g. hard winter ordinary, 12, 13 and 14 per cent, and sub-classes e.g. soft white, western white. Australian f.a.q. which differs slightly in quality each season, is regularly traded in volume as are Argentine and French. But in both the latter cases the figures in Table VII cover several qualities and for French wheat include substantial quantities of feed wheat in certain years.

TABLE VII

Commercial Exports of Wheat (Excluding Durum Wheat) By Type or Grade
Five Exporting Countries
1959/60 to 1963/64

Thousand Metric Tons

Country and Type of Wheat	1959/60	1960/61	1961/62	1962/63	1963/64
Canada: Manitoba[a]					
No. 2	1,881	2,868	5,123	3,830	7,394
No. 3	1,952	2,744	1,916	1,251	3,281
No. 4	1,102	740	325	562	1,256
Other	570	718	992	1,910	1,854
Total Manitobas	5,505	7,070	8,356	7,553	13,785
USA[b]					
Hard Red Spring	..	..	..	471	825
Hard Red Winter	..	..	..	1,042	3,493
Soft Red Winter	..	..	..	672	1,792
(Durum)	..	..	..	(90)	(759)
White	..	..	..	791	1,742
Mixed	..	..	..	44	63
Total	2,814[e]	4,728[e]	5,451[e]	3,110	8,374
Australia[c]					
FAQ	..	..	..	3,677	5,176
Premium-Hard	..	..	..	242	565
Semi-Hard	..	..	..	67	829
Off-Grade	..	..	..	157	283
Total	2,433	4,164	5,541	4,143	6,853
Argentina[d]					
Medium-Hard	1,923	1,552	2,357	1,289	2,871
France[e]					
Soft	1,318	1,194	1,336	2,427	2,197

[a]August/July years.

[b]July/June years: based on inspections for export.

[c]July/June years.

[d]August/July years: based on IWC records.

[e]Includes durum - hence durum shown ( ) for 1962/63 and 1963/64.

Not available.

(ii) Geographical spread of trade

21.   Taking into account the procedures and problems involved in the operation of
each of the basing points as described in earlier paragraphs, there could be
certain administrative difficulties if a wheat were selected which was not widely
traded.   Sheer volume is not essential but it should be traded widely throughout
the world and regularly throughout the season.   In order to consider which wheats
fulfil this criterion, an analysis of the commercial trade of each major exporting
country has also been made, as far as possible, by types and classes.   It seems
important to confine this analysis to commercial trade but figures for each type of
United States wheat are only available for the two years 1962/63 and 1963/64.   For
Argentine, Australian and French wheat no breakdown within grades is available
and while for the first two the bulk of the exports are of one grade, this may not
be so in every year for France.

22.   Considering the countries in turn, Canadian Manitoba wheat (Table VIII)
undoubtedly meets this requirement as for the five years average 1959/60-1963/64
most grades of Manitoba have been sold in significant volume in virtually all the
markets listed, which cover 90 per cent or more of total exports.   Only in North
Africa (where the commercial market for wheat, as opposed to flour, is relatively
small) and to a lesser extent in Central America did total exports of Manitobas
fall below 100,000 tons.   In fact both No. 2 and No. 3 individually are well
represented throughout the world.

TABLE VIII

Exports of Canadian Manitoba Wheats by Selected Destinations

August/July years: Average 1959/60-1963/64

Selected Destination	Thousand Metric Tons				
	Manitobas				
	No.1	No.2	No.3	No.4	Others
Belgium/Luxemburg, Netherlands, Fed. Rep. Germany	79	529	261	103	137
United Kingdom	126	1443	408	91	19
Eastern Europe	27	199	201	66	52
USSR	105	540	350	81	57
Central America	4	42	27	5	2
South America	50	87	24	41	4
Near East Asia	6	13	12	36	-
China (Mainland)	66	549	301	91	105
Japan	4	419	581	166	145
Other Far East Asia	43	92	4	3	-
North Africa	7	-	-	-	-
Other Africa	48	32	12	28	-
WORLD	686	4,219	2,229	797	523

23. For the United States (Table IX) the analysis is more difficult because information for only two years is readily available and the second of these is not really representative because total exports were roughly double the usual commercial level. Nevertheless, even on the basis of this limited data, it is possible to make certain tentative observations. Red spring wheat has a regular market in several important market areas but not in the United Kingdom or Japan. Hard winter on the other hand has a larger and more widespread market but a fluctuating trade with the United Kingdom. In addition, this wheat is traded in a wide range of protein values and some markets regularly buy only the upper range while others take the lower. Soft red wheat, which is important as a grade of soft wheat closer to the feed grains, also enjoys a fairly wide market but is not purchased by Japan. White wheat is also well distributed but consists of two different sub-classes of western white and soft white of which most of the latter is shipped to Europe and the former to the Far East.

TABLE IX

Commercial Exports[a] of United States Wheats by Class and Selected Destinations

July/June Years: 1962/63 and 1963/64

Selected Destinations	Thousand Metric Tons							
	Hard Red Spring		Hard Red Winter		Soft Red Winter		White	
	1962/3	1963/4	1962/3	1963/4	1962/3	1963/4	1962/3	1963/4
Belgium, Luxemburg, Netherlands, Fed. Rep. Germany	241	411	150	425	230	630	36	79
United Kingdom	1	47	8	176	33	159	93	65
Eastern Europe	-	-	-	152	-	294	-	296
USSR	-	-	-	982	-	25	-	185
Central America	67	118	29	48	9	17	13	21
South America	68	97	282	108	52	102	16	15
Near East	-	-	45	20	18	-	-	-
China	-	-	-	-	-	-	-	-
Japan	-	-	454	1,076	-	-	501	936
Other Far East	57	97	13	192	-	-	100	81
North Africa	-	-	9	35	22	140	-	-
Other Africa	42	38	16	82	52	68	11	1
WORLD	476	822	1,046	3,494	562	1,792	791	1,742

[a] Based on "inspections for export".

24. Argentine wheat (Table X) is not so widely represented in world markets, at least so far as trading results for the period 1959/60 - 1963/64 provide a reliable indication. Sales in the commercial markets of Central America, the Near East, Africa and Far East were small or non-existent while there has been virtually no trade with Japan. Thus on the experience of this five-year period Argentine wheat has not been traded as widely as some other wheats, being largely confined to South American and Western European markets although recently substantial business has been done with China and USSR. Australian exports, which include increasing quantities of harder wheats, are widely traded and are only poorly represented in Central and South American and Eastern European markets. French exports on the evidence of 1959/64 have been confined to certain areas, particularly Western Europe, Eastern Europe, China and Africa, although more recent trading experience has been somewhat wider.

TABLE X

Exports of Wheat by Argentina, Australia and France to Selected Destinations

July/August Years: Average 1959/60-1963/64

Selected Destination	Thousand Metric Tons		
	Argentina[a]	Australia	France
Belgium, Luxemburg, Netherlands, Fed. Rep. Germany	364	168	425
United Kingdom	240	628	208
Eastern Europe	17	18	217
USSR	2	274	-
Central America	-	3	-
South America	969	4	10
Near East Asia	3	297	5
China (Mainland)	235	1,534	235
Japan	-	404	-
Other Far East Asia	-	542	-
North Africa	7	51	244
Other Africa	5	152	146
WORLD	1,943	4,645	1,694

[a] Excluding durum.

(iii) <u>Relationship between wheat and coarse grains</u>

25. This is an important question which cannot be dealt with at length in this paper and must be analyzed separately. It may be useful, however, to consider one aspect of it briefly in so far as it affects the choice of the reference wheat. The task of relating the wheat price to the price structure for coarse grains in the administration of a Grains Agreement would admittedly be simplified if the basing point were the same for wheat as for coarse grains. Without prejudice to the detailed discussion of this question for coarse grains but adopting the same criteria as those suggested for the reference wheat, it may be argued that the coarse grain most regularly and widely traded is maize, and within the maize trade U.S. No. 2 and No. 3 Yellow Corn is clearly predominant. Thus the choice of a U.S. wheat which could be readily aligned in price terms with U.S. maize would have certain administrative attractions. If however, as seems vital for an effective agreement in the future, differentials between the various types of wheat are to be set, then U.S. corn or any other coarse grain can without difficulty be related to the scale of wheat prices and differentials at any point, regardless of which wheat is chosen as the reference wheat. There appears to be no real practical reason, therefore, to insist that the reference wheat should be close in characteristics and price to coarse grains.

(iv) <u>Precise definitions and grades</u>

26. For most wheats entering world trade clear definitions of grading standards or procedures for the determination of standards have been set down, most of them with statutory backing in the exporting country. For trading purposes, however, and more particularly in connexion with the selection of a wheat to serve as the central point of an international pricing system it may be useful to consider briefly the major characteristics of which most grading systems take account.

27. The most widely-used determinant of grade is the weight of a given volume of grain expressed as pounds per bushel or kilogrammes per hectolitre. This "test weight" is an important index of the quantity of flour that can be milled from a given weight of wheat (the weight is also affected by the presence of impurities but most grading systems have separate provisions regarding impurities or foreign matter). Moisture content is also important and wheat containing more than 17 per cent is unfit for warehousing and usually any figure higher than 16 or $16\frac{1}{2}$ per cent is considered unsuitable for milling. The protein content is correlated with baking quality but this varies from year to year with climatic conditions while its assessment requires chemical tests not easily incorporated in extensive grain sampling operations. Other characteristics such as condition, proportion of hard vitreous kernels, presence of extraneous matter and uniformity of sample or varieties are all involved to some extent. So far as the choice of a "base" or reference wheat is concerned, however, the precise standards of the grading system are perhaps of less importance than the need to ensure that the selected wheat is of a grade and description which can be defined and which is not subject to significant variation from season to season. The reference wheat is the measure or yardstick by which the differentials for other wheats will be set and if the reference wheat itself is variable in quality and characteristics the task of negotiating differentials becomes difficult and speculative.