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Second Interregional Fertilizer Symposium

Kiev, USSR, 21 September - 1 October 1971

New Delhi, India, 2 - 13 October 1971

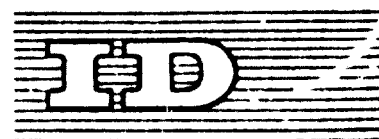
Agenda item II/2

REVIEW OF WORLD PRODUCTION, CONSUMPTION AND  
INTERNATIONAL TRADE IN FERTILIZERS WITH  
PROJECTIONS TO 1975 AND 1980

by

United Nations Industrial Development Organisation  
Vienna  
Austria

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6 July 1971

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Agenda item II/2

SUMMARY

REVIEW OF WORLD PRODUCTION, CONSUMPTION AND INTERNATIONAL  
TRADE IN FERTILIZERS WITH PROJECTIONS TO 1975 AND 1980

United Nations Industrial Development Organization  
Vienna Austria

The fertilizer industry is one of the major industries of the world with a total world output in 1969/70 of 200 million tons gross weight of products (containing 66 million tons of plant nutrients) with a total ex-factory sale value of approximately US\$7 billion. This means that among the world's industrial products, fertilizer is exceeded only by steel, petroleum refinery products, cement and sawn lumber in gross weight of product. Even in comparison with agricultural products, fertilizer is exceeded in tonnage only by wheat, maize and milk.

Fertilizer is one of the largest commodities in international trade with approximately 50 million tons of fertilizers (gross weight) moving across international borders in 1969/70. In addition to finished fertilizer, large tonnages of fertilizer raw materials (such as phosphate rock and sulphur) and fertilizer intermediates (such as ammonia and phosphoric acid) move in international trade.

World fertilizer consumption increased from 27.8 million tons (nutrient basis) in 1959/60 to 62.8 million tons in 1969/70 or an average growth rate of 8.5 per cent per year. This is the highest rate of growth of any decade since the early days of the fertilizer industry prior to 1914. During the decade of the 1960's the developed countries had a growth rate of 7.5 per cent per year while the developing countries had a growth rate of 14.0 per cent per year, giving a world average of 8.5 per cent.

In 1969/70 the developing countries produce 7.0 million tons of fertilizer (nutrient basis) and consumed 12.3 million tons indicating an apparent deficit of 5.3

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million tons. The largest apparent deficits among the developing countries in 1969/70 were People's Republic of China 1.6 million tons, India 0.8 million tons, Brazil 0.5 million tons, Cuba 0.5 million tons, Turkey 0.4 million tons, Pakistan, Indonesia, United Arab Republic and Republic of Vietnam 0.2 million tons each. These nine countries comprised 85 per cent of the total apparent deficits of the developing countries in 1969/70.

Projections of fertilizer production and consumption have been made for all countries in the world for 1975/76 and 1980/81 based on the historical data from 1955/56 to 1969/70. The projection method used is a visual, graphical adaptation of the Gompertz growth curve.

The projections made are summarized as follows:

Nitrogen fertilizer (1000 tons N)

|                      | <u>Production</u> |         |         | <u>Consumption</u> |         |         |
|----------------------|-------------------|---------|---------|--------------------|---------|---------|
|                      | 1969/70           | 1975/76 | 1980/81 | 1969/70            | 1975/76 | 1980/81 |
| Developed countries  | 26,200            | 41,500  | 57,200  | 20,810             | 34,500  | 48,500  |
| Developing countries | 4,135             | 9,500   | 14,800  | 7,675              | 14,200  | 19,900  |
| World total          | 30,335            | 51,000  | 72,000  | 28,485             | 48,700  | 68,400  |

Phosphate fertilizer (1000 tons P<sub>2</sub>O<sub>5</sub>)

|                      | <u>Production</u> |         |         | <u>Consumption</u> |         |         |
|----------------------|-------------------|---------|---------|--------------------|---------|---------|
|                      | 1969/70           | 1975/76 | 1980/81 | 1969/70            | 1975/76 | 1980/81 |
| Developed countries  | 16,625            | 25,100  | 31,600  | 15,560             | 22,500  | 28,500  |
| Developing countries | 2,170             | 4,700   | 7,200   | 2,965              | 5,900   | 8,500   |
| World total          | 18,795            | 29,800  | 38,800  | 18,525             | 28,400  | 37,000  |

Potash fertilizer (1000 tons of K<sub>2</sub>O)

|                      | <u>Production</u> |         |         | <u>Consumption</u> |         |         |
|----------------------|-------------------|---------|---------|--------------------|---------|---------|
|                      | 1969/70           | 1975/76 | 1980/81 | 1969/70            | 1975/76 | 1980/81 |
| Developed countries  | 16,225            | 21,900  | 27,300  | 14,100             | 18,900  | 23,200  |
| Developing countries | 670               | 1,500   | 2,200   | 1,695              | 3,400   | 4,900   |
| World total          | 16,895            | 23,400  | 29,500  | 15,795             | 22,300  | 28,100  |

Total fertilizer (1000 tons N + P<sub>2</sub>O<sub>5</sub> + K<sub>2</sub>O)

|                      | <u>Production</u> |         |         | <u>Consumption</u> |         |         |
|----------------------|-------------------|---------|---------|--------------------|---------|---------|
|                      | 1969/70           | 1975/76 | 1980/81 | 1969/70            | 1975/76 | 1980/81 |
| Developed countries  | 59,050            | 88,500  | 116,000 | 50,470             | 75,900  | 100,200 |
| Developing countries | 6,795             | 15,700  | 24,200  | 12,335             | 23,500  | 33,300  |
| World total          | 66,025            | 104,200 | 140,300 | 62,805             | 99,400  | 133,500 |

"Developing countries" include all countries of Asia, Africa and Latin America, except Japan. "Developed countries" include all the rest of the world. The paper presents detailed projections for 24 principal developing countries plus regional and world totals.

Apparent deficits of the developing countries are projected to increase from 5.3 million tons in 1969/70 to 7.8 million tons in 1975/76 and 9.1 million tons in 1980/81.

Effective planning and large amounts of capital will be required to increase fertilizer production in the developing countries from 7.0 million tons in 1969/70 to 24.2 million tons in 1980/81. Even larger amounts of capital would be required to make the developing countries self-sufficient in fertilizer in 1980/81, i.e. production of 33.3 million tons.

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## Introduction

The fertilizer industry is one of the major industries of the world with a total world output in 1969/70 of 200 million tons gross weight of products (containing 66 million tons of plant nutrients) with a total ex-factory sale value of approximately US\$7 billion. This means that among the world's industrial products, fertilizer is exceeded only by steel, petroleum refinery products, cement and sawn lumber in gross weight of product. Even in comparison with agricultural products, fertilizer is exceeded in tonnage only by wheat, maize and milk.

Fertilizer is one of the largest commodities in international trade with approximately 50 million tons of fertilizers (gross weight) moving across international borders in 1969/70. In addition to finished fertilizer, large tonnages of fertilizer raw materials (such as phosphate rock and sulphur) and fertilizer intermediates (such as ammonia and phosphoric acid) move in international trade.

World fertilizer consumption has increased steadily and at a high rate for the past sixty four years since fertilizer consumption statistics first became available in 1906, as follows:

|         |            |          |
|---------|------------|----------|
| 1905/06 | 1,928,000  | tons NPK |
| 1913/14 | 3,861,000  | tons NPK |
| 1919/20 | 3,556,000  | tons NPK |
| 1938/39 | 9,211,000  | tons NPK |
| 1945/46 | 7,500,000  | tons NPK |
| 1947/48 | 11,240,000 | tons NPK |
| 1959/60 | 27,855,000 | tons NPK |
| 1969/70 | 62,780,000 | tons NPK |

The rate of growth of fertilizer consumption during the decade of the 1960's averaged 8.5 per cent per year which is the highest rate of growth since the early years before 1913/14 (see Tables IV and V for additional data).

During the decade of the 1960's the developed countries had a growth rate of fertilizer consumption of 7.5 per cent per year while the developing countries had a growth rate of 14.0 per cent per year, giving a world average of 8.5 per cent.

In production of fertilizer the developed countries had a growth rate of 8.0 per cent per year during the 1960's while the developing countries had a growth rate of 14.8 per cent, giving a world average of 8.6 per cent.

In 1969/70 the developing countries produced 7.0 million tons of fertilizer (nutrient basis) and consumed 12.3 million tons, indicating an apparent deficit of 5.3 million tons. The largest apparent deficits among the developing



countries in 1969/70 were People's Republic of China 1.6 million tons, India 0.8 million tons, Brazil 0.5 million tons, Cuba 0.5 million tons, Turkey 0.4 million tons, Pakistan, Indonesia, United Arab Republic and Republic of Vietnam 0.2 million tons each. These nine countries comprised 35 per cent of the total apparent deficits of the developing countries in 1969/70 (see tables I, II, III for additional data).

Projections of fertilizer production and consumption have been made for all countries in the world for 1975/76 and 1980/81 based on the historical data from 1955/56 to 1969/70. The projection method used is a visual, graphical adaptation of the Gompertz growth curve.

The projections made are summarized as follows:

Nitrogen fertilizer (1000 tons N)

|                      | <u>Production</u> |                |                | <u>Consumption</u> |                |                |
|----------------------|-------------------|----------------|----------------|--------------------|----------------|----------------|
|                      | <u>1969/70</u>    | <u>1975/76</u> | <u>1980/81</u> | <u>1969/70</u>     | <u>1975/76</u> | <u>1980/81</u> |
| Developed countries  | 26,200            | 41,500         | 57,200         | 20,810             | 34,500         | 48,500         |
| Developing countries | 4,135             | 9,500          | 14,800         | 7,675              | 14,200         | 19,900         |
| World total          | 30,335            | 51,000         | 72,000         | 28,485             | 48,700         | 68,400         |

Phosphate fertilizer (1000 tons P<sub>2</sub>O<sub>5</sub>)

|                      | <u>Production</u> |                |                | <u>Consumption</u> |                |                |
|----------------------|-------------------|----------------|----------------|--------------------|----------------|----------------|
|                      | <u>1969/70</u>    | <u>1975/76</u> | <u>1980/81</u> | <u>1969/70</u>     | <u>1975/76</u> | <u>1980/81</u> |
| Developed countries  | 16,625            | 25,100         | 31,600         | 15,560             | 22,500         | 28,500         |
| Developing countries | 2,170             | 4,700          | 7,200          | 2,965              | 5,900          | 8,500          |
| World total          | 18,795            | 29,800         | 38,800         | 18,525             | 28,400         | 37,000         |

Potash fertilizer (1000 tons of K<sub>2</sub>O)

|                      | <u>Production</u> |                |                | <u>Consumption</u> |                |                |
|----------------------|-------------------|----------------|----------------|--------------------|----------------|----------------|
|                      | <u>1969/70</u>    | <u>1975/76</u> | <u>1980/81</u> | <u>1969/70</u>     | <u>1975/76</u> | <u>1980/81</u> |
| Developed countries  | 16,225            | 21,900         | 27,300         | 14,100             | 18,900         | 23,200         |
| Developing countries | 670               | 1,500          | 2,200          | 1,695              | 3,400          | 4,900          |
| World total          | 16,895            | 23,400         | 29,500         | 15,795             | 22,300         | 28,100         |

Total fertilizer (1000 tons N + P<sub>2</sub>O<sub>5</sub> + K<sub>2</sub>O)

|                      | Production |         |         | Consumption |         |         |
|----------------------|------------|---------|---------|-------------|---------|---------|
|                      | 1969/70    | 1975/76 | 1980/81 | 1969/70     | 1975/76 | 1980/81 |
| Developed countries  | 59,050     | 88,500  | 116,000 | 50,470      | 75,900  | 100,200 |
| Developing countries | 6,795      | 15,700  | 24,200  | 12,335      | 23,500  | 33,300  |
| World total          | 66,025     | 104,200 | 140,300 | 62,805      | 99,400  | 133,500 |

"Developing countries" include all countries of Asia, Africa and Latin America, except Japan. "Developed countries" include all the rest of the world. Tables X, XI, XII present detailed projections for 24 principal developing countries plus regional and world totals.

Apparent deficits of the developing countries are projected to increase from 5.3 million tons in 1969/70 to 7.8 million tons in 1975/76 and 9.1 million tons in 1980/81. The two largest deficits indicated by the projections in 1980/81 are People's Republic of China 3.1 million tons, and India 2.65 million tons NPK.

Effective planning and large amounts of capital will be required to increase fertilizer production in the developing countries from 7.0 million tons in 1969/70 to 24.2 million tons in 1980/81. Even larger amounts of capital would be required to make the developing countries self-sufficient in fertilizer 1980/81, i.e. production of 33.3 million tons.

TABLE I  
Largest Producers, Consumers, Exporters and Importers  
of Nitrogen Fertilizer in 1969/70  
(all data in thousand tons of nitrogen)

| <u>Largest Producers</u> | <u>Production</u> | <u>Largest Consumers</u> | <u>Consumption</u> |
|--------------------------|-------------------|--------------------------|--------------------|
| 1. USA                   | 7,632             | 1. USA                   | 6,679              |
| 2. USSR                  | 4,509             | 2. USSR                  | 3,798              |
| 3. Japan                 | 2,152             | 3. China (Mainland)      | 2,495              |
| 4. FRG                   | 1,574             | 4. India                 | 1,244              |
| 5. France                | 1,313             | 5. France                | 1,243              |
| 6. China (Mainland)      | 1,040             | 6. FRG                   | 1,085              |
| 7. Italy                 | 960               | 7. Japan                 | 897                |
| 8. Poland                | 938               | 8. Poland                | 790                |
| 9. Netherlands           | 906               | 9. United Kingdom        | 650                |
| 10. India                | 731               | 10. Spain                | 604                |
| 11. United Kingdom       | 710               | 11. Italy                | 550                |
| 12. Canada               | 605               | 12. GDR                  | 487                |
| 13. Bulgaria             | 586               | 13. Bulgaria             | 402                |
| 14. Spain                | 543               | 14. Mexico               | 388                |
| 15. Belgium              | 514               | 15. Netherlands          | 385                |
| 16. Romania              | 494               | 16. Romania              | 380                |
| 17. GDR                  | 391               | 17. Hungary              | 348                |
| 18. Norway               | 371               | 18. Czechoslovakia       | 330                |
| 19. Mexico               | 359               | 19. Korea, Republic of   | 320                |
| 20. Korea, Republic of   | 356               | 20. Pakistan             | 320                |

| <u>Largest Exporters</u> | <u>Apparent Exports*</u> | <u>Largest Importers</u> | <u>Apparent Imports*</u> |
|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Japan                 | 1,255                    | 1. China (Mainland)      | 1,455                    |
| 2. USA                   | 953                      | 2. India                 | 513                      |
| 3. USSR                  | 711                      | 3. Denmark               | 200                      |
| 4. Netherlands           | 521                      | 4. Turkey                | 179                      |
| 5. FRG                   | 489                      | 5. Cuba                  | 179                      |
| 6. Italy                 | 410                      | 6. United Arab Republic  | 160                      |
| 7. Canada                | 360                      | 7. Brazil                | 158                      |
| 8. Belgium               | 337                      | 8. Pakistan              | 146                      |
| 9. Norway                | 296                      | 9. Vietnam, Republic of  | 122                      |
| 10. Bulgaria             | 184                      | 10. Indonesia            | 122                      |
| 11. Poland               | 148                      | 11. Yugoslavia           | 100                      |
| 12. Austria              | 127                      | 12. GDR                  | 96                       |
| 13. Romania              | 114                      | 13. Ceylon               | 62                       |
| 14. Kuwait               | 75                       | 14. Spain                | 61                       |
| 15. Trinidad & Tobago    | 70                       | 15. Sweden               | 61                       |
| 16. France               | 70                       | 16. Hungary              | 48                       |
| 17. United Kingdom       | 60                       | 17. Thailand             | 47                       |
| 18. Chile                | 59                       | 18. Greece               | 45                       |
| 19. South Africa         | 54                       | 19. Sudan                | 39                       |
| 20. Korea, Republic of   | 36                       | 20. Peru                 | 35                       |

\* Apparent exports estimated as Production - Consumption; apparent imports estimated as Consumption - Production. This is a rough method of estimating apparent exports and apparent imports, but it should be reasonably accurate except for stock changes and losses. Since stocks of fertilizer tend to increase in step with the steady increase in consumption and since losses in transportation and storage do occur, apparent exports calculated in this manner tend to be too high by a few percent and apparent imports tend to be too low by a few percent.

SOURCE: FAO Monthly Bulletin of Agricultural Economics and Statistics, Rome, February 1971.

TABLE II

Largest Producers, Consumers, Exporters and Importersof Phosphate Fertilizer in 1969/70(all data in thousand tons of  $P_2O_5$ )

| <u>Largest Producers</u> | <u>Production</u> | <u>Largest Consumers</u> | <u>Consumption</u> |
|--------------------------|-------------------|--------------------------|--------------------|
| 1. USA                   | 4,721             | 1. USA                   | 4,177              |
| 2. USSR                  | 2,071             | 2. USSR                  | 1,916              |
| 3. France                | 1,400             | 3. France                | 1,681              |
| 4. FRG                   | 919               | 4. FRG                   | 857                |
| 5. Australia             | 792               | 5. Australia             | 830                |
| 6. Japan                 | 745               | 6. Japan                 | 689                |
| 7. Belgium               | 616               | 7. Poland                | 600                |
| 8. Italy                 | 540               | 8. China (Mainland)      | 511                |
| 9. Poland                | 534               | 9. Italy                 | 486                |
| 10. China (Mainland)     | 507               | 10. United Kingdom       | 460                |
| 11. Canada               | 450               | 11. Spain                | 406                |
| 12. United Kingdom       | 434               | 12. GDR                  | 389                |
| 13. Spain                | 375               | 13. New Zealand          | 341                |
| 14. GDR                  | 369               | 14. India                | 315                |
| 15. New Zealand          | 330               | 15. Canada               | 320                |
| 16. South Africa         | 312               | 16. Czechoslovakia       | 300                |
| 17. Czechoslovakia       | 289               | 17. South Africa         | 261                |
| 18. Netherlands          | 284               | 18. Bulgaria             | 256                |
| 19. India                | 224               | 19. Brazil               | 237                |
| 20. Romania              | 221               | 20. Turkey               | 201                |

| <u>Largest Exporters</u> | <u>Apparent Exports*</u> | <u>Largest Importers</u> | <u>Apparent Imports*</u> |
|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. USA                   | 544                      | 1. France                | 281                      |
| 2. Belgium               | 460                      | 2. Turkey                | 157                      |
| 3. Netherlands           | 176                      | 3. Brazil                | 118                      |
| 4. Tunisia               | 162                      | 4. Bulgaria              | 117                      |
| 5. USSR                  | 155                      | 5. Cuba                  | 112                      |
| 6. Luxembourg            | 140                      | 6. India                 | 91                       |
| 7. Canada                | 130                      | 7. Chile                 | 81                       |
| 8. Morocco               | 87                       | 8. Poland                | 66                       |
| 9. FRG                   | 63                       | 9. Indonesia             | 53                       |
| 10. Japan                | 56                       | 10. Pakistan             | 48                       |
| 11. Italy                | 54                       | 11. Colombia             | 48                       |
| 12. South Africa         | 51                       | 12. Thailand             | 45                       |
| 13. Norway               | 49                       | 13. Ireland              | 45                       |
| 14. Romania              | 41                       | 14. Yugoslavia           | 39                       |
| 15. Lebanon              | 16                       | 15. Australia            | 39                       |
| 16. Korea, Republic of   | 16                       | 16. Switzerland          | 38                       |
| 17. United Arab Republic | 10                       | 17. Denmark              | 33                       |
| 18. Greece               | 6.6                      | 18. Spain                | 31                       |
| 19. Senegal              | 5.9                      | 19. Iran                 | 30                       |
| 20. Uganda               | 3.4                      | 20. Vietnam, Republic of | 28                       |

\* Apparent exports estimated as Production - Consumption; apparent imports estimated as Consumption - Production. This is a rough method of estimating apparent exports and apparent imports, but it should be reasonably accurate except for stock changes and losses. Since stocks of fertilizer tend to increase in step with the steady increase in consumption and since losses in transportation and storage do occur, apparent exports calculated in this manner tend to be too high by a few percent and apparent imports tend to be too low by a few percent.

SOURCE: FAO Monthly Bulletin of Agricultural Economics and Statistics, Rome, February 1971.

**TABLE III**

**Largest Producers, Consumers, Exporters and Importers**  
**of Potash Fertilizer in 1969/70**  
 (all data in thousand tons of K<sub>2</sub>O)

| <u>Largest Producers</u>         | <u>Production</u> | <u>Largest Consumers</u> | <u>Consumption</u> |
|----------------------------------|-------------------|--------------------------|--------------------|
| 1. Canada                        | 3,500             | 1. USA                   | 3,625              |
| 2. USSR                          | 3,244             | 2. USSR                  | 2,319              |
| 3. USA                           | 2,487             | 3. France                | 1,279              |
| 4. GDR                           | 2,346             | 4. FRG                   | 1,120              |
| 5. FRG                           | 2,212             | 5. Poland                | 1,050              |
| 6. France                        | 1,750             | 6. Japan                 | 690                |
| 7. Spain                         | 519               | 7. GDR                   | 624                |
| 8. Israel                        | 437               | 8. Czechoslovakia        | 500                |
| 9. Italy                         | 166               | 9. UK                    | 462                |
| 10. China (Mainland)             | 140               | 10. China (Mainland)     | 240                |
| 11. Congo (Brazzaville)          | 67                | 11. Spain                | 224                |
| 12. Chile                        | 15                | 12. Brazil               | 200                |
| (No other significant producers) |                   | 13. Italy                | 195                |
|                                  |                   | 14. Canada               | 190                |
|                                  |                   | 15. Belgium              | 186                |
|                                  |                   | 16. Cuba                 | 185                |
|                                  |                   | 17. Denmark              | 184                |
|                                  |                   | 18. Yugoslavia           | 180                |
|                                  |                   | 19. Austria              | 169                |
|                                  |                   | 20. Hungary              | 169                |

| <u>Largest Exporters</u> | <u>Apparent Exports*</u> | <u>Largest Importers</u> | <u>Apparent Imports*</u> |
|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Canada                | 3,310                    | 1. USA                   | 1,138                    |
| 2. GDR                   | 1,722                    | 2. Poland                | 1,050                    |
| 3. FRG                   | 1,092                    | 3. Japan                 | 690                      |
| 4. USSR                  | 955                      | 4. Czechoslovakia        | 500                      |
| 5. France                | 471                      | 5. UK                    | 462                      |
| 6. Israel                | 428                      | 6. Brazil                | 200                      |
| 7. Spain                 | 295                      | 7. Belgium               | 186                      |
| 8. Congo (Brazzaville)   | 63                       | 8. Cuba                  | 185                      |
| (No other exporters)     |                          | 9. Denmark               | 184                      |
|                          |                          | 10. Yugoslavia           | 180                      |
|                          |                          | 11. Austria              | 169                      |
|                          |                          | 12. Hungary              | 169                      |
|                          |                          | 13. India                | 151                      |
|                          |                          | 14. Ireland              | 141                      |
|                          |                          | 15. Finland              | 132                      |
|                          |                          | 16. Sweden               | 129                      |
|                          |                          | 17. Netherlands          | 121                      |
|                          |                          | 18. China (Mainland)     | 100                      |
|                          |                          | 19. New Zealand          | 99                       |
|                          |                          | 20. Australia            | 95                       |

\* Apparent exports estimated as Production - Consumption; apparent imports estimated as Consumption - Production. This is a rough method of estimating apparent exports and apparent imports, but it should be reasonably accurate except for stock changes and losses. Since stocks of fertilizer tend to increase in step with the steady increase in consumption and since losses in transportation and storage do occur, apparent exports calculated in this manner tend to be too high by a few percent and apparent imports tend to be too low by a few percent.

SOURCE: FAO Monthly Bulletin of Agricultural Economics and Statistics, Rome, February 1971.

**TABLE IV**

Growth of Fertilizer Consumption - 1905/06 to 1963/70  
(in thousand ton)

| <u>Fertilizer consumption</u>               | <u>N</u> | <u>P<sub>2</sub>O<sub>5</sub></u> | <u>K<sub>2</sub>O</u> | <u>Total</u> |
|---|----------|-----------------------------------|-----------------------|--------------|
| 1905/06                                     | 366      | 1,047                             | 515                   | 1,928        |
| 1913/14                                     | 402      | 2,137                             | 1,022                 | 3,861        |
| ----- Decline during First World War -----  |          |                                   |                       |              |
| 1919/20                                     | 757      | 1,723                             | 1,070                 | 3,556        |
| 1938/39                                     | 2,670    | 3,637                             | 2,904                 | 9,211        |
| ----- Decline during Second World War ----- |          |                                   |                       |              |
| 1945/46                                     | 2,025    | 3,375                             | 2,100                 | 7,500        |
| 1947/48                                     | 3,103    | 5,017                             | 3,104                 | 11,230       |
| 1953/60                                     | 3,750    | 3,840                             | 8,265                 | 27,855       |
| 1963/70                                     | 28,485   | 18,525                            | 15,770                | 62,780       |

| <u>Average annual rates of growth</u> | <u>Percent per year</u> |                                   |                       |              |
|---------------------------------------|-------------------------|-----------------------------------|-----------------------|--------------|
|                                       | <u>N</u>                | <u>P<sub>2</sub>O<sub>5</sub></u> | <u>K<sub>2</sub>O</u> | <u>Total</u> |
| 1905/06 to 1913/14 (8 years)          | 8.5%                    | 1.3%                              | 3.0%                  | 3.0%         |
| 1917/20 to 1938/39 (19 years)         | 6.7%                    | 4.0%                              | 5.4%                  | 5.1%         |
| 1947/48 to 1953/60 (12 years)         | 10.0%                   | 5.8%                              | 8.5%                  | 7.3%         |
| 1953/60 to 1963/70 (10 years)         | 11.3%                   | 6.5%                              | 6.7%                  | 8.5%         |

**TABLE V**

Growth of Fertilizer Production and Consumption in Developed and Developing Countries during ten-year Period 1953/60 to 1963/70

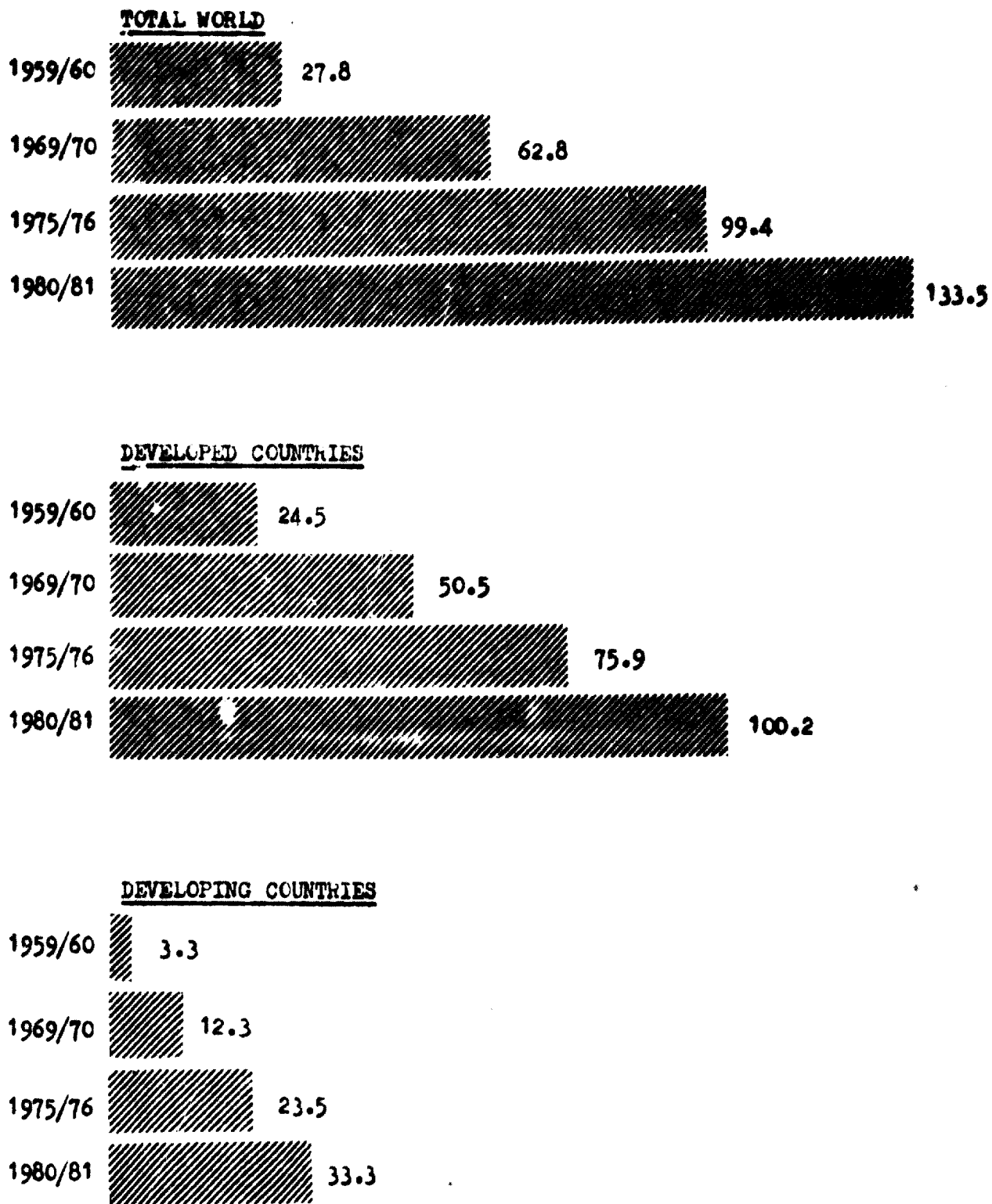
(in million tons N+P<sub>2</sub>O<sub>5</sub>+K<sub>2</sub>O)

|                               | <u>Developed countries</u> | <u>Developing countries</u> | <u>World total</u> |
|-------------------------------|----------------------------|-----------------------------|--------------------|
| Production, 1953-60           | 27.2                       | 1.8                         | 29.0               |
| " , 1963-70                   | 53.1                       | 7.0                         | 66.1               |
| Annual rate of increase       | 8.0%                       | 14.8%                       | 8.6%               |
| Consumption, 1953-60          | 24.5                       | 3.3                         | 27.8               |
| " , 1963-70                   | 50.5                       | 12.3                        | 62.8               |
| Annual rate of increase       | 7.5%                       | 14.0%                       | 8.5%               |
| Surplus (or Deficit), 1953/60 | 2.7                        | (1.5)                       | 1.2                |
| " " , 1963/70                 | 8.6                        | (5.3)                       | 3.3                |
| Annual rate of increase       | 13.1%                      | 13.3%                       | 10.6%              |

FIGURE 1

CONSUMPTION OF FERTILIZERS - 1959/60, 1969/70, 1975/76, 1980/81

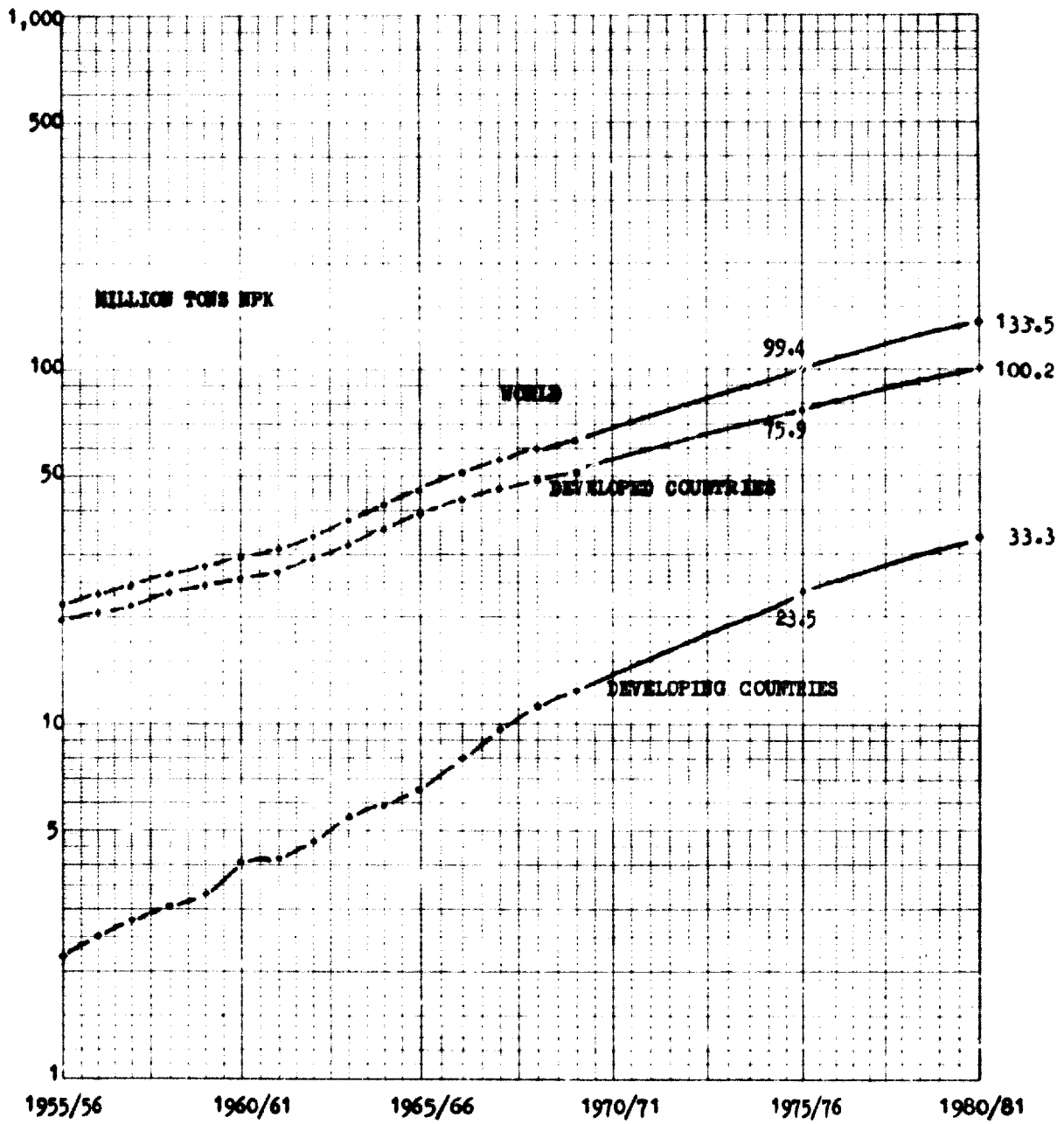
(million tons NPK)(including Mainland China, North Korea, North Vietnam)



**FIGURE 2**

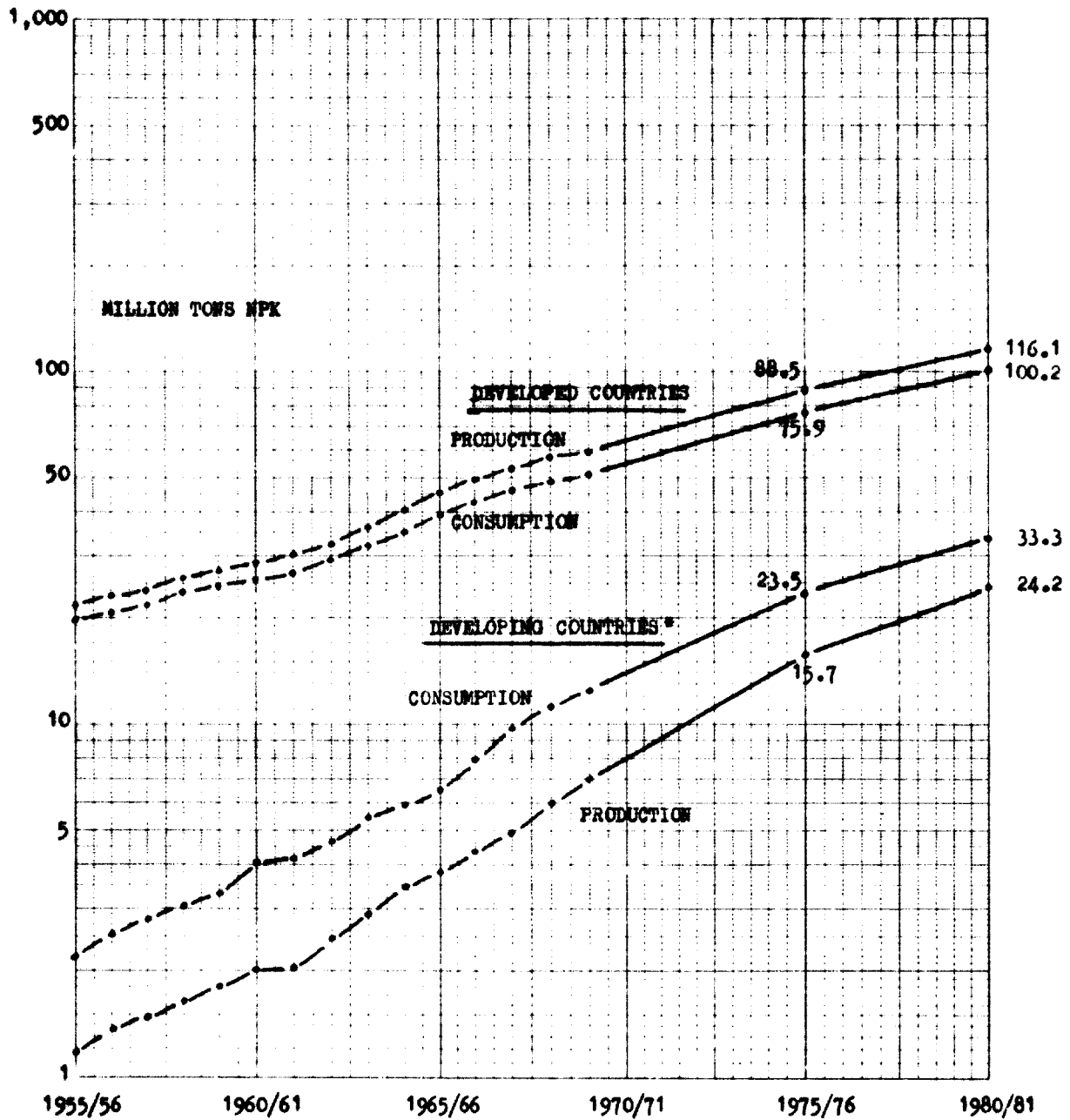
**WORLD CONSUMPTION OF FERTILIZERS**

(including Mainland China, North Korea, North Vietnam)





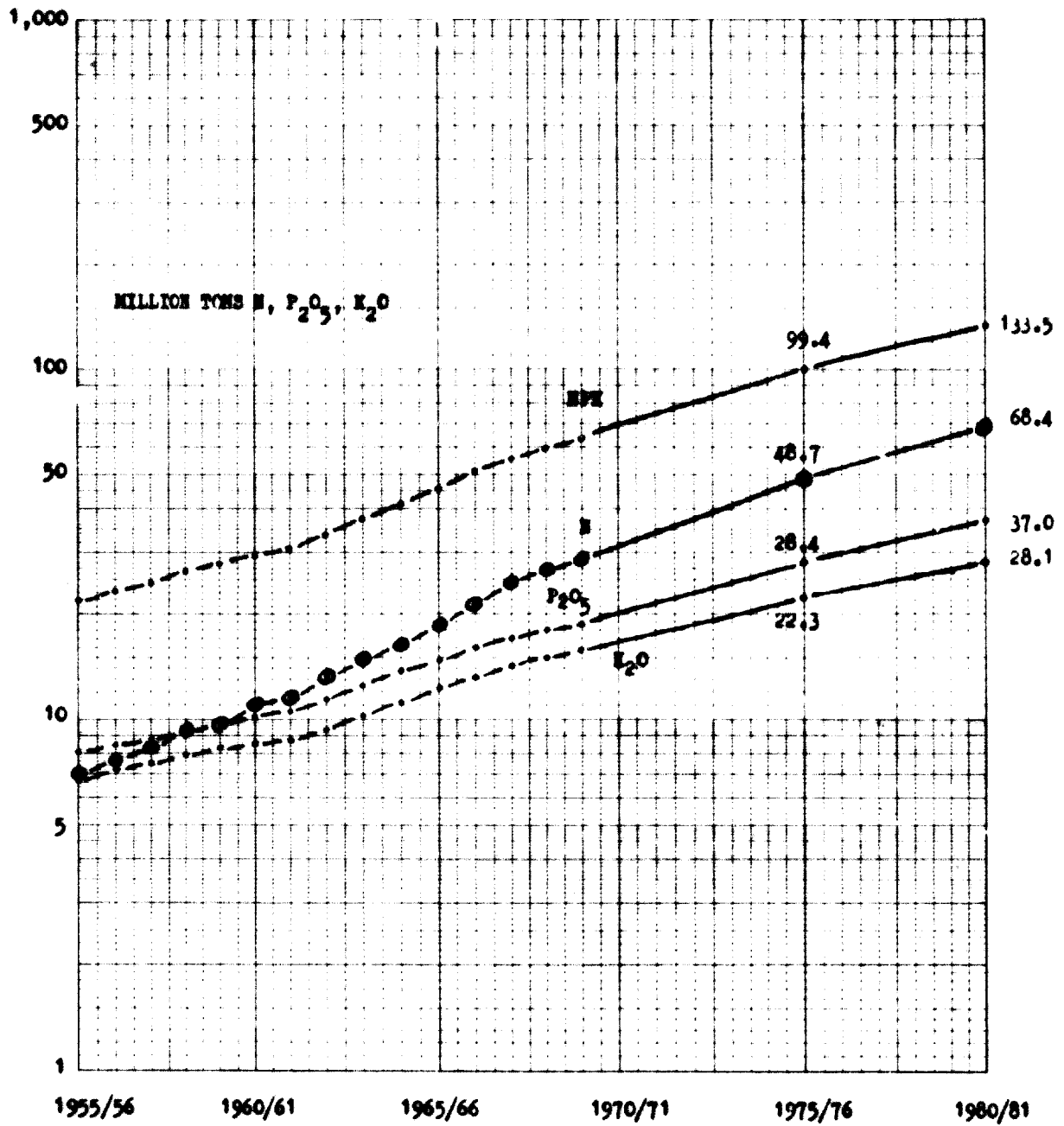
**FIGURE 3**  
**PRODUCTION AND CONSUMPTION OF FERTILIZERS**  
**IN DEVELOPED AND DEVELOPING COUNTRIES**



\*/ DEVELOPING COUNTRIES include Mainland China, North Korea, North Vietnam

FIGURE 4

**WORLD CONSUMPTION OF FERTILIZERS**  
(including Mainland China, North Korea, North Vietnam)



**TABLE VI**

Classification of Countries in Fertilizer Consumption per Capita  
 (Including all countries over 5,000,000 population in 1970)  
 (in kg./capita of N + P<sub>2</sub>O<sub>5</sub> + K<sub>2</sub>O in 1969/70 crop year)

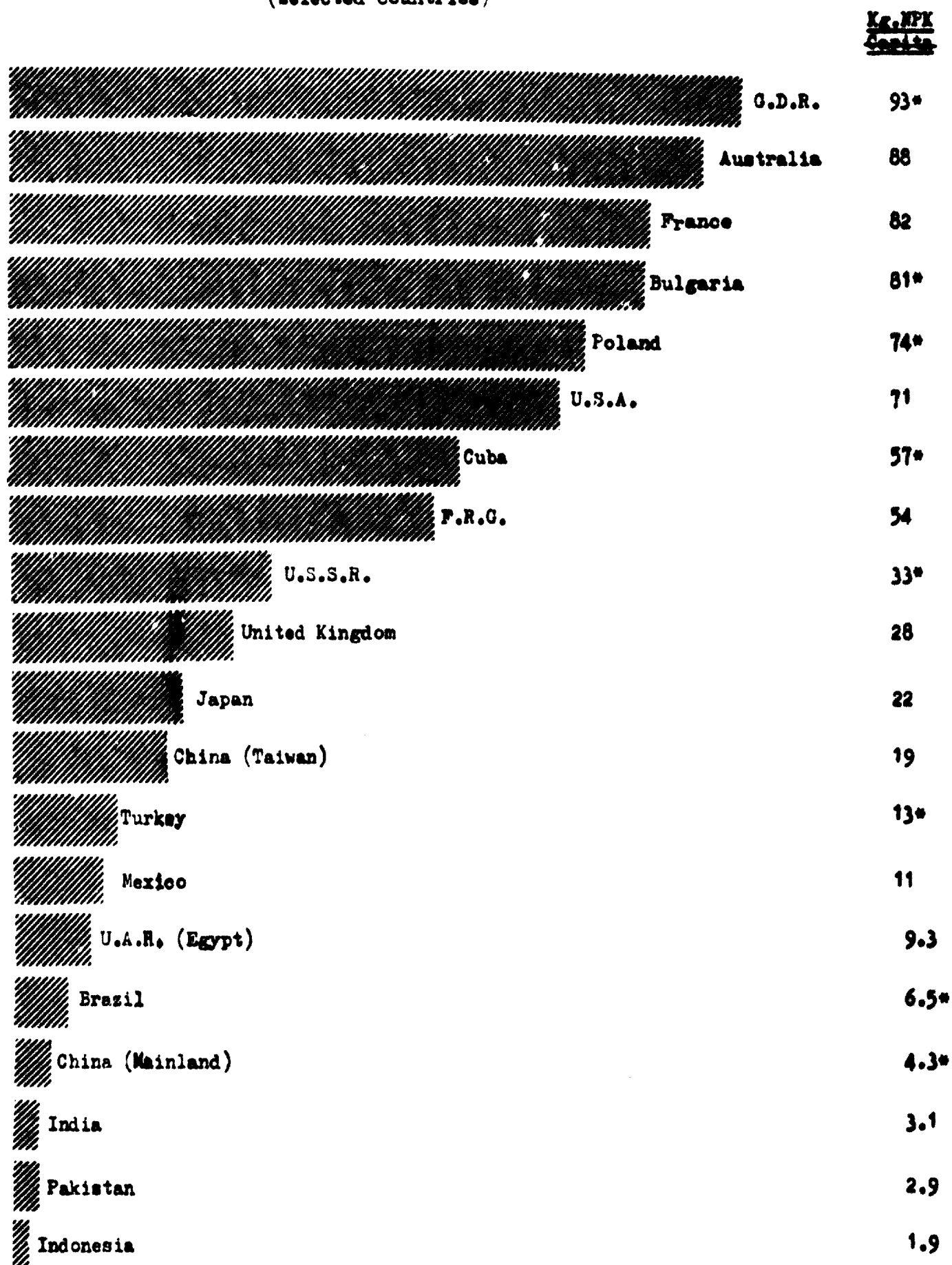
| <u>Developed Countries</u>           |                | <u>Developing Countries</u> |                   |
|--------------------------------------|----------------|-----------------------------|-------------------|
| <u>Very High - 50-100 kg./capita</u> |                |                             |                   |
| Australia                            | Germany (East) | Cuba                        |                   |
| Austria                              | Germany (West) |                             |                   |
| Belgium                              | Hungary        |                             |                   |
| Bulgaria                             | Poland         |                             |                   |
| Czechoslovakia                       | Sweden         |                             |                   |
| France                               | United States  |                             |                   |
| <u>High - 25-50 kg./capita</u>       |                |                             |                   |
| Canada                               | United Kingdom | Greece                      |                   |
| Netherlands                          | USSR           | Spain                       |                   |
| Romania                              |                | Yugoslavia                  |                   |
| <u>Moderate - 10-25 kg./capita</u>   |                |                             |                   |
| Italy                                |                | Central America*            | Mexico            |
| Japan                                |                | Chile                       | Portugal          |
| Switzerland                          |                | China (Taiwan)              | Rhodesia          |
|                                      |                | Korea (North)               | South Africa      |
|                                      |                | Korea (Rep. of)             | Turkey            |
| <u>Low - 5-10 kg./capita</u>         |                |                             |                   |
| NONE                                 |                | Algeria                     | Morocco           |
|                                      |                | Brazil                      | Peru              |
|                                      |                | Ceylon                      | Tunisia           |
|                                      |                | Colombia                    | UAR (Egypt)       |
|                                      |                | Ecuador                     | Vietnam (Rep. of) |
|                                      |                | Malaysia                    |                   |
| <u>Very low - 0-5 kg./capita</u>     |                |                             |                   |
| NONE                                 |                | Afghanistan                 | Kenya             |
|                                      |                | Angola                      | Madagascar        |
|                                      |                | Argentina                   | Mali              |
|                                      |                | Burma                       | Mozambique        |
|                                      |                | Cambodia                    | Nepal             |
|                                      |                | Cameroon                    | Nigeria           |
|                                      |                | China (Mainland)            | Pakistan          |
|                                      |                | Congo (Dem. Rep.)           | Philippines       |
|                                      |                | Ethiopia                    | Saudi Arabia      |
|                                      |                | Ghana                       | Sudan             |
|                                      |                | Haiti                       | Syria             |
|                                      |                | India                       | Tanzania          |
|                                      |                | Indonesia                   | Thailand          |
|                                      |                | Iran                        | Uganda            |
|                                      |                | Iraq                        | Upper Volta       |
|                                      |                |                             | Venezuela         |
|                                      |                |                             | Vietnam (North)   |

\*Central America includes Guatemala, Nicaragua, Honduras, El Salvador, Costa Rica and Panama.

FIGURE 5

FERTILIZER CONSUMPTION PER CAPITA - 1969/70

(selected countries)



\* For calendar year 1969

**TABLE VII**

**COMPARISON OF COUNTRIES—FERTILIZER CONSUMPTION PER CAPITA**  
 (Countries listed in order to fertilizer consumption per capita,  
 including all countries over 5,000,000 population in 1970)  
 (Developing countries in capital letters)  
 (For fertilizer year 1961/70)

|                                   | Fertilizer<br>Consumption<br><u>N+P<sub>2</sub>O<sub>5</sub>+K<sub>2</sub>O</u> | Population<br>mid-1970<br><u>millions</u> | Fertilizer<br>Consumption<br><u>kg./capita</u> |                     |
|-----------------------------------|---|---|--|---------------------|
| 1. East Germany                   | 1,500   | 16.2                                      | 92.6   | } Very high<br>>50  |
| 2. Australia                      | 1,097   | 12.5                                      | 87.7   |                     |
| 3. France                         | 4,203   | 51.1                                      | 82.3   |                     |
| 4. Bulgaria                       | 685   | 8.5                                       | 80.7   |                     |
| 5. Czechoslovakia                 | 1,130   | 14.7                                      | 77.0   |                     |
| 6. Poland                         | 2,440   | 33.0                                      | 74.1   |                     |
| 7. U.S.                           | 14,481  | 205.2                                     | 70.7   |                     |
| 8. Hungary                        | 689   | 10.3                                      | 67.8   |                     |
| 9. Sweden                         | 473   | 8.0                                       | 59.2   |                     |
| 10. CUBA                          | 479   | 8.4                                       | 57.0   |                     |
| 11. Austria                       | 409   | 7.4                                       | 55.3   |                     |
| 12. West Germany                  | 3,061   | 58.6                                      | 54.0   |                     |
| 13. Belgium                       | 520   | 9.7                                       | 53.6   |                     |
| 14. Netherlands                   | 614   | 13.0                                      | 47.2   | } High<br>25-50     |
| 15. Spain                         | 1,235   | 33.2                                      | 37.2   |                     |
| 16. Greece                        | 323   | 8.9                                       | 36.3   |                     |
| 17. Canada                        | 755   | 21.4                                      | 35.2   |                     |
| 18. USSR                          | 8,033   | 242.6                                     | 33.1   |                     |
| 19. Yugoslavia                    | 643   | 20.6                                      | 31.4   |                     |
| 20. Romania                       | 585   | 20.3                                      | 28.8   |                     |
| 21. United Kingdom                | 1,572   | 56.0                                      | 28.1   |                     |
| 22. SOUTH AFRICA                  | 501   | 20.1                                      | 24.9   | } Moderate<br>10-25 |
| 23. NORTH KOREA                   | 345   | 13.9                                      | 24.8   |                     |
| 24. Italy                         | 1,231   | 53.7                                      | 22.9   |                     |
| 25. Japan                         | 2,276   | 103.5                                     | 22.0   |                     |
| 26. Switzerland                   | 138   | 6.3                                       | 21.9   |                     |
| 27. Portugal                      | 197   | 9.6                                       | 20.5   |                     |
| 28. RHODESIA                      | 98  | 5.0                                       | 19.6   |                     |
| 29. CHINA (TAIWAN)                | 268   | 14.0                                      | 19.1   |                     |
| 30. KOREA, REP. OF                | 534   | 32.1                                      | 16.6   |                     |
| 31. CHILE                         | 148   | 9.8                                       | 15.2   |                     |
| 32. CENTRAL AMERICA <sup>1/</sup> | 209   | 16.5                                      | 12.7   |                     |
| 33. TURKEY                        | 446   | 35.6                                      | 12.5   |                     |
| 34. MEXICO                        | 534   | 50.7                                      | 10.5   |                     |
| 35. VIETNAM, REP. OF              | 174   | 18.0                                      | 9.7  |                     |
| 36. CEYLON                        | 120   | 12.6                                      | 9.5  |                     |
| 37. MALAYSA                       | 101   | 10.8                                      | 9.4  |                     |
| 38. U.A.R. (EGYPT)                | 315   | 33.9                                      | 9.3  |                     |
| 39. ECUADOR                       | 54  | 6.1                                       | 8.9  |                     |
| 40. TUNISIA                       | 39  | 5.1                                       | 7.6  |                     |
| 41. COLOMBIA                      | 158   | 21.4                                      | 7.4  |                     |
| 42. ALGERIA                       | 94  | 14.0                                      | 6.7  |                     |
| 43. BRAZIL                        | 601   | 93.0                                      | 6.5  |                     |
| 44. MOROCCO                       | 97  | 15.7                                      | 6.2  |                     |
| 45. PERU                          | 82  | 13.6                                      | 6.0  |                     |

**TABLE VII (cont'd)**

**COMPARISON OF COUNTRIES-FERTILIZER CONSUMPTION PER CAPITA**

(Continued)

|                      | <u>Fertilizer<br/>Consumption<br/>N+P<sub>2</sub>O<sub>5</sub>+K<sub>2</sub>O</u> | <u>Population<br/>mid-1970<br/>millions</u> | <u>Fertilizer<br/>Consumption<br/>Kg./capita</u> |   |
|----------------------|---|---|--|---|
| 46. SYRIA            | 29  | 6.2   | 4.7  | } |
| 47. PHILIPPINES      | 173   | 38.1  | 4.5  |   |
| 48. CHINA (MAINLAND) | 3,246   | 759.6                                       | 4.3  |   |
| 49. VENEZUELA        | 47  | 10.8  | 4.3  |   |
| 50. KENYA            | 40  | 10.9  | 3.7  |   |
| 51. THAILAND         | 130   | 36.2  | 3.6  |   |
| 52. CAMEROON         | 19  | 5.8   | 3.2  |   |
| 53. ARGENTINA        | 74  | 24.3  | 3.1  |   |
| 54. INDIA            | 1,710   | 554.6                                       | 3.1  |   |
| 55. IRAN             | 87  | 28.4  | 3.1  |   |
| 56. PAKISTAN         | 335   | 136.9                                       | 2.9  |   |
| 57. SUDAN            | 45  | 15.8  | 2.8  |   |
| 58. NORTH VIETNAM    | 59  | 21.2  | 2.8  |   |
| 59. BURMA            | 63  | 27.7  | 2.3  |   |
| 60. INDONESIA        | 227   | 121.2                                       | 1.9  |   |
| 61. MADAGASCAR       | 12  | 6.9   | 1.6  |   |
| 62. ANGOLA           | 8.6   | 5.7   | 1.5  |   |
| 63. IRAQ             | 15  | 9.7   | 1.5  |   |
| 64. MOZAMBIQUE       | 11  | 7.7   | 1.4  |   |
| 65. AFGHANISTAN      | 15  | 17.0  | 0.9  |   |
| 66. TANZANIA         | 13  | 13.2  | 0.9  |   |
| 67. CAMBODIA         | 5.4   | 7.1   | 0.8  |   |
| 68. MALI             | 2.9   | 5.1   | 0.6  |   |
| 69. SAUDI ARABIA     | 5.0   | 7.7   | 0.6  |   |
| 70. UGANDA           | 5.5   | 8.6   | 0.6  |   |
| 71. GHANA            | 4.2   | 9.0   | 0.5  |   |
| 72. HAITI            | 2.8   | 5.2   | 0.5  |   |
| 73. NEPAL            | 4.6   | 11.2  | 0.4  |   |
| 74. CONGO, DEM. REP. | 4.1   | 17.4  | 0.2  |   |
| 75. NIGERIA          | 14  | 55.1  | 0.2  |   |
| 76. UPPER VOLTA      | 1.3   | 5.4   | 0.2  |   |
| 77. ETHIOPIA         | 2.0   | 25.0  | 0.1  |   |

VERY LOW  
0-5

1/ "Central America" includes the five Central American Common Market Countries + Panama.

Sources:

Fertilizer consumption from Monthly Bulletin of Agricultural Economics and Statistics, FAO, Rome, February 1971.

Population from World Population Data Sheet-1970, Population Reference Bureau, Washington, April 1970.

TABLE VIII

Classification of Countries in Fertilizer Consumption per Hectare  
 (Including all countries over 5,000,000 population in 1970)  
 (In kg./hectare of N + P<sub>2</sub>O<sub>5</sub> + K<sub>2</sub>O in 1969/70 crop year)

| <u>Developed Countries</u>              |                  | <u>Developing Countries</u> |         |
|---|------------------|-----------------------------|---------|
| <u>Very High - over 200 kg./hectare</u> |                  |                             |         |
| Austria                                 | Germany, West    | China (Taiwan)              | Rep. of |
| Belgium                                 | Japan            | Cuba                        |         |
| Czechoslovakia                          | Netherlands      | Korea, Rep. of              |         |
| France                                  | Switzerland      |                             |         |
| Germany, East                           | United Kingdom   |                             |         |
| <u>High - 100-200 kg./hectare</u>       |                  |                             |         |
| Bulgaria                                | Poland           | Korea, North                |         |
| Hungary                                 | Sweden           | UAR (Egypt)                 |         |
| <u>Moderate - 50-100 kg./hectare</u>    |                  |                             |         |
| Greece                                  | Spain            | Ceylon                      |         |
| Italy                                   | USA              | Rhodesia                    |         |
| Romania                                 | Yugoslavia       | Vietnam, Rep. of            |         |
| <u>Low - 25-50 kg./hectare</u>          |                  |                             |         |
| Australia                               | Central America* | Malaysia                    |         |
| Portugal                                | Chile            | Peru                        |         |
| USSR                                    | China (Mainland) | South Africa                |         |
|   | Colombia         | Vietnam, North              |         |
| <u>Very low - 0-5 kg./hectare</u>       |                  |                             |         |
| Canada                                  | Afghanistan      | Mali                        |         |
|   | Algeria          | Mexico                      |         |
|   | Angola           | Morocco                     |         |
|   | Argentina        | Mozambique                  |         |
|   | Brazil           | Nepal                       |         |
|   | Burma            | Nigeria                     |         |
|   | Cambodia         | Pakistan                    |         |
|   | Cameroon         | Philippines                 |         |
|   | Congo, Dem.Rep.  | Saudi Arabia                |         |
|   | Ecuador          | Sudan                       |         |
|   | Ethiopia         | Syria                       |         |
|   | Ghana            | Tanzania                    |         |
|   | Haiti            | Thailand                    |         |
|   | India            | Tunisia                     |         |
|   | Indonesia        | Turkey                      |         |
|   | Iran             | Uganda                      |         |
|   | Iraq             | Upper Volta                 |         |
|   | Kenya            | Venezuela                   |         |
|   | Madagascar       |                             |         |

\*Central America includes Guatemala, Nicaragua, Honduras, El Salvador, Costa Rica and Panama.

**FIGURE 6**

**FERTILIZER CONSUMPTION PER HECTARE - 1969/70**

(selected countries)

|                  | <u>Kg.NPK</u><br><u>hectare</u> |
|------------------|---------------------------------|
| Japan            | 400                             |
| F.R.G.           | 374                             |
| G.D.R.           | 309*                            |
| China (Taiwan)   | 298                             |
| Cuba             | 234*                            |
| United Kingdom   | 213                             |
| France           | 212                             |
| Poland           | 198*                            |
| Bulgaria         | 150*                            |
| U.A.R. (Egypt)   | 112                             |
| U.S.A.           | 82                              |
| U.S.S.R.         | 36*                             |
| China (Mainland) | 30*                             |
| Australia        | 27                              |
| Mexico           | 22                              |
| Brazil           | 20*                             |
| Indonesia        | 18                              |
| Turkey           | 17*                             |
| Pakistan         | 14                              |
| India            | 9*                              |

\* For calendar year 1969



**TABLE IX**

**Comparison of Countries-Fertilizer Consumption per Hectare**  
 (Countries listed in order of fertilizer consumption per hectare,  
 including all countries over 5,000,000 population in 1970)  
 (For fertilizer year 1969/70)  
 (Developing countries in capital letters)

|                                   | Fertilizer<br>Consumption<br>N+P <sub>2</sub> O <sub>5</sub> +K <sub>2</sub> O<br>1,000 tons | Land under<br>Cultivation <sup>1/</sup><br>m. hectares | Fertilizer<br>Consumption<br>kg./hectare |                      |
|-----------------------------------|--|--|--|----------------------|
| 1. Netherlands                    | 614.0  | 0.91   | 675 <sup>2/</sup>                        | } Very High<br>≥ 200 |
| 2. Belgium                        | 519.7  | 0.89   | 581 <sup>2/</sup>                        |                      |
| 3. Japan                          | 2,276.4  | 5.68   | 400                                      |                      |
| 4. West Germany                   | 3,061.3  | 8.19   | 374                                      |                      |
| 5. Switzerland                    | 137.8  | 0.40   | 341                                      |                      |
| 6. East Germany                   | 1,500.2  | 4.99   | 301                                      |                      |
| 7. China (Taiwan)                 | 267.9  | 0.70   | 298                                      |                      |
| 8. Austria                        | 409.2  | 1.67   | 245                                      |                      |
| 9. CUBA                           | 478.5  | 2.04   | 234                                      |                      |
| 10. Korea, Rep. of.               | 533.9  | 2.32   | 230                                      |                      |
| 11. United Kingdom                | 1,571.5  | 7.38   | 213                                      | } High<br>100-200    |
| 12. Czechoslovakia                | 1,130.0  | 5.35   | 212                                      |                      |
| 13. France                        | 4,203.2  | 19.82  | 212                                      |                      |
| 14. North Korea                   | 345.0  | 1.89   | 182                                      |                      |
| 15. Poland                        | 2,440.0  | 15.49  | 158                                      |                      |
| 16. Sweden                        | 473.1  | 3.02   | 156                                      |                      |
| 17. Bulgaria                      | 685.0  | 4.56   | 150                                      |                      |
| 18. Hungary                       | 698.6  | 5.61   | 125                                      |                      |
| 19. U.A.R. (Egypt)                | 315.0  | 2.80   | 112                                      |                      |
| 20. Greece                        | 323.1  | 3.85   | 84                                       |                      |
| 21. USA                           | 14,480.7   | 176.4  | 82                                       | } Moderate<br>50-100 |
| 22. Italy                         | 1,231.1  | 15.20  | 81                                       |                      |
| 23. Yugoslavia                    | 646.2  | 8.25   | 78                                       |                      |
| 24. CEYLON                        | 112.5  | 1.78   | 61                                       |                      |
| 25. VIETNAM, REP. OF              | 174.1  | 2.84   | 61                                       |                      |
| 26. Spain                         | 1,234.9  | 20.48  | 60                                       |                      |
| 27. Romania                       | 585.0  | 10.56  | 55                                       |                      |
| 28. RHODESIA                      | 98.2   | 1.84   | 53                                       |                      |
| 29. Portugal                      | 197.3  | 4.37   | 45                                       |                      |
| 30. SOUTH AFRICA                  | 500.6  | 12.06  | 42                                       |                      |
| 31. CENTRAL AMERICA <sup>3/</sup> | 208.9  | 5.03   | 42                                       | } Low<br>25-50       |
| 32. USSR                          | 8,033.0  | 224.3  | 36                                       |                      |
| 33. CHILE                         | 148.4  | 4.51   | 33                                       |                      |
| 34. COLOMBIA                      | 157.7  | 5.05   | 31                                       |                      |
| 35. PERU                          | 81.6   | 2.63   | 31                                       |                      |
| 36. CHINA (MAINLAND)              | 3,246.0  | 109.4  | 30                                       |                      |
| 37. MALAYSIA                      | 101.3  | 3.57   | 29                                       |                      |
| 38. NORTH VIETNAM                 | 53.0   | 2.02   | 29                                       |                      |
| 39. Australia                     | 1,097.0  | 41.46  | 27                                       |                      |

**TABLE IX (cont'd)**

**Comparison of Countries-Fertilizer Consumption per Hectare**

(Continued)

|                      | Fertilizer<br>Consumption<br>N+P <sub>2</sub> O <sub>5</sub> +K <sub>2</sub> O<br>1,000 tons | Land Under<br>Cultivation <sup>1</sup><br>m. hectares | Fertilizer<br>Consumption<br>kg./hectare |
|----------------------|--|---|--|
| 40. KENYA            | 39.8   | 1.67  | 24                                       |
| 41. MEXICO           | 533.7  | 23.82   | 22                                       |
| 42. ECUADOR          | 54.3   | 2.60  | 21                                       |
| 43. BRAZIL           | 601.3  | 29.76   | 20                                       |
| 44. PHILIPPINES      | 172.6  | 8.55  | 20                                       |
| 45. INDONESIA        | 227.3  | 12.70   | 18                                       |
| 46. Canada           | 755.0  | 43.40   | 17                                       |
| 47. TURKEY           | 446.0  | 26.60   | 17                                       |
| 48. NIGERIA          | 94.4   | (6.7)   | 14                                       |
| 49. PAKISTAN         | 395.0  | 28.21   | 14                                       |
| 50. MOROCCO          | 96.6   | 7.30  | 12                                       |
| 51. SAUDI ARABIA     | 5.0  | 0.46  | 11                                       |
| 52. THAILAND         | 129.8  | 11.42   | 11                                       |
| 53. INDIA            | 1,710.1  | 163.7   | 10                                       |
| 54. VENEZUELA        | 47.0   | 5.21  | 9.0                                      |
| 55. ANGOLA           | 8.6  | 0.30  | 2.6                                      |
| 56. TUNISIA          | 38.6   | 4.51  | 8.6                                      |
| 57. HAITI            | 2.8  | 0.37  | 7.6                                      |
| 58. IRAN             | 87.0   | 11.59   | 7.5                                      |
| 59. SUDAN            | 14.5   | 7.10  | 6.3                                      |
| 60. SYRIA            | 48.1   | 5.86  | 4.9                                      |
| 61. CAMEROON         | 18.5   | 4.30  | 4.3                                      |
| 62. MADAGASCAR       | 12.4   | 2.86  | 4.3                                      |
| 63. MOZAMBIQUE       | 11.1   | 2.65  | 4.2                                      |
| 64. BURMA            | 61.0   | 16.01   | 3.3                                      |
| 65. ARGENTINA        | 74.1   | 33.01   | 2.2                                      |
| 66. IRAQ             | 14.6   | 7.50  | 2.0                                      |
| 67. NEPAL            | 4.6  | 2.27  | 2.0                                      |
| 68. AFGHANISTAN      | 15.0   | 7.84  | 1.9                                      |
| 69. CAMBODIA         | 5.4  | 2.38  | 1.8                                      |
| 70. GHANA            | 4.2  | 2.84  | 1.5                                      |
| 71. TANZANIA         | 12.5   | 11.70   | 1.1                                      |
| 72. UGANDA           | 5.5  | 4.89  | 1.1                                      |
| 73. CONGO, DEM. REP. | 4.1  | 7.20  | 0.6                                      |
| 74. NIGERIA          | 13.5   | 21.80   | 0.6                                      |
| 75. MALI             | 2.7  | 7.20  | 0.4                                      |
| 76. ETHIOPIA         | 2.0  | 12.52   | 0.2                                      |
| 77. UPPER VOLTA      | 1.4  | 3.66  | 0.1                                      |

Very Low  
← 25

<sup>1</sup> "Land under cultivation" is arable land as defined and reported on the FAO Production Yearbook. It does not include permanent pasture.

<sup>2</sup> Fertilizer consumption per hectare as given in this table for Netherlands and Belgium are not comparable with other figures in the table since more than half of the fertilizer in these two countries is used on permanent pasture and not on "cultivated land". A similar situation exists, but to a much lesser extent, in some other Western European countries, such as United Kingdom, Denmark, West Germany and Switzerland.

TABLE IX (cont'd)

Comparison of Countries-Fertilizer Consumption per Hectare  
(Continued)

<sup>3/</sup> "Central America" includes Guatemala, Nicaragua, Honduras, El Salvador, Costa Rica, and Panama.

Sources:

Fertilizer consumption from Monthly Bulletin of Agricultural Economics and Economics and Statistics, FAO, Rome, February 1971.

Land under cultivation from Production Yearbook--1969, FAO, Rome, 1970.

FIGURE 7

PRODUCTION OF NITROGEN FERTILIZERS  
(excluding Mainland China, North Korea, North Vietnam)

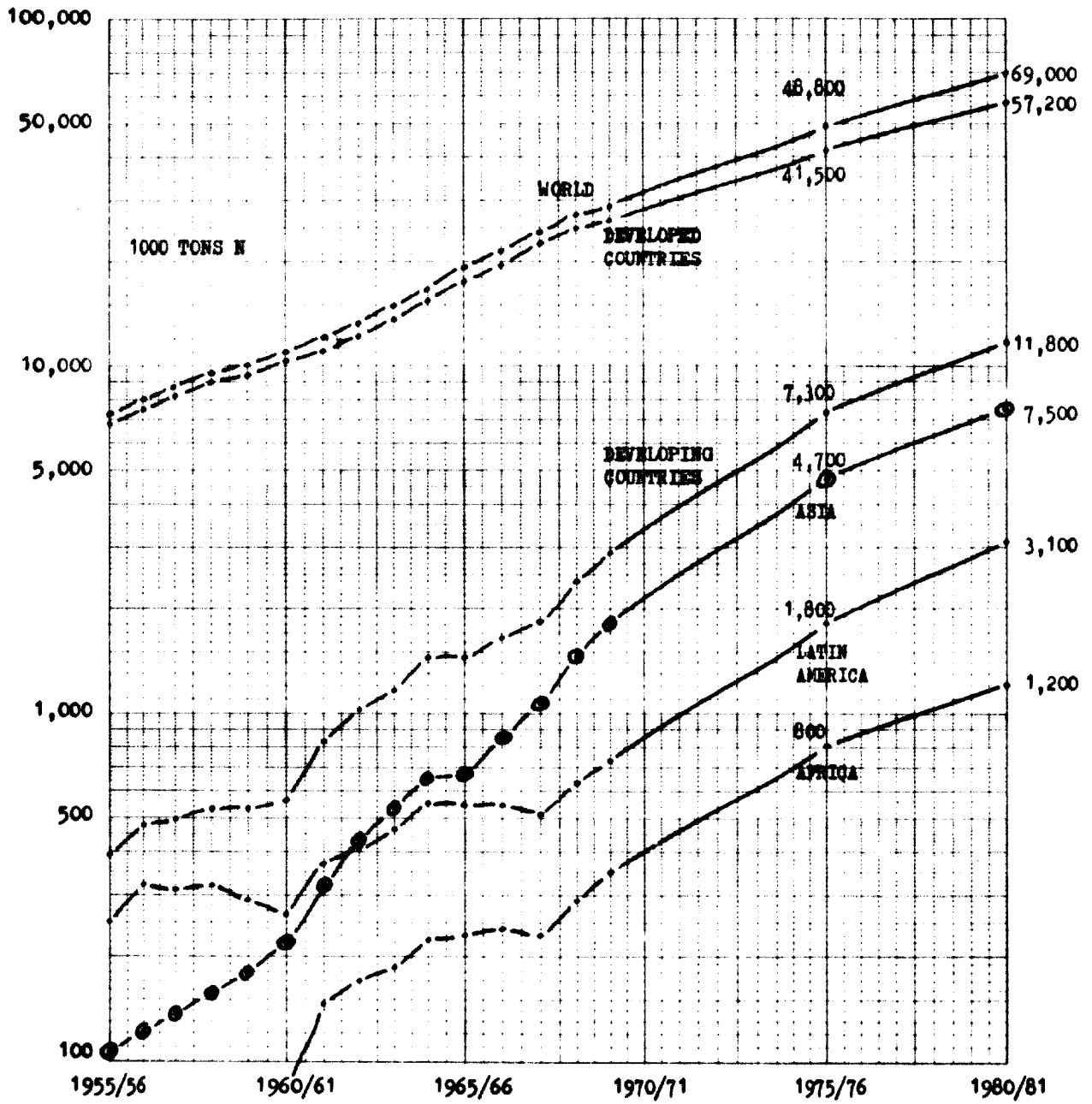


FIGURE 8

CONSUMPTION OF NITROGEN FERTILIZERS

(excluding Mainland China, North Korea, North Vietnam)

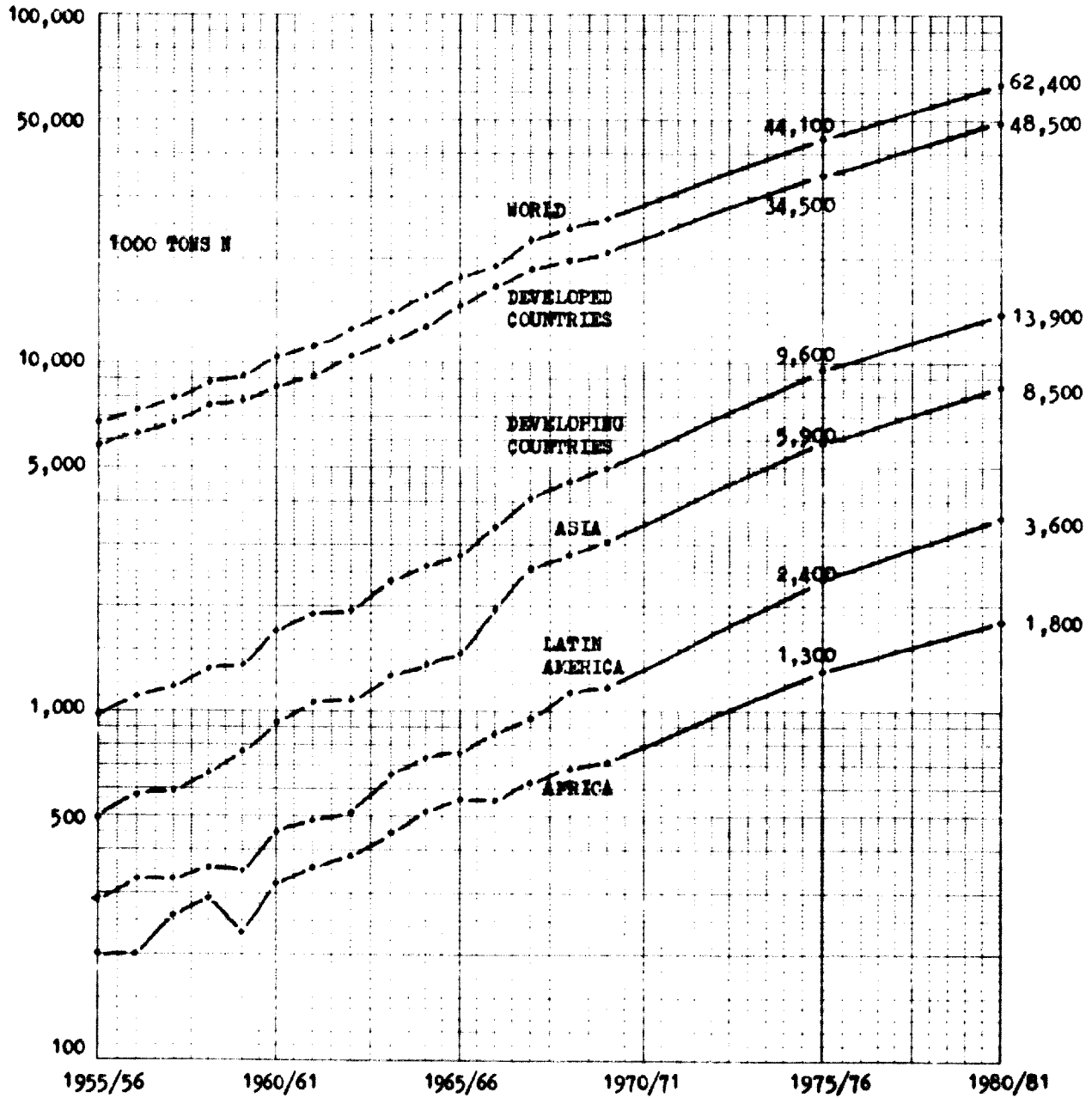
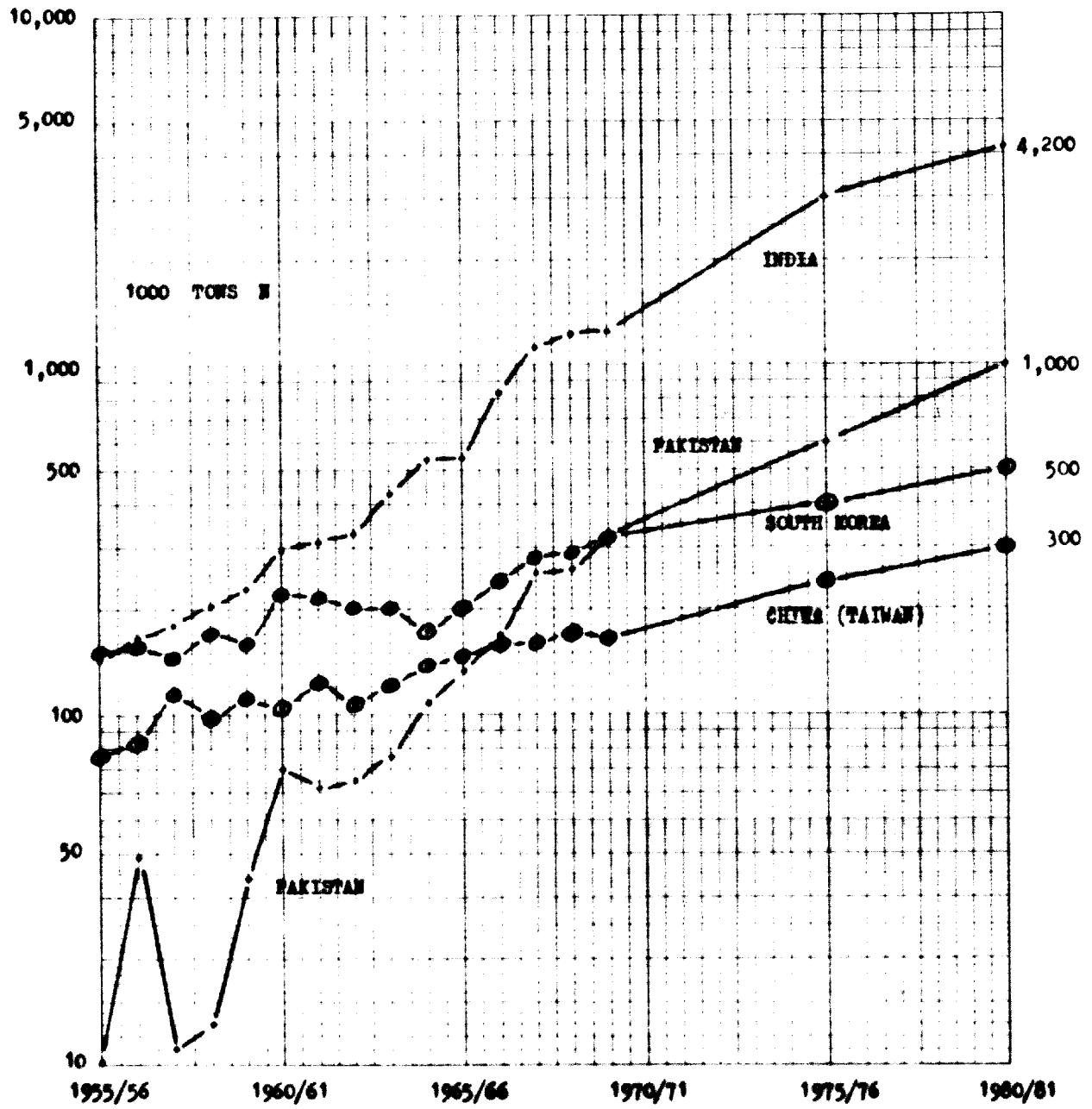


FIGURE 9

CONSUMPTION OF NITROGEN FERTILIZERS IN FOUR ASIAN COUNTRIES

TO ILLUSTRATE METHOD OF PROJECTION



**TABLE X**

**Production and Consumption of Nitrogen Fertilizers**  
1960/61 to 1980/81  
(thousand tons N)

|                                   | Production        |                   |                     |                     | Consumption       |                   |                     |                     |
|-----------------------------------|-------------------|-------------------|---------------------|---------------------|-------------------|-------------------|---------------------|---------------------|
|                                   | 1960/61<br>actual | 1969/70<br>actual | 1975/76<br>forecast | 1980/81<br>forecast | 1960/61<br>actual | 1969/70<br>actual | 1975/76<br>forecast | 1980/81<br>forecast |
| <b>DEVELOPED COUNTRIES</b>        |                   |                   |                     |                     |                   |                   |                     |                     |
| Western Europe                    | 4,375             | 7,870             | 12,600              | 15,400              | 3,150             | 5,955             | 9,000               | 11,500              |
| Eastern Europe                    | 905               | 3,255             | 5,300               | 8,500               | 960               | 3,045             | 5,500               | 8,500               |
| U.S.S.R.                          | 1,000             | 4,510             | 7,500               | 11,000              | 770               | 3,800             | 7,000               | 10,500              |
| U.S.A./Canada                     | 3,025             | 8,235             | 12,300              | 17,000              | 2,840             | 6,925             | 11,500              | 16,000              |
| Japan                             | 1,030             | 2,150             | 3,500               | 4,800               | 755               | 895               | 1,150               | 1,400               |
| Oceania                           | 30                | 180               | 300                 | 500                 | 30                | 190               | 350                 | 600                 |
| Developed countries, total        | 10,365            | 26,200            | 41,500              | 57,200              | 8,505             | 20,810            | 34,500              | 48,500              |
| <b>DEVELOPING COUNTRIES</b>       |                   |                   |                     |                     |                   |                   |                     |                     |
| <b>Asia - ECAFE area</b>          |                   |                   |                     |                     |                   |                   |                     |                     |
| India                             | 110               | 730               | 2,200               | 3,200               | 295               | 1,245             | 3,000               | 4,200               |
| Pakistan                          | 10                | 175               | 350                 | 600                 | 70                | 320               | 600                 | 1,000               |
| Korea, South                      | 20                | 355               | 450                 | 600                 | 220               | 320               | 400                 | 500                 |
| Indonesia                         | --                | 45                | 200                 | 400                 | 20                | 165               | 300                 | 500                 |
| China, Taiwan                     | 50                | 195               | 250                 | 300                 | 105               | 165               | 240                 | 300                 |
| Iran                              | --                | 30                | 200                 | 500                 | 10                | 55                | 110                 | 200                 |
| Rest of ECAFE area                | 10                | 110               | 250                 | 500                 | 140               | 460               | 650                 | 1,000               |
| ECAFE area, total                 | 200               | 1,640             | 3,900               | 6,100               | 860               | 2,730             | 5,300               | 7,700               |
| <b>Asia - Middle East</b>         |                   |                   |                     |                     |                   |                   |                     |                     |
| Turkey                            | --                | 50                | 200                 | 400                 | 25                | 230               | 450                 | 600                 |
| Rest of Middle East               | 20                | 115               | 600                 | 1,000               | 40                | 85                | 150                 | 200                 |
| Middle East, total                | 20                | 165               | 800                 | 1,400               | 65                | 315               | 600                 | 800                 |
| Asia, total*                      | 220               | 1,805             | 4,700               | 7,500               | 925               | 3,045             | 5,900               | 8,500               |
| <b>Africa</b>                     |                   |                   |                     |                     |                   |                   |                     |                     |
| U.A.R.                            | 55                | 105               | 200                 | 250                 | 175               | 265               | 400                 | 500                 |
| South Africa                      | 25                | 205               | 300                 | 400                 | 45                | 150               | 300                 | 400                 |
| Rhodesia                          | --                | 25                | --                  | --                  | 20                | 45                | 75                  | 100                 |
| Sudan                             | --                | --                | --                  | --                  | 20                | 40                | 75                  | 100                 |
| Morocco                           | --                | --                | --                  | --                  | 10                | 35                | 75                  | 100                 |
| Algeria                           | --                | 15                | 175                 | 300                 | 15                | 30                | 50                  | 100                 |
| Rest of Africa                    | --                | --                | 125                 | 250                 | 35                | 145               | 325                 | 500                 |
| Africa, total                     | 80                | 350               | 800                 | 1,200               | 320               | 710               | 1,300               | 1,800               |
| <b>Latin America</b>              |                   |                   |                     |                     |                   |                   |                     |                     |
| Mexico                            | 30                | 360               | 450                 | 700                 | 135               | 390               | 750                 | 1,050               |
| Brazil                            | 15                | 5                 | 200                 | 400                 | 65                | 165               | 375                 | 600                 |
| Cuba                              | --                | --                | 100                 | 200                 | 25                | 180               | 350                 | 500                 |
| Peru                              | 50                | 35                | 80                  | 125                 | 60                | 70                | 100                 | 150                 |
| Argentina                         | --                | 40                | 100                 | 175                 | 10                | 45                | 100                 | 175                 |
| Colombia                          | --                | 50                | 120                 | 250                 | 5                 | 55                | 125                 | 200                 |
| Chile                             | 150               | 100               | 200                 | 300                 | 50                | 40                | 75                  | 125                 |
| Venezuela                         | --                | 15                | 400                 | 750                 | 5                 | 20                | 50                  | 100                 |
| Rest of Latin America             | 20                | 130               | 150                 | 200                 | 95                | 220               | 475                 | 700                 |
| Latin America, total              | 265               | 735               | 1,800               | 3,100               | 450               | 1,185             | 2,400               | 3,600               |
| Developing countries, total*      | 565               | 2,890             | 7,300               | 11,800              | 1,695             | 4,940             | 9,600               | 13,900              |
| <b>Asia - Socialist countries</b> |                   |                   |                     |                     |                   |                   |                     |                     |
| P. R. China                       | 400               | 1,040             | 1,900               | 2,500               | 660               | 2,495             | 4,200               | 5,400               |
| North Korea                       | 80                | 205               | 300                 | 400                 | 90                | 205               | 300                 | 400                 |
| North Vietnam                     | --                | --                | --                  | 100                 | 15                | 35                | 100                 | 200                 |
| Asia-Socialist, total             | 480               | 1,245             | 2,200               | 3,000               | 765               | 2,735             | 4,600               | 6,000               |
| Developing countries, total**     | 1,045             | 4,135             | 9,500               | 14,800              | 2,460             | 7,675             | 14,200              | 19,900              |
| <b>WORLD, TOTAL</b>               | <b>11,410</b>     | <b>30,335</b>     | <b>51,000</b>       | <b>72,000</b>       | <b>10,965</b>     | <b>28,485</b>     | <b>48,700</b>       | <b>68,400</b>       |

\*Excluding People's Republic of China, North Korea and North Vietnam

\*\*Including People's Republic of China, North Korea and North Vietnam

TABLE XI

## Production and Consumption of Phosphate Fertilizers

1960/61 to 1980/81  
(thousand tons P<sub>2</sub>O<sub>5</sub>)

|                                   | Production        |                   |                     |                     | Consumption       |                   |                     |                     |
|-----------------------------------|-------------------|-------------------|---------------------|---------------------|-------------------|-------------------|---------------------|---------------------|
|                                   | 1960/61<br>actual | 1969/70<br>actual | 1975/76<br>forecast | 1980/81<br>forecast | 1960/61<br>actual | 1969/70<br>actual | 1975/76<br>forecast | 1980/81<br>forecast |
| <b>DEVELOPED COUNTRIES</b>        |                   |                   |                     |                     |                   |                   |                     |                     |
| Western Europe                    | 3,815             | 5,640             | 7,200               | 8,300               | 3,540             | 5,185             | 6,500               | 7,500               |
| Eastern Europe                    | 685               | 1,880             | 3,400               | 4,500               | 820               | 2,105             | 4,000               | 5,500               |
| U.S.S.R.                          | 915               | 2,070             | 3,600               | 5,000               | 825               | 1,915             | 3,000               | 4,000               |
| U.S.A./Canada                     | 2,835             | 5,170             | 8,400               | 10,800              | 2,550             | 4,495             | 6,500               | 8,500               |
| Japan                             | 515               | 745               | 900                 | 1,000               | 490               | 690               | 900                 | 1,000               |
| Oceania                           | 790               | 1,120             | 1,600               | 2,000               | 800               | 1,170             | 1,600               | 2,000               |
| Developed countries, total        | 9,555             | 16,625            | 25,100              | 31,600              | 9,025             | 15,560            | 22,500              | 28,500              |
| <b>DEVELOPING COUNTRIES</b>       |                   |                   |                     |                     |                   |                   |                     |                     |
| <b>Asia - ECAFE area</b>          |                   |                   |                     |                     |                   |                   |                     |                     |
| India                             | 55                | 225               | 650                 | 1,000               | 55                | 315               | 1,100               | 1,700               |
| Pakistan                          | --                | --                | 75                  | 150                 | 15                | 50                | 200                 | 400                 |
| Korea, South                      | --                | 145               | 100                 | 140                 | 55                | 130               | 250                 | 350                 |
| Indonesia                         | --                | --                | 75                  | 100                 | 10                | 55                | 45                  | 100                 |
| China, Taiwan                     | 30                | 45                | 70                  | 100                 | 35                | 40                | 75                  | 100                 |
| Iran                              | --                | --                | 30                  | 50                  | 5                 | 30                | 30                  | 50                  |
| Rest of ECAFE area                | 5                 | 35                | 100                 | 200                 | 40                | 190               | 350                 | 500                 |
| ECAFE area, total                 | 90                | 450               | 1,100               | 1,750               | 215               | 810               | 2,050               | 3,200               |
| <b>Asia - Middle East</b>         |                   |                   |                     |                     |                   |                   |                     |                     |
| Turkey                            | 5                 | 45                | 60                  | 100                 | 10                | 200               | 375                 | 500                 |
| Rest of Middle East               | 20                | 45                | 40                  | 50                  | 35                | 50                | 75                  | 100                 |
| Middle East, total                | 25                | 90                | 100                 | 150                 | 45                | 250               | 450                 | 600                 |
| Asia, total*                      | 115               | 540               | 1,200               | 1,900               | 260               | 1,060             | 2,500               | 3,800               |
| <b>Africa</b>                     |                   |                   |                     |                     |                   |                   |                     |                     |
| U.A.R.                            | 30                | 60                | 125                 | 200                 | 35                | 50                | 70                  | 90                  |
| South Africa                      | 135               | 310               | 400                 | 500                 | 145               | 260               | 400                 | 520                 |
| Rhodesia                          | 20                | 30                | 30                  | 40                  | 25                | 30                | 30                  | 40                  |
| Sudan                             | --                | --                | --                  | --                  | --                | --                | 10                  | 20                  |
| Morocco                           | 15                | 125               | 500                 | 800                 | 15                | 40                | 30                  | 40                  |
| Algeria                           | 15                | 15                | 120                 | 300                 | 25                | 40                | 30                  | 40                  |
| Rest of Africa                    | 65                | 200               | 425                 | 660                 | 45                | 100               | 230                 | 350                 |
| Africa, total                     | 280               | 740               | 1,600               | 2,500               | 290               | 520               | 800                 | 1,100               |
| <b>Latin America</b>              |                   |                   |                     |                     |                   |                   |                     |                     |
| Mexico                            | 30                | 115               | 300                 | 500                 | 45                | 120               | 300                 | 450                 |
| Brazil                            | 45                | 120               | 250                 | 400                 | 75                | 235               | 375                 | 500                 |
| Cuba                              | 10                | 5                 | 35                  | 50                  | 20                | 115               | 220                 | 325                 |
| Peru                              | 55                | 5                 | 35                  | 50                  | 20                | 10                | 40                  | 50                  |
| Argentina                         | --                | --                | 25                  | 50                  | 5                 | 25                | 50                  | 75                  |
| Colombia                          | 5                 | 10                | 25                  | 50                  | 25                | 55                | 85                  | 125                 |
| Chile                             | 10                | 5                 | 35                  | 50                  | 30                | 85                | 175                 | 225                 |
| Venezuela                         | --                | 10                | 35                  | 50                  | 5                 | 10                | 30                  | 50                  |
| Rest of Latin America             | 10                | 10                | 60                  | 100                 | 55                | 115               | 225                 | 300                 |
| Latin America, total              | 165               | 280               | 800                 | 1,300               | 275               | 770               | 1,500               | 2,100               |
| Developing countries, total*      | 560               | 1,560             | 3,600               | 5,700               | 825               | 2,350             | 4,800               | 7,000               |
| <b>Asia - Socialist countries</b> |                   |                   |                     |                     |                   |                   |                     |                     |
| P. R. China                       | 200               | 505               | 900                 | 1,200               | 200               | 510               | 900                 | 1,200               |
| North Korea                       | 20                | 80                | 150                 | 200                 | 20                | 80                | 150                 | 200                 |
| North Vietnam                     | 10                | 25                | 50                  | 100                 | 10                | 25                | 50                  | 100                 |
| Asia-Socialist, total             | 230               | 610               | 1,100               | 1,500               | 230               | 615               | 1,100               | 1,500               |
| Developing countries, total**     | 790               | 2,170             | 4,700               | 7,200               | 1,055             | 2,965             | 5,900               | 8,500               |
| WORLD, TOTAL                      | 10,345            | 18,795            | 29,800              | 38,800              | 10,080            | 18,525            | 28,400              | 37,000              |

\*Excluding People's Republic of China, North Korea and North Vietnam

\*\*Including People's Republic of China, North Korea and North Vietnam



TABLE XII

Production and Consumption of Potash Fertilizers  
1960/61 to 1980/81  
(thousand tons K<sub>2</sub>O)

|                                   | Production        |                   |                     |                     | Consumption       |                   |                     |                     |
|-----------------------------------|-------------------|-------------------|---------------------|---------------------|-------------------|-------------------|---------------------|---------------------|
|                                   | 1960/61<br>actual | 1969/70<br>actual | 1975/76<br>forecast | 1980/81<br>forecast | 1960/61<br>actual | 1969/70<br>actual | 1975/76<br>forecast | 1980/81<br>forecast |
| <b>DEVELOPED COUNTRIES</b>        |                   |                   |                     |                     |                   |                   |                     |                     |
| Western Europe                    | 3,870             | 4,650             | 5,600               | 6,200               | 3,400             | 4,510             | 5,200               | 6,000               |
| Eastern Europe                    | 1,690             | 2,345             | 2,900               | 3,100               | 1,040             | 2,575             | 3,600               | 4,500               |
| U.S.S.R.                          | 1,080             | 3,245             | 5,700               | 8,000               | 765               | 2,320             | 3,600               | 4,500               |
| U.S.A./Canada                     | 2,045             | 5,985             | 7,700               | 10,000              | 2,065             | 3,815             | 5,500               | 7,000               |
| Japan                             | --                | --                | --                  | --                  | 600               | 690               | 750                 | 900                 |
| Oceania                           | --                | --                | --                  | --                  | 90                | 190               | 250                 | 300                 |
| Developed countries, total        | 8,685             | 16,225            | 21,900              | 27,300              | 7,960             | 14,100            | 18,900              | 23,200              |
| <b>DEVELOPING COUNTRIES</b>       |                   |                   |                     |                     |                   |                   |                     |                     |
| <b>Asia - ECAFE area</b>          |                   |                   |                     |                     |                   |                   |                     |                     |
| India                             | --                | --                | --                  | --                  | 30                | 150               | 700                 | 950                 |
| Pakistan                          | --                | --                | --                  | --                  | 10                | 25                | 120                 | 200                 |
| Korea, South                      | --                | --                | --                  | --                  | 5                 | 85                | 135                 | 200                 |
| Indonesia                         | --                | --                | --                  | --                  | 10                | 10                | 35                  | 50                  |
| China, Taiwan                     | --                | --                | --                  | --                  | 35                | 60                | 80                  | 100                 |
| Iran                              | --                | --                | --                  | --                  | --                | --                | 30                  | 50                  |
| Rest of ECAFE area                | --                | --                | --                  | --                  | 70                | 180               | 250                 | 350                 |
| ECAFE area, total                 | --                | --                | --                  | --                  | 160               | 510               | 1,350               | 1,900               |
| <b>Asia - Middle East</b>         |                   |                   |                     |                     |                   |                   |                     |                     |
| Turkey                            | --                | --                | --                  | --                  | --                | 15                | 115                 | 150                 |
| Rest of Middle East               | 95                | 440               | 750                 | 950                 | 10                | 15                | 35                  | 50                  |
| Middle East, total                | 95                | 440               | 750                 | 950                 | 10                | 30                | 150                 | 200                 |
| Asia, total*                      | 95                | 440               | 750                 | 950                 | 170               | 540               | 1,500               | 2,100               |
| <b>Africa</b>                     |                   |                   |                     |                     |                   |                   |                     |                     |
| U.A.R.                            | --                | --                | --                  | --                  | --                | --                | 40                  | 75                  |
| South Africa                      | --                | --                | --                  | --                  | 35                | 90                | 150                 | 225                 |
| Rhodesia                          | --                | --                | --                  | --                  | 20                | 25                | 30                  | 35                  |
| Sudan                             | --                | --                | --                  | --                  | --                | 5                 | 15                  | 25                  |
| Morocco                           | --                | --                | --                  | --                  | 5                 | 25                | 20                  | 25                  |
| Algeria                           | --                | --                | --                  | --                  | 15                | 25                | 15                  | 25                  |
| Rest of Africa                    | --                | 70                | 450                 | 800                 | 25                | 70                | 130                 | 190                 |
| Africa, total                     | --                | 70                | 450                 | 800                 | 100               | 240               | 400                 | 600                 |
| <b>Latin America</b>              |                   |                   |                     |                     |                   |                   |                     |                     |
| Mexico                            | --                | --                | --                  | --                  | 10                | 25                | 150                 | 250                 |
| Brazil                            | --                | --                | --                  | --                  | 105               | 200               | 260                 | 400                 |
| Cuba                              | --                | --                | --                  | --                  | 20                | 185               | 200                 | 300                 |
| Peru                              | 5                 | --                | 5                   | 5                   | 5                 | 5                 | 35                  | 50                  |
| Argentina                         | --                | --                | --                  | --                  | 5                 | 5                 | 35                  | 50                  |
| Colombia                          | --                | --                | --                  | --                  | 5                 | 50                | 75                  | 100                 |
| Chile                             | 10                | 20                | 45                  | 95                  | 15                | 20                | 35                  | 50                  |
| Venezuela                         | --                | --                | --                  | --                  | 5                 | 15                | 35                  | 50                  |
| Rest of Latin America             | --                | --                | --                  | --                  | 65                | 110               | 175                 | 250                 |
| Latin America, total              | 15                | 20                | 50                  | 100                 | 235               | 615               | 1,000               | 1,500               |
| Developing countries, total*      | 110               | 530               | 1,250               | 1,850               | 505               | 1,395             | 2,900               | 4,200               |
| <b>Asia - Socialist countries</b> |                   |                   |                     |                     |                   |                   |                     |                     |
| P. R. China                       | 50                | 140               | 250                 | 350                 | 50                | 240               | 400                 | 550                 |
| North Korea                       | --                | --                | --                  | --                  | --                | 60                | 75                  | 100                 |
| North Vietnam                     | --                | --                | --                  | --                  | --                | --                | 25                  | 50                  |
| Asia-Socialist, total             | 50                | 140               | 250                 | 350                 | 50                | 300               | 500                 | 700                 |
| Developing countries, total**     | 160               | 670               | 1,500               | 2,200               | 555               | 1,695             | 3,400               | 4,900               |
| <b>WORLD, TOTAL</b>               | <b>8,845</b>      | <b>16,895</b>     | <b>23,400</b>       | <b>29,500</b>       | <b>8,515</b>      | <b>15,795</b>     | <b>22,300</b>       | <b>28,100</b>       |

\*Excluding People's Republic of China, North Korea and North Vietnam

\*\*Including People's Republic of China, North Korea and North Vietnam

Notes to Production/Consumption Tables

(Tables X, XI, XII)

1. All figures are rounded to nearest 5,000 tons. All tons are metric tons.
2. All areas indicated by (\*) exclude Mainland China, North Korea, North Vietnam and Mongolia.
3. Data for 1960/61 and 1969/70 are actual productions and consumptions as reported in the FAO Production Yearbook. Figures for 1975/76 and 1980/81 are projections made by visual graphical extrapolation based on historical data for the period 1955/56 to 1969/70.
4. All data in this table exclude non-fertilizer uses of nitrogen, phosphoric oxide and potash.
5. "Production" includes all forms of solid fertilizers produced in a country for domestic consumption or for export and also ammonia and phosphoric acid produced in a country for domestic consumption as fertilizers, but "production" excludes ammonia and phosphoric acid produced for export, such as ammonia exported from Trinidad, Kuwait, Saudi Arabia, Iran and possibly other countries, and phosphoric acid exported from Mexico and possibly other countries. Exported ammonia and phosphoric acid therefore appear in the data for production of fertilizers in the importing countries.
6. "Rest of ECAFE Area" includes Afghanistan, Nepal, Ceylon, Burma, Thailand, Philippines, Malaysia, South Vietnam, Cambodia, Laos, Hong Kong, Singapore, Brunei, Ryukyu Islands.
7. "Rest of Middle East" includes Israel, Syria, Lebanon, Cyprus, Jordan, Iraq, Saudi Arabia, Kuwait, Yemen, Southern Yemen, Qatar, Bahrain and the Trucial States.
8. "Rest of Africa" includes all countries and dependencies in Africa other than the six stated separately in the Master Table.
9. "Rest of Latin America" includes Ecuador, Bolivia, Paraguay, Uruguay, Guyana, French Guiana, Surinam, the six Central American countries, and all Caribbean Islands except Cuba and Puerto Rico (Puerto Rico included in U.S.A.).

FIGURE 10

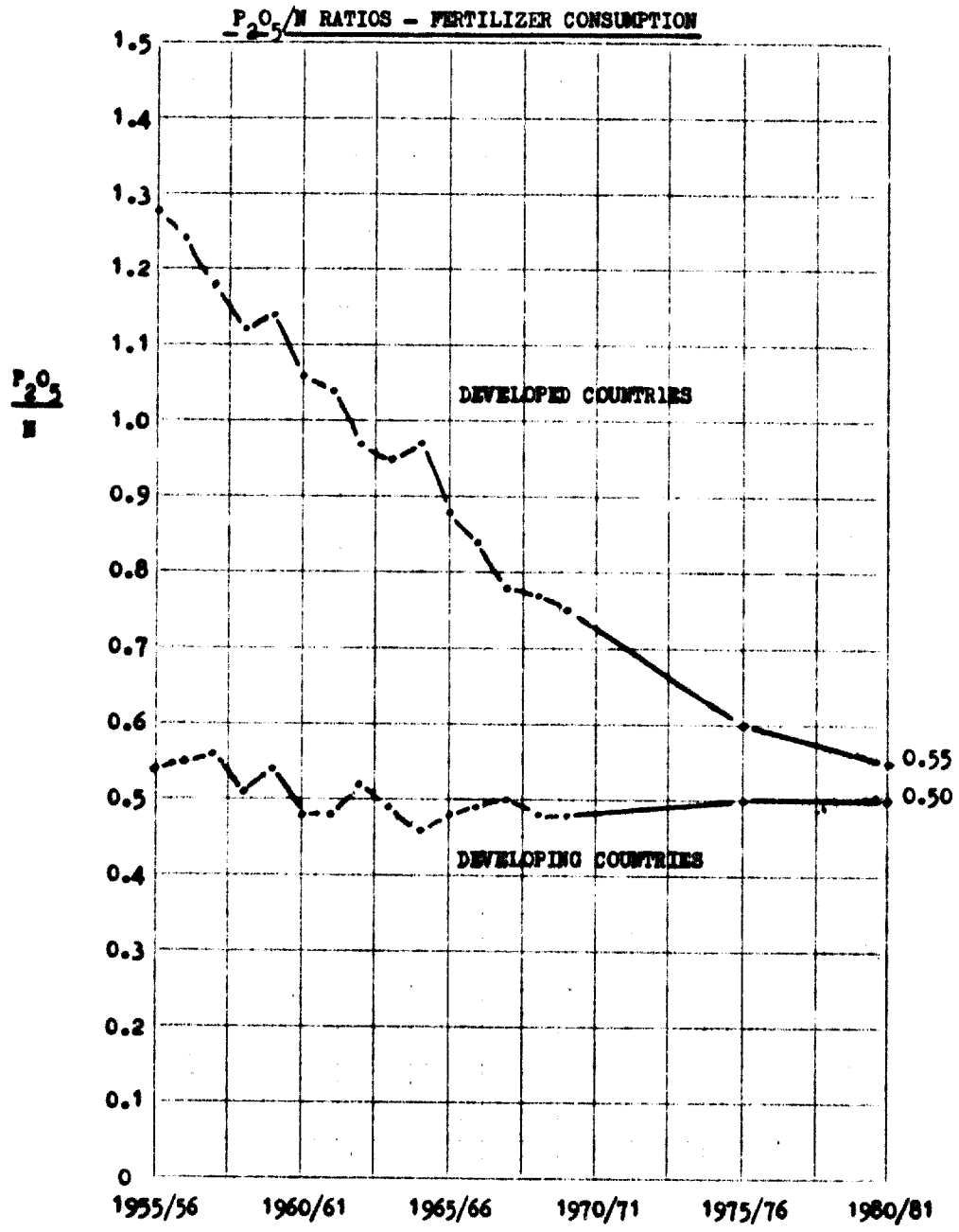


FIGURE 11

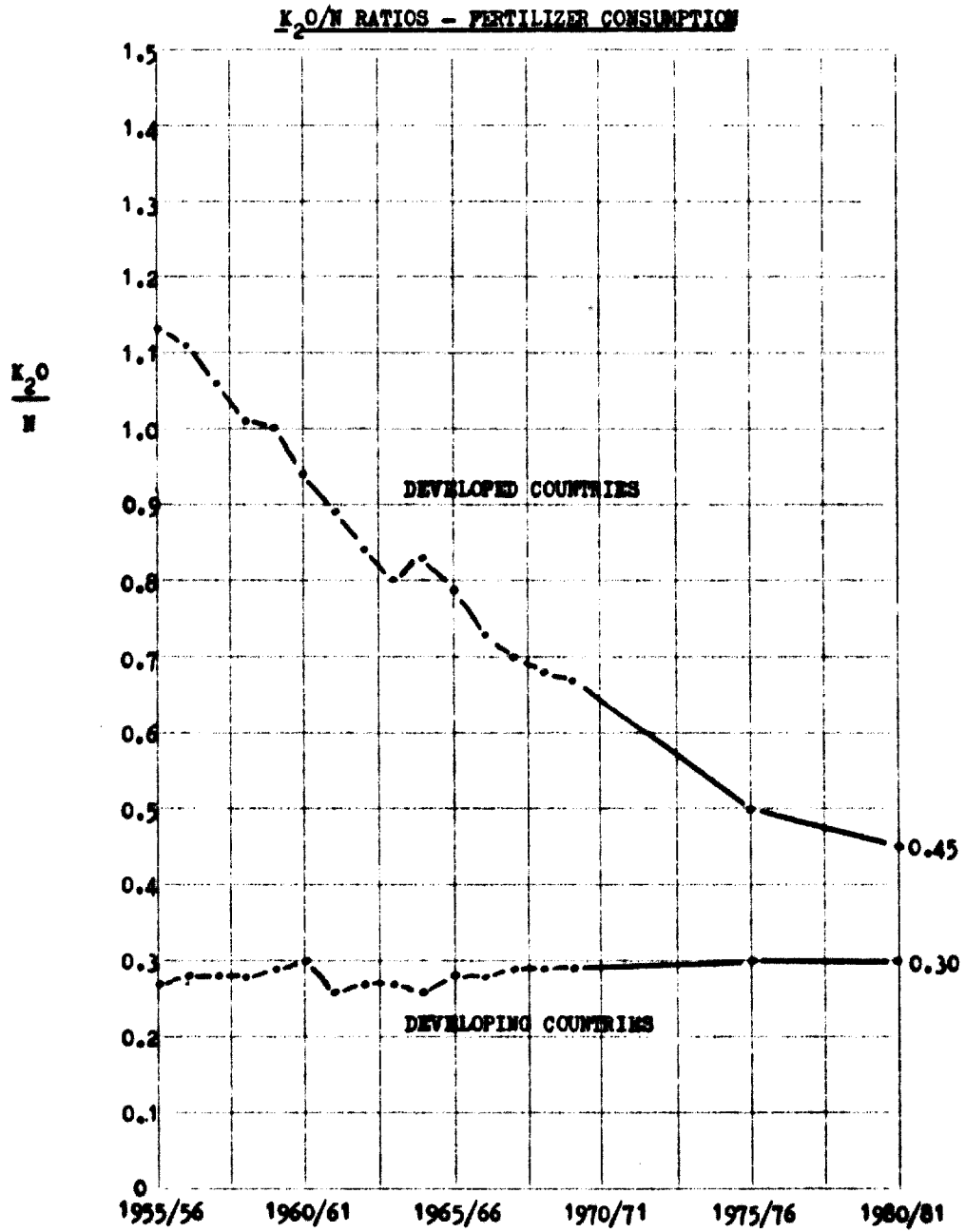


FIGURE 12

PRODUCTION AND CONSUMPTION OF NITROGEN FERTILIZERS IN INDIA

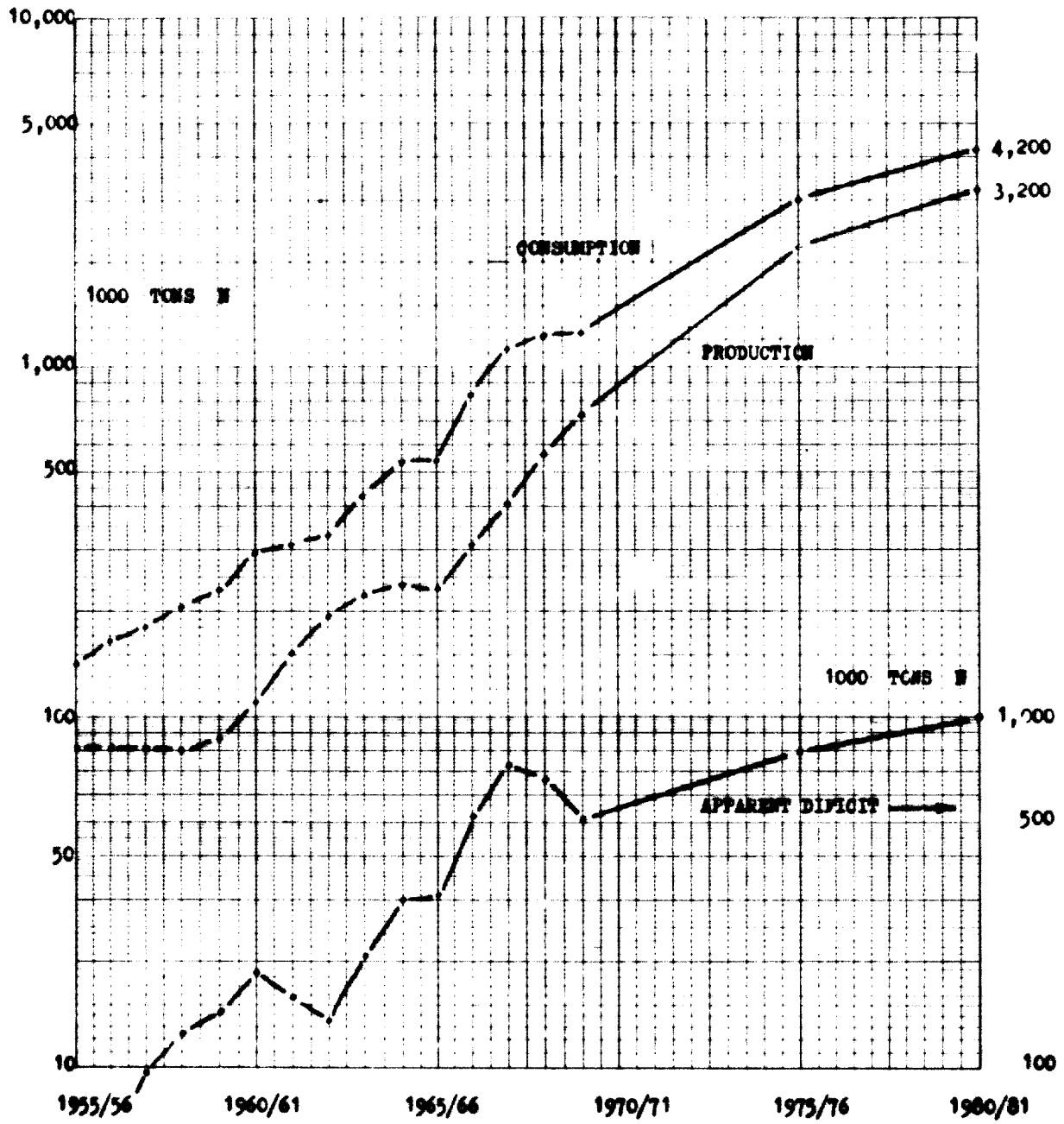


FIGURE 13

PRODUCTION AND CONSUMPTION OF NITROGEN FERTILIZERS IN MAINLAND CHINA

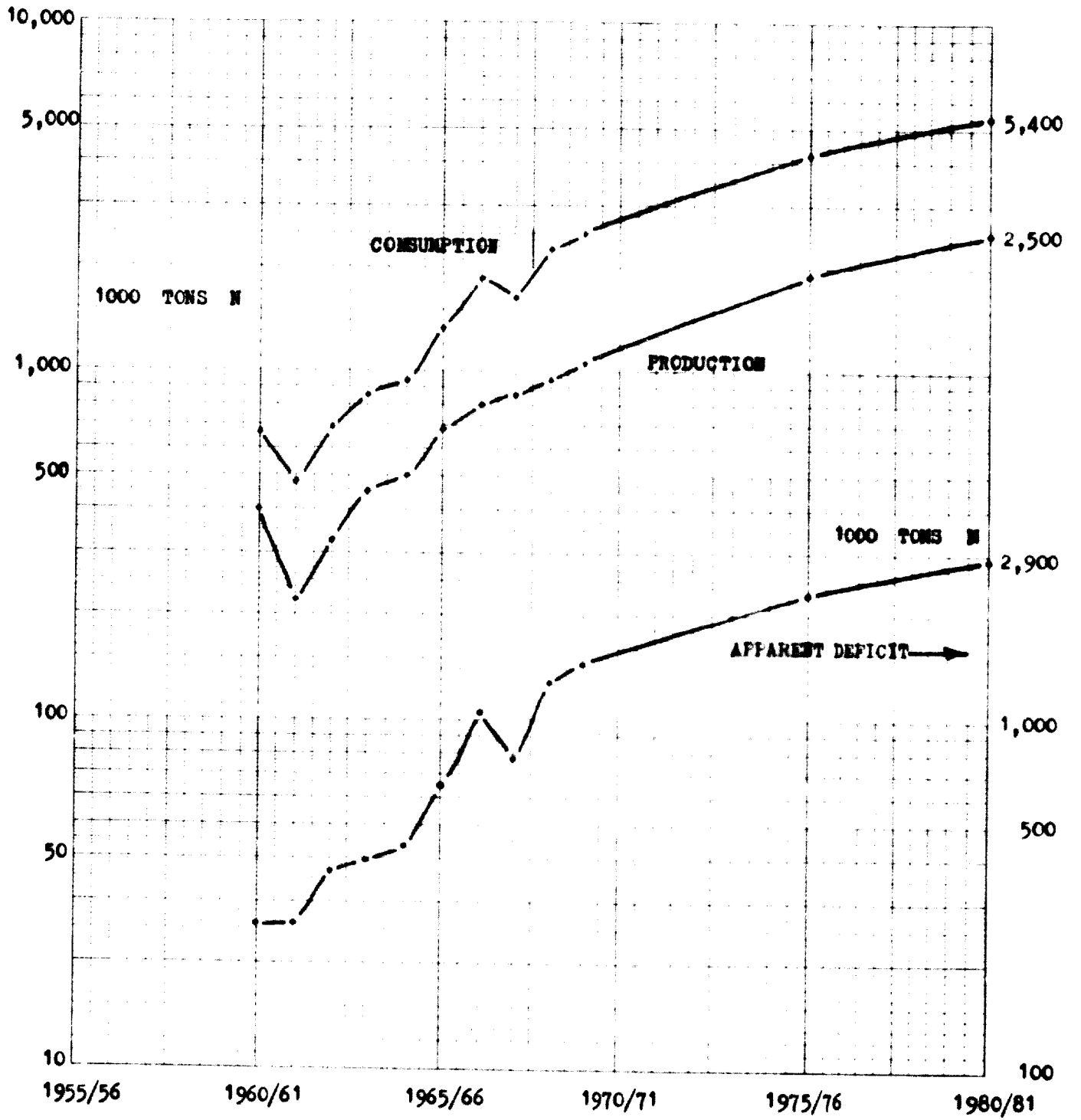


TABLE XIII

Comparison of Several Forecasts of Fertilizer Consumption  
with Actual Consumption in 1969/70

(all figures exclude Asian Communist countries)

|                            | (1)<br>Forecast<br>by Ewell<br>(1965) | (2)<br>Forecast<br>by Coleman<br>(1965) | (3)<br>Forecast*<br>by UNIDO<br>(1967) | (4)<br>Forecast<br>by TVA<br>(1968) | (5)<br>Forecast<br>by TVA<br>(1970) | (6)<br>Actual<br>Consumption<br>(1969/70) |
|----------------------------|---------------------------------------|---|--|-------------------------------------|-------------------------------------|---|
| <u>Nitrogen</u>            |                                       |   |  |                                     |                                     |   |
| Developed countries        | 18.9                                  | 19.6                                    | 21.3                                   | ----                                | 21.5                                | 20.8                                      |
| Developing countries       | 4.9                                   | 4.6                                     | 4.7                                    | ----                                | 5.4                                 | 4.9                                       |
| Asia                       | 3.1                                   | 2.5                                     | 2.7                                    | ----                                | 3.3                                 | 3.0                                       |
| Africa                     | 0.7                                   | 0.8                                     | 1.1                                    | ----                                | 0.8                                 | 0.7                                       |
| Latin America              | <u>1.1</u>                            | <u>1.2</u>                              | <u>0.9</u>                             | <u>----</u>                         | <u>1.3</u>                          | <u>1.2</u>                                |
| Total World                | 23.8                                  | 24.2                                    | 26.0                                   | ----                                | 26.9                                | 25.7                                      |
| <u>Phosphate</u>           |                                       |   |  |                                     |                                     |   |
| Developed countries        | ----                                  | 16.1                                    | ----                                   | ----                                | 15.6                                | 15.6                                      |
| Developing countries       | ----                                  | 2.3                                     | ----                                   | ----                                | 2.7                                 | 2.4                                       |
| Asia                       | ----                                  | 0.9                                     | ----                                   | ----                                | 1.2                                 | 1.1                                       |
| Africa                     | ----                                  | 0.7                                     | ----                                   | ----                                | 0.6                                 | 0.5                                       |
| Latin America              | ----                                  | <u>0.7</u>                              | ----                                   | ----                                | <u>0.9</u>                          | <u>0.8</u>                                |
| Total World                | 17.0                                  | 18.4                                    | 19.2                                   | ----                                | 18.3                                | 18.0                                      |
| <u>Potash</u>              |                                       |   |  |                                     |                                     |   |
| Developed countries        | ----                                  | 13.1                                    | ----                                   | ----                                | 13.8                                | 14.1                                      |
| Developing countries       | ----                                  | 1.2                                     | ----                                   | ----                                | 1.6                                 | 1.3                                       |
| Asia                       | ----                                  | 0.4                                     | ----                                   | ----                                | 0.6                                 | 0.5                                       |
| Africa                     | ----                                  | 0.2                                     | ----                                   | ----                                | 0.3                                 | 0.2                                       |
| Latin America              | ----                                  | <u>0.6</u>                              | ----                                   | ----                                | <u>0.7</u>                          | <u>0.6</u>                                |
| Total World                | 14.5                                  | 14.3                                    | 16.0                                   | ----                                | 15.4                                | 15.4                                      |
| <u>All nutrients (NPK)</u> |                                       |   |  |                                     |                                     |   |
| Developed countries        | ----                                  | 48.8                                    | 52.6                                   | 55.0                                | 50.9                                | 50.4                                      |
| Developing countries       | ----                                  | 8.1                                     | 8.6                                    | 8.4                                 | 9.7                                 | 8.7                                       |
| Asia                       | ----                                  | 3.9                                     | 4.4                                    | 4.1                                 | 5.2                                 | 4.6                                       |
| Africa                     | ----                                  | 1.7                                     | 1.9                                    | 1.3                                 | 1.6                                 | 1.5                                       |
| Latin America              | ----                                  | <u>2.5</u>                              | <u>2.3</u>                             | <u>3.0</u>                          | <u>2.3</u>                          | <u>2.6</u>                                |
| Total World                | 55.3                                  | 56.9                                    | 61.2                                   | 63.4                                | 60.6                                | 59.1                                      |

NOTES

Years in parentheses at head of columns one to five are years in which forecasts were made.

\* Interpolated linearly between actual consumption in 1965/66 and forecast for 1970/71.

REFERENCES

- R. Ewell: "World Survey of Fertilizer Production, Consumption and International Trade", Proceedings of the United Nations Interregional Seminar on the Production of Fertilizers 1965" (published by United Nations 1968).
- R. Coleman: "Projected World Use of Plant Nutrients", Symposium at TVA, 1965.
- UNIDO: "Sectoral Studies: Fertilizer Industry", paper presented at International Symposium on Industrial Development, Athens, 1967.
- TVA: "Estimated World Fertilizer Production Capacity as Related to Future Needs", June 1968 and June 1970.

TABLE XIV

**Comparison of Forecasts of Fertilizer Consumption in 1975/76**  
(all figures exclude Asian communist countries)

|                            | (1)<br>Forecast<br>by Ewell<br>(1965) <sup>1/</sup> | (2)<br>Forecast<br>by UNIDO<br>(1967) | (3)<br>Forecast<br>by TVA<br>(1968) | (4)<br>Forecast<br>by FAO<br>(1969) <sup>2/</sup> | (5)<br>Forecast<br>by TVA<br>(1970) <sup>3/</sup> | (6)<br>Forecast<br>by UNIDO<br>(1971) |
|----------------------------|---|---------------------------------------|-------------------------------------|---|---|---------------------------------------|
| <b>Nitrogen</b>            |   |                                       |                                     |   |   |                                       |
| Developed countries        | 30.4  | 35.0                                  | --                                  | --  | 31.7  | 34.5                                  |
| Developing countries       | 10.4  | 9.0                                   | --                                  | --  | 10.2  | 9.6                                   |
| Asia                       | 7.1   | 5.5                                   | --                                  | --  | 6.1   | 5.9                                   |
| Africa                     | 1.2   | 2.0                                   | --                                  | --  | 1.4   | 1.3                                   |
| Latin America              | <u>2.1</u>  | <u>1.5</u>                            | <u>--</u>                           | <u>--</u>   | <u>2.7</u>  | <u>2.4</u>                            |
| Total World                | 40.8  | 44.0                                  | --                                  | --  | 41.9  | 44.1                                  |
| <b>Phosphate</b>           |   |                                       |                                     |   |   |                                       |
| Developed countries        | --  | 23.0                                  | --                                  | --  | 19.8  | 22.5                                  |
| Developing countries       | --  | 4.6                                   | --                                  | --  | 5.2   | 4.8                                   |
| Asia                       | --  | 2.2                                   | --                                  | --  | 2.6   | 2.5                                   |
| Africa                     | --  | 0.6                                   | --                                  | --  | 0.8   | 0.8                                   |
| Latin America              | <u>--</u>   | <u>1.8</u>                            | <u>--</u>                           | <u>--</u>   | <u>1.8</u>  | <u>1.5</u>                            |
| Total World                | 23.0  | 27.6                                  | --                                  | --  | 25.0  | 27.3                                  |
| <b>Potash</b>              |   |                                       |                                     |   |   |                                       |
| Developed countries        | --  | 21.0                                  | --                                  | --  | 17.3  | 18.9                                  |
| Developing countries       | --  | 2.55                                  | --                                  | --  | 2.9   | 2.9                                   |
| Asia                       | --  | 1.15                                  | --                                  | --  | 1.3   | 1.5                                   |
| Africa                     | --  | 0.6                                   | --                                  | --  | 0.5   | 0.4                                   |
| Latin America              | <u>--</u>   | <u>0.8</u>                            | <u>--</u>                           | <u>--</u>   | <u>1.1</u>  | <u>1.0</u>                            |
| Total World                | 19.9  | 23.55                                 | --                                  | --  | 20.2  | 21.8                                  |
| <b>All Nutrients (NPK)</b> |   |                                       |                                     |   |   |                                       |
| Developed countries        | --  | 79.0                                  | 75-80                               | --  | 68.8  | 75.9                                  |
| Developing countries       | --  | 16.15                                 | 15-20                               | 18.0  | 18.3  | 17.3                                  |
| Asia                       | --  | 8.85                                  | 8-12                                | 12.3  | 10.0  | 9.9                                   |
| Africa                     | --  | 3.2                                   | 2                                   | 1.7   | 2.7   | 2.5                                   |
| Latin America              | <u>--</u>   | <u>4.1</u>                            | <u>5-6</u>                          | <u>4.0</u>  | <u>5.6</u>  | <u>4.9</u>                            |
| Total World                | 83.7  | 95.15                                 | 95                                  | --  | 87.1  | 93.2                                  |

**Notes**

Years in parentheses at head of each column are years in which forecasts were made.

<sup>1/</sup> Figures in column (1) extrapolated linearly from 1974/75.

<sup>2/</sup> Figures in columns (3) and (4) are actually for 1975, but in view of the generalised character of these forecasts, it was not felt significant to interpolate for 1975/76.

<sup>3/</sup> Figures in column (5) interpolated linearly from 1974/75.

**References**

References for columns (1), (2), (3) and (5) are same as in table of forecasts for 1969/70.

FAO(1969) - "Provisional Indicative World Plan for Agricultural Development", FAO, Rome 1969 (final printed version, 1970)

UNIDO(1971) - "Second Development Decade Report -- Fertiliser Industry", UNIDO, Vienna (in preparation).



TABLE XV

Comparison of Forecasts of Fertilizer Consumption in 1980/81  
(All figures exclude Asian Communist countries)

|                            | (1)<br>Forecast<br>by TVA <sup>1/</sup><br>(1968) | (2)<br>Forecast<br>by FAO <sup>2/</sup><br>(1961) | (3)<br>Forecast<br>by TFA <sup>3/</sup><br>(1970) | (4)<br>Forecast<br>by UNIDO<br>(1971) |
|----------------------------|---|---|---|---------------------------------------|
| <u>Nitrogen</u>            |   |   |   |                                       |
| Developed countries        | --  | --  | 40.2  | 48.5                                  |
| Developing countries       | --  | --  | 14.1  | 13.9                                  |
| Asia                       | --  | --  | 8.1   | 8.5                                   |
| Africa                     | --  | --  | 1.9   | 1.8                                   |
| Latin America              | --  | --  | <u>3.8</u>  | <u>3.6</u>                            |
| Total World                | --  | --  | 54.3  | 62.4                                  |
| <u>Phosphate</u>           |   |   |   |                                       |
| Developed countries        | --  | --  | 23.3  | 28.5                                  |
| Developing countries       | --  | --  | 7.3   | 7.0                                   |
| Asia                       | --  | --  | 3.7   | 3.8                                   |
| Africa                     | --  | --  | 1.0   | 1.1                                   |
| Latin America              | --  | --  | <u>2.6</u>  | <u>2.1</u>                            |
| Total World                | --  | --  | 30.6  | 35.5                                  |
| <u>Potash</u>              |   |   |   |                                       |
| Developed countries        | --  | --  | 20.2  | 23.2                                  |
| Developing countries       | --  | --  | 4.1   | 4.2                                   |
| Asia                       | --  | --  | 1.8   | 2.1                                   |
| Africa                     | --  | --  | 0.8   | 0.6                                   |
| Latin America              | --  | --  | <u>1.5</u>  | <u>1.5</u>                            |
| Total World                | --  | --  | 21.3  | 27.4                                  |
| <u>All Nutrients (NPK)</u> |   |   |   |                                       |
| Developed countries        | 103-125   | --  | 81.7  | 100.2                                 |
| Developing countries       | 25-33   | 27.0  | 25.5  | 25.1                                  |
| Asia                       | 15-20   | 18.5  | 13.9  | 14.4                                  |
| Africa                     | 2-3   | 2.4   | 3.7   | 3.5                                   |
| Latin America              | <u>8-10</u>                                       | <u>6.1</u>  | <u>7.2</u>  | <u>7.2</u>                            |
| Total World                | 128-158   | --  | 109.2   | 125.3                                 |

Notes

Years in parentheses at head of each column are years in which forecasts were made

<sup>1/</sup> Figures in column (1) are actually for 1980, but in view of the generalized character of these forecasts, it was not felt significant to interpolate for 1980/81.

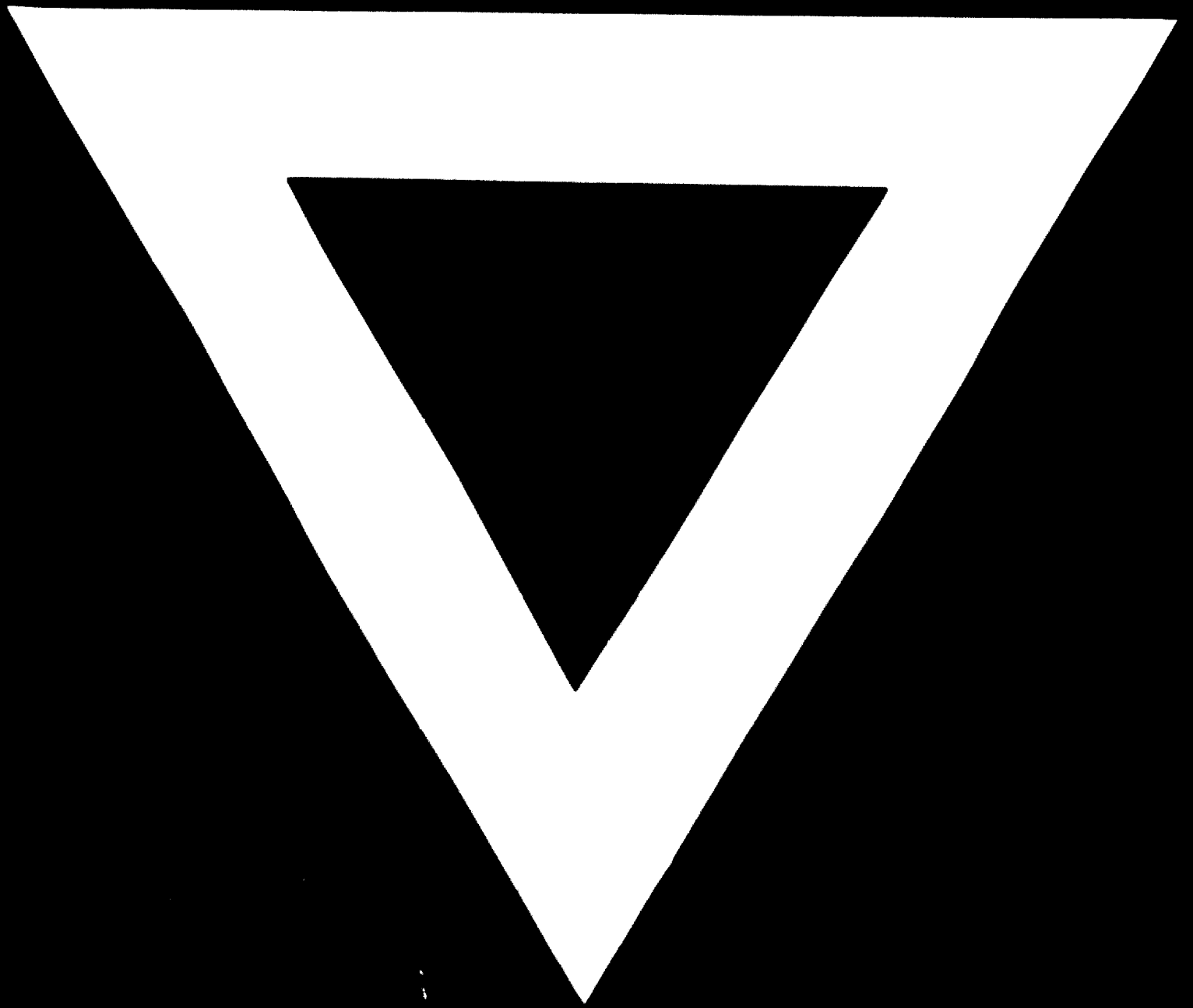
<sup>2/</sup> Figures in column (2) interpolated logarithmically between 1975 and 1985. Figures are actually for 1980, but in view of the generalized character of these forecasts, it was not felt significant to interpolate for 1980/81.

<sup>3/</sup> Figures in column (3) extrapolated linearly from 1979/80.

References

All references are same as in the two tables of forecasts for 1969/70 and 1975/76.





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