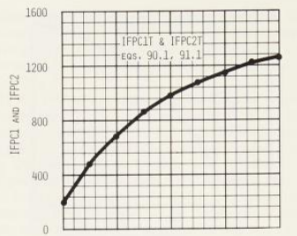

Figure 4-26 Indicated food per capita table

```
IFPC.K=CLIP(IFPC2.K,IFPC1.K,TIME.K,PYEAR)                    89, A
    IFPC   - INDICATED FOOD PER CAPITA (VEGETABLE-
             EQUIVALENT KILOGRAMS/PERSON-YEAR)
    CLIP   - A FUNCTION SWITCHED DURING THE RUN
    IFPC2  - IFPC, VALUE AFTER TIME=PYEAR (VEGETABLE-
             EQUIVALENT KILOGRAMS/PERSON-YEAR)
    IFPC1  - IFPC, VALUE BEFORE TIME=PYEAR (VEGETABLE-
             EQUIVALENT KILOGRAMS/PERSON-YEAR)
    TIME   - CURRENT TIME IN THE SIMULATION RUN
    PYEAR  - YEAR NEW POLICY IS IMPLEMENTED (YEAR)


IFPC1.K=TABHL(IFPC1T,IOPC.K,0,1600,200)                      90, A
IFPC1T=230/480/690/850/970/1070/1150/1210/1250               90.1, T
    IFPC1  - IFPC, VALUE BEFORE TIME=PYEAR (VEGETABLE-
             EQUIVALENT KILOGRAMS/PERSON-YEAR)
    TABHL  - A FUNCTION WITH VALUES SPECIFIED BY A TABLE
    IFPC1T - IFPC1 TABLE
    IOPC   - INDUSTRIAL OUTPUT PER CAPITA (DOLLARS/
             PERSON-YEAR)

IFPC2.K=TABHL(IFPC2T,IOPC.K,0,1600,200)                      91, A
IFPC2T=230/480/690/850/970/1070/1150/1210/1250               91.1, T
    IFPC2  - IFPC, VALUE AFTER TIME=PYEAR (VEGETABLE-
             EQUIVALENT KILOGRAMS/PERSON-YEAR)
    TABHL  - A FUNCTION WITH VALUES SPECIFIED BY A TABLE
    IFPC2T - IFPC2 TABLE
    IOPC   - INDUSTRIAL OUTPUT PER CAPITA (DOLLARS/
             PERSON-YEAR)
```

Total Agricultural Investment TAI In World3, portions of the annual industrial output IO are invested in capital for increasing agricultural, industrial, and service output in the future. To the extent that resources and capital are available, the demands for agricultural, service, and industrial output will be satisfied in that order of priority. The total agricultural investment TAI represents the value in dollar

equivalents of that portion of the world's industrial output allocated to agriculture each year. Although the unit of TAI is dollars, the variable actually represents the manufactured physical goods (fertilizers, tractors, pesticides, roads, dams, and bulldozers) used to increase arable land, land fertility, or land yield in any given year. The value of the total agricultural investment TAI is calculated from the total year's industrial output IO and the fraction of the industrial output allocated to agriculture FIOAA.

```
TAI.K=IO.K*FIOAA.K                                           92, A
    TAI    - TOTAL AGRICULTURAL INVESTMENT (DOLLARS/
             YEAR)
    IO     - INDUSTRIAL OUTPUT (DOLLARS/YEAR)
    FIOAA  - FRACTION OF INDUSTRIAL OUTPUT ALLOCATED TO
             AGRICULTURE (DIMENSIONLESS)
```

Fraction of Industrial Output Allocated to Agriculture FIOAA The relative supply of and demand for food determine the fraction of industrial output allocated to agriculture FIOAA. The food supply in any year is represented by the average food per capita FPC, and the demand for food is determined by the indicated food per capita IFPC discussed earlier. The ratio of the two (FPC/IFPC) is the driving factor causing a change in the allocation of industrial output to agriculture. A low ratio (FPC/IFPC<1) indicates that the food demand is not being satisfied, which causes an increase in the fraction of industrial output allocated to agriculture FIOAA. A high ratio indicates an overabundance of food, which reduces the investment in agriculture. The postulated numerical relationship between FPC/IFPC and FIOAA is shown in Figure 4-27 and in the following equations:

```
FIOAA.K=CLIP(FIOAA2.K,FIOAA1.K,TIME.K,PYEAR)                 93, A
    FIOAA  - FRACTION OF INDUSTRIAL OUTPUT ALLOCATED TO
             AGRICULTURE (DIMENSIONLESS)
    CLIP   - A FUNCTION SWITCHED DURING THE RUN
    FIOAA2 - FIOAA, VALUE AFTER TIME=PYEAR
             (DIMENSIONLESS)
    FIOAA1 - FIOAA, VALUE BEFORE TIME=PYEAR
             (DIMENSIONLESS)
    TIME   - CURRENT TIME IN THE SIMULATION RUN
    PYEAR  - YEAR NEW POLICY IS IMPLEMENTED (YEAR)

FIOAA1.K=TABHL(FIOAA1T,FPC.K/IFPC.K,0,2.5,.5)                94, A
FIOAA1T=.4/.2/.1/.025/0/0                                    94.1, T
    FIOAA1 - FIOAA, VALUE BEFORE TIME=PYEAR
             (DIMENSIONLESS)
    TABHL  - A FUNCTION WITH VALUES SPECIFIED BY A TABLE
    FIOAA1T- FIOAA1 TABLE
    FPC    - FOOD PER CAPITA (VEGETABLE-EQUIVALENT
             KILOGRAMS/PERSON-YEAR)
    IFPC   - INDICATED FOOD PER CAPITA (VEGETABLE-
             EQUIVALENT KILOGRAMS/PERSON-YEAR)

FIOAA2.K=TABHL(FIOAA2T,FPC.K/IFPC.K,0,2.5,.5)                95, A
FIOAA2T=.4/.2/.1/.025/0/0                                    95.1, T
    FIOAA2 - FIOAA, VALUE AFTER TIME=PYEAR
             (DIMENSIONLESS)
    TABHL  - A FUNCTION WITH VALUES SPECIFIED BY A TABLE
    FIOAA2T- FIOAA2 TABLE
    FPC    - FOOD PER CAPITA (VEGETABLE-EQUIVALENT
             KILOGRAMS/PERSON-YEAR)
    IFPC   - INDICATED FOOD PER CAPITA (VEGETABLE-
             EQUIVALENT KILOGRAMS/PERSON-YEAR)
```