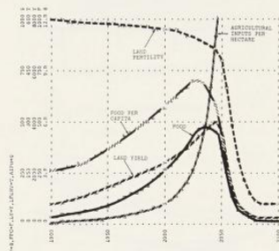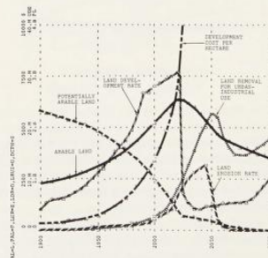farmers can afford to spend more of their agricultural capital on land maintenance. The land fertility regeneration time LFRT is cut in half by this increasing effort at land maintenance. Nevertheless, the exponentially growing index of persistent pollution PPOLX keeps land fertility degradation LFD just slightly ahead of land fertility regeneration LFR.

Standard Run

Run 4-2 (Figure 4-70) shows the behavior of different variables in the agriculture sector as it is simulated from 1900 to 2100, assuming that the exogenous inputs
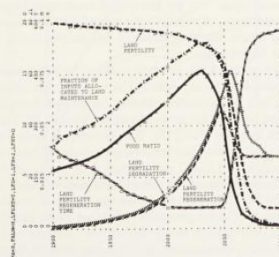
continue to grow exponentially at fixed rates of growth. Population POP grows at 1.2 percent per year, industrial output IO at 3.6 percent per year, and the index of persistent pollution PPOLX at 3 percent per year. By the year 2100 the population level POP has reached 18 billion, industrial output per capita IOPC equals 4,900 dollars per person-year, and persistent pollution PPOLX reaches 50 times its 1970 level.

Several factors contribute to the overshoot and decline mode of behavior shown here. Since total food is the product of the number of hectares of arable land AL and the yield per hectare LY (minus small losses due to processing and harvesting), the

A. The behavior of land yields and food production

B. The behavior of arable land

Figure 4-70 Run 4-2: standard run
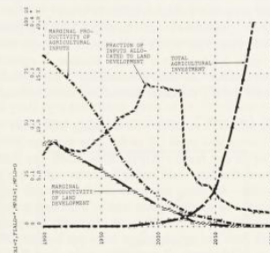
C. The allocation mechanism

D. The behavior of land fertility