

Figure 4-15 Loop 6: immediate food increase from discontinuing land maintenance

food. In the longer run, however, this diversion of land maintenance investment will result in a depletion of the soil fertility and hence in a decrease of the food output generated by the agriculture sector. Even with later ample allocations to land maintenance we assumed that it will take years for the soil to regain its fertility.

Loop 6 (Figure 4-15) represents the short-run gain in food output that can be achieved through the elimination of land maintenance programs. Loop 6 is a negative loop; food pressures act to terminate land maintenance programs and thus to increase the immediately productive agricultural inputs. More inputs give a higher yield and ultimately more food.

Loops 5 and 6 represent another trade-off between the long term and the short term in World3; the immediate benefits of discontinuing land maintenance in loop 5 are only obtained at the cost of depleting the land fertility in the long run through loop 6.

4.5 DESCRIPTION OF EQUATIONS

The causal structure outlined in section 4.4 can be formalized, and made less ambiguous by formulating a DYNAMO flow diagram (Figure 4-16). This section explains why the displayed structure was chosen and expresses each relationship in a mathematical equation. The discussion is organized around the major causal loops identified in section 4.4.

