**MACHOBANE FARMING SYSTEM SIMULATER REPORT**

The main objective of the code implementation is to simulate the Machobane farming system. This system involves inter-cropping , relay cropping, and harvesting practices to showcase sustainable agricultural practices. The code simulates the growth and harvest of various crops over winter and summer seasons. During the winter season, the code simulates the planting of either wheat or potatoes, and relay cropping with peas in the case of wheat planting. Soil fertility is managed through the addition of manure and the reduction of fertility. The code also simulates the growth and harvest of crops, taking into consideration the impact of soil fertility on the yield.The summer season involves the planting of either beans or groundnuts, and relay cropping with maize, pumpkin, sorghum, and watermelon is also simulated. Soil fertility is managed similarly to the winter season, and the growth and harvest of crops are simulated, considering the impact of soil fertility on the yield.

Detailed reports on updates of crops are generated after each season, highlighting the growth progress of each crop and the expected yield. The reports emphasize the sustainable practices incorporated, such as the addition of manure and soil fertility management. The harvest phase simulates the actual yield based on the growth and soil fertility factors, and the harvested weights are displayed, emphasizing the impact of sustainable practices on overall crop productivity.The code also reflects sustainable practices by incorporating functions for reducing soil fertility (nutrient absorption by crops) and adding manure to enhance fertility. Crop rotation is implemented to maintain soil health and prevent depletion of specific nutrients. Rotation cycles alternate between legumes (peas, beans, groundnuts) and cereals (wheat, maize, sorghum). Relay cropping is simulated in both winter and summer seasons, promoting diversified and efficient land use.

Finally, the code establishes a feedback loop where soil fertility influences crop growth, and crop residues contribute to soil fertility. This reflects a closed-loop system, characteristic of sustainable agriculture. Overall, the code provides a comprehensive simulation of the Machobane farming system, highlighting its seasonal and sustainable aspects.

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