

Animal products include liveweight, deadweight, milk, wool, work and manure. Feed energy is the most relevant input that can easily be linked to other inputs. A bio-economic productivity index is total output value per unit dry matter intake. It depends on fitness traits, performance levels, energy flow constants and unit produce values. They can be freely set in a microcomputer program (PRY) performing productivity assessments for the stationary state of population dynamics. Features distinguishing PRY from other microcomputer-based herd-level models include species and systems independence, inclusion of a range of different performance traits, and optimization of the culling strategy. The herd dynamics derivations and their computer coding have been tested by comparison with stochastically simulated empirical data. The program's main uses are productivity indexing, impact analysis and modelling of the livestock sub-system for farming systems development. Future work will extend applications, provide default parameter estimates for different species and systems, and develop the package into an expert system. A goat productivity index and sensitivity analysis in Kenya are presented for exemplification.