Economic Feasibility and Performance Evaluation of Pasture-Raised Broiler Chicken in Peanut-Based Farming Systems

Progress Report – Experimental Setup and Field Establishment

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The project aims to evaluate the economic feasibility and production performance of pasture-raised broiler chickens integrated into peanut-based farming systems. During this initial phase, work has focused on diet formulation, experimental planning, and establishment of the pasture system to support upcoming spring and fall trials.

Experimental broiler diets have been formulated to allow direct comparison between treatments. Two isocaloric, isonitrogenous, three-phase feeding programs have been developed: (1) a conventional corn–soy control diet and (2) a corn–soy diet supplemented with 20% defatted peanut. Diets are formulated to meet or exceed nutrient requirements for broilers during the starter, grower, and finisher phases over a 6–8-week production cycle. This experimental design will enable evaluation of growth performance, carcass and meat quality, and potential value-added attributes associated with the peanut-supplemented ration under pasture-based production conditions.

The pasture field for the broiler production system has been planted and successfully established. The mixed-species sward includes white Dutch clover, strawberry clover, buckwheat, flax, ryegrass, and Bermuda grass. This diverse pasture mixture is intended to provide high-quality forage, support soil health, and contribute to ecosystem services such as nitrogen fixation, pollinator support, and improved ground cover. Pasture establishment marks a key milestone, ensuring that birds in the forthcoming trials will have access to a functional, representative pasture environment.

Soil testing has been done on the established pasture area to assess baseline soil fertility and key physical and biological indicators. This data will serve as a reference point at the start of the project and help evaluate changes after integrating broiler production into the pasture. The soil results will also guide any necessary amendments to maximize pasture productivity and support both crop and poultry components of the system.

Tentative dates have been set for both spring and fall broiler experiments. The spring trial will serve as the initial performance and management assessment under pasture conditions using the two experimental diets, while the fall trial will allow evaluation in a different seasonal environment and provide replication over time. Together, these planned experiments will produce data on bird performance, economics, and soil responses, supporting a comprehensive assessment of the feasibility and potential benefits of pasture-raised broilers in peanut-based farming systems.