

YIELD AND FINANCIAL ASSESSMENT OF HIGH-DENSITY PINEAPPLE (*Ananas comosus*) INTERCROPPING UNDER IMMATURE RUBBER (*Hevea brasiliensis* Muell. Arg.) PLANTATION

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The rubber cultivations in Sri Lanka hold economic importance, yet pose challenges during the six-year immature phase due to the absence of latex production and underutilized land. Intercropping, particularly with pineapple, offers a promising solution to enhance land productivity and income. This study assessed the yield and financial performance of two high-density pineapple intercropping systems: the paired double row system (2*2 system, 13,900 plants ha⁻¹) and the paired triple rows system (2*3 system, 20,900 plants ha⁻¹), established under immature rubber at the *Salawa* estate, *Pussellawa* plantations, *Awissawella*. The experiment was performed under a randomized complete block design with three replicates. Data were analyzed using ANOVA and Duncan's test ($p < 0.05$). Yield indicators; length, girth, and weight of pineapple fruit, and yield per hectare were collected. Rubber growth was evaluated by girth expansion. Financial benefits were analyzed using the benefit-cost ratio (BCR) and net present value (NPV) for two harvesting approaches: farmer-harvested (FH) and contractor-harvested (CH). There were no significant differences in fruit dimension, yield parameters, or rubber growth metrics among treatments. However, financial metrics varied with the 2*3 system showing higher NPV (26.5 and 18.1 million for FH and CH) than the 2*2 system (16.9 and 11.3 million for FH and CH) suggesting better economic returns from the 2*3 system. In both systems, the BCR was higher for the FH approach (3.89 and 3.51 for 2*3 and 2*2) than the CH approach (2.99 and 2.69 for 2*3 and 2*2). The study concludes that the 2*3 high-density pineapple intercropping system offers better financial returns and profitability without affecting the pineapple yield and rubber growth, particularly under a farmer-harvested approach. Future research should focus on system optimization, latex production, and long-term viability to improve ecological and financial outcomes in rubber cultivation.

Keywords: Benefit-cost ratio, Income, Net present value, Productivity