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Analisis Tekno-Ekonomi produksi pakan ayam probiotik dari campuran residu bahan pangan menggunakan Metode Solid State Fermentation = Techno-Economic Analysis of probiotic poultry feed production from food residue mixture using Solid State Fermentation Method

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Abstrak

Pakan ayam probiotik menjadi salah satu alternatif yang menjanjikan dengan memanfaatkan limbah residu bahan pangan seperti ampas singkong dan molase dan penambahan lemna sebagai sumber protein. Penelitian ini dilakukan bertujuan mendesain dan menganalisis keekonomian dari proses produksi pakan ayam probiotik dari campuran residu bahan pangan menggunakan metode solid state fermentation. Metode penelitian ini adalah perancangan simulasi produksi menggunakan perangkat lunak SuperPro dan analisis keekonomian menggunakan perangkat lunak Microsoft Excel. Kapasitas produksi pakan ayam probiotik adalah 3000 kg/tahun. Proses dimulai dari persiapan bahan baku, penggilingan, kultur probiotik, proses SSF hingga pengemasan. Proses ini bernilai ekonomis dengan mempertimbangkan variasi komposisi bahan baku. Adapun variasi komposisi pertama, yaitu 55% ampas singkong; 44% lemna dan 1% molase didapatkan nilai NPV (net present value) sebesar Rp5.720.647.401,25, IRR (internal rata of return) 23,24%, ROI (rate of investment) 61,77%, dan PBP (payback period) 7,02 tahun. Variasi komposisi kedua, yaitu 65% ampas singkong; 34% lemna dan 1% molase didapatkan nilai NPV (net present value) sebesar Rp2.920.774.419,22, IRR (internal rate of return) 14,51%, ROI (rate of investment) 36,36%, dan PBP (payback period) 10,37 tahun. Sedangkan variasi komposisi ketiga, yaitu 75% ampas singkong; 24% lemna dan 1% molase didapatkan nilai NPV (net present value) sebesar Rp4.914.707.789,88, IRR (internal rate of return) 21,56%, ROI (rate of investment) 52,55%, dan PBP (payback period) 7,28 tahun. Analisis profitabilitas menunjukkan variasi komposisi ketiga menjadi variasi komposisi bahan baku yang paling ideal. Berdasarkan analisis sensitivitas, harga jual produk menjadi variabel yang sensitif pada ketiga jenis variasi.
.....Probiotic poultry feed is one of the promising alternatives by utilizing food residue waste such as cassava pulp and molasses and the addition of lemna as a source of protein. This study was conducted with the aim of designing and analyzing the economics of the probiotic chicken feed production process from a mixture of food residues using the solid state fermentation method. The research method is production simulation design using SuperPro software and economic analysis using Microsoft Excel software. The production capacity of probiotic chicken feed is 3000 kg/year. The process starts from raw material preparation, grinding, probiotic culture, SSF process to packaging. This process is economically valuable considering the variation in the composition of raw materials. The first composition variation, namely 55% cassava pulp; 44% lemna and 1% molasses obtained an NPV (net present value) Rp5.720.647.401,25, IRR (internal rata of return) 23,24%, ROI (rate of investment) 61,77%, and PBP (payback period) 7,02 years. The second composition variation, which is 65% cassava pulp; 34% lemna and 1% molasses obtained an NPV (net present value) of Rp2,920,774,419.22, IRR (internal rate of return) of 14.51%, ROI (rate of investment) of 36.36%, and PBP (payback period) of 10.37 years. While the third composition variation, namely 75% cassava pulp; 24% lemna and 1% molasses obtained an NPV (net present value) of IDR 4,914,707,789.88, IRR (internal rate of return) of 21.56%, ROI (rate of investment) of 52.55%, and PBP

(payback period) of 7.28 years. The profitability analysis shows that the third composition variation is the most ideal raw material composition variation. Based on sensitivity analysis, the selling price of products is a sensitive variable in all three types of variations.