

Relative Technical Efficiency of Silvopasture, Pasture and Forestry Systems

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Silvopasture is a form of agroforestry that incorporates trees, livestock and pasture on a single parcel of land, and can provide numerous benefits. In subtropical northeast Argentina, this technology has become moderately adopted by different types of producers. The next steps in research and extension should be to identify those farmers whose specific practices are the most productive and pass those practices along to other farmers. Data envelopment analysis (DEA) is a non-parametric method that can be used to identify parcels that are the most efficient, that is, those which produce maximum output for a given quantity of input. DEA is adapted to analyzing silvopasture systems because it is easily able to incorporate multiple inputs and outputs. I used DEA to compare the efficiency of silvopasture systems to conventional open-air cattle-grazing and conventional plantation forestry, and to compare the scale efficiency of the systems for varying scales of farm operations. Also, I identified efficient peer farms for inefficient farms. Silvopasture and open-air cattle-grazing systems have higher scale efficiency for small scale farmers, indicating decreasing returns to scale, whereas conventional forest plantations have increasing returns to scale. Silvopasture and plantation forestry have higher resource-use efficiency than open-air cattle-grazing.

Keywords: Agroforestry, silvopasture, technical efficiency, efficient peers, data envelopment analysis

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