

# **Economic Analysis of Agricultural Land Use Integrated with Forestry: A Hypothetical Application in Turkey**

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The main land use activities in Turkey are agriculture, livestock and forestry. At the moment these activities are developing separately. Agricultural land is severely limited because of the rough terrain, thus forest land is cleared for new fields and 61% of present agricultural land is poor quality, often steeply sloping, eroded and stony, and 53% of this is not suitable for cultivation at all.

There are serious problems between farmers and the Forestry Department, because of the identification of boundaries between forests and agricultural land that have not yet been cleared up. Integration of forestry and agriculture may be a solution of these problems, but there is no considerable application of any type of integration in Turkey. Agroforestry as a kind of integration is a new concept for Turkey.

It is possible to apply some type of integrated land use systems properly. An application of integration between forestry and agriculture may be theoretically developed as follow. A 625 ha area of farm land is considered that is situated in the south of Turkey and has been used for agriculture and belongs to a farming organization. Despite the fact that the productivity of some part of the land is very low, the farmer has been used for cropping and uncontrolled animal grazing. There are several options for the farmer to improve his agricultural production. First option for the farmer is to sell part of his farm to the Forestry Department and invest to develop agricultural production from the remaining area. Second option is to plant part of the farm for productive forest by taking advantage of available grants, and third option is to plant small strips or areas of the land with trees to create general shelterbelts for livestock.

Options 1 and 2 may provide additional benefits by sharing the cost of roads and fences. The third option provides some protection against wind and snow. In this case, shelterbelts are expensive to fence and are difficult to manage for the production of high class timber.

In the first two options, it is possible to integrate agriculture and forestry with different proportions. Before starting integration, there are some tasks which have to be done. Firstly, a land survey should be done and the land should be divided into blocks. For example, the land may be divided into 25 blocks. Secondly, the selection of agricultural and forest blocks is essential task for integration.

An outline of the farm is drawn up on a square basis for coding of information and divided into 25 ha squares. A vegetation survey of the farm is carried out, and coded onto the grid. Soil information is also coded in a similar way. Altitude zones are determined from the contour map and coded into the grid. Access codes are worked out for those grid squares containing a road and fencing codes are worked out on the basis of the number of sides of a block that are fenced.

In this application, all forestry is more beneficial for the farmer, but as forestry takes a long time to produce timber and wood, the farmer can not use the whole land as forestry. The main objective of the farmer was to use the land for grazing and to provide more revenue from this farm.

According to the results, the farmer can provide more benefit than from all unimproved and improved agriculture by integrating his farm with forestry. There will also be indirect benefit from afforestation of agricultural area. There is no doubt that the shelter provided by the forestry blocks to the farm margins would effectively be created for this farm.

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