INTEGRATING AGRICULTURE AND FORESTRY

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Introduction

In certain parts of Northwestern Europe and North America, as well in several other parts of the world, farming is more or less integrated with forestry. In Sweden, for example, some 50 percent of the total forest land is owned by individual, private, non-industrial forestowners.
Approximately 60 percent of the private forestland belongs to farms that also cultivate agricultural land. In spite of the numbers of integrated farms the management of the firm is, in most cases, devoted primarily to either farming or forestry. True integrated farms are scarce, although the combination of farming and forestry management entails substantial economic advantages. Due to the declining profitability in farming, overproduction of major agricultural commodeties etc we perceive today a new interest in managing the firm as an integrated farm to utilize the resources in a more efficient way thus improving the profitability of the operation.

Potential Benefits of the Integrated Farm

The advantages of the combined farm forestry operation over a pure farming or forestry operation can be summarized as follows:

- Decreasing the economic risk of the firm by including another production area with different business cycles and risk characteristica.
- Potentials for a higher utilization of the firm´s labour resources are essential especially since most forestry operations can be performed during the winter season when activities in farming are low.
- Agricultural and forestry operations can also be performed to a certain extent with the same basic machinery such as tractors, trailers, loaders etc. This means a lower total machinery capital since the equipment can be utilized to a higher extent.

- The production cycle in forestry is often 50-100 times longer than in farming. At the same time the profitability of forestry is fairly insensitive to optimal harvesting time. This characterizes forestry as almosts a conventional financial investment which can be liquidated at a time optimal for the total operation. This also means that the forest can be utilized as a "cash generator" with certain limits, providing the necessary amount of capital for investments or other expenses in the firm.
- Since tax laws in most countries calculate income tax on the amount of harvested timber and not on the growth of standing timber, forestry provides an interesting tax shelter in many cases.

To utilize all these potentials of the diversified farm a new set of planning tools are essential. In most cases agriculture and forestry are, at present, planned separately without the optimization of the total firm as the main objective. Such planning is however needed and is at present being developed in Sweden.

Economic Planning in the Integrated Firm

As mentioned earlier in this paper, economic planning of farming and forestry is rarely integrated. One of the reasons behind this is the dramatic difference in production cycles. These differences are illustrated in figure 1.

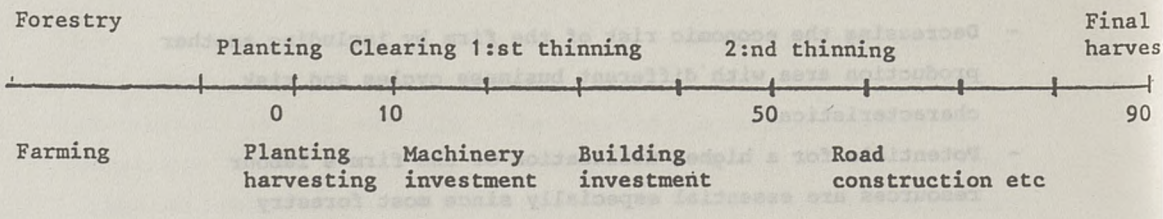

Figure 1. Examples of operations in farming and forestry illustrated over a 90-years production cycle.

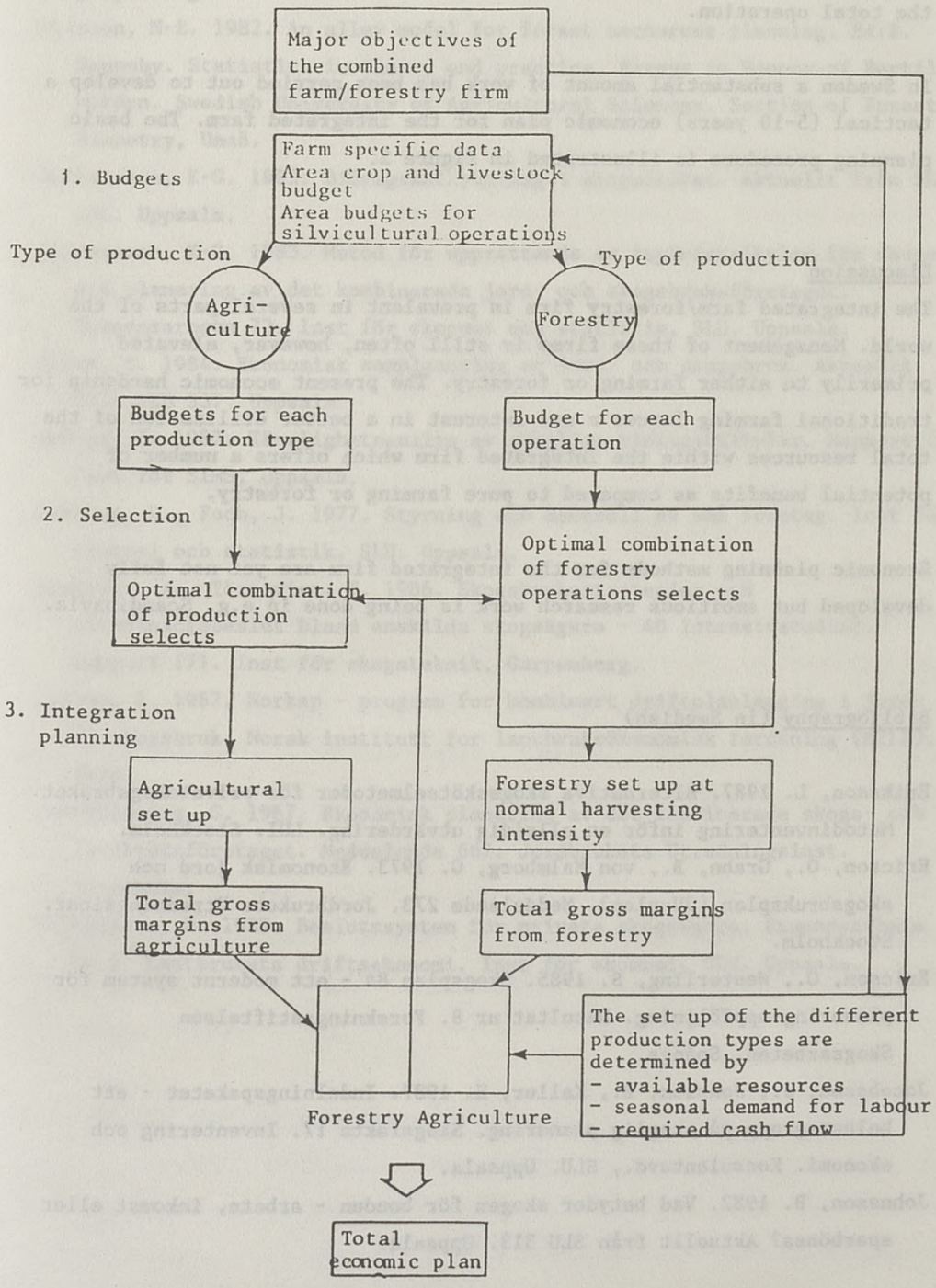

Figure 2. Schematic illustration of an integrated farm/forestry planning procedure. (Source: Posse, 1984)

In spite of the different production cycles, there is a need for both strategic and tactical plans in order to optimize resource utilization in the total operation.

In Sweden a substantial amount of work has been carried out to develop a tactical (5-10 years) economic plan for the integrated farm. The basic planning procedure is illustrated in figure 2.

Discussion

The integrated farm/forestry firm is prevalent in several parts of the world. Management of these firms is still often, however, elevated primarily to either farming or forestry. The present economic hardship for traditional farming forces a new interest in a better utilization of the total resources within the integrated firm which offers a number of potential benefits as compared to pure farming or forestry.

Economic planning methods for the integrated firm are yet not fully developed but ambitious research work is being done in e.g. Scandinavia.

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