

An Introduction to SYMFOR: a tool for the evaluation of forest management options.

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1. Why use Symfor?

There are many people that want to find out what impact a particular forest management strategy will have on the forest. To do this, they can use their own experience, documentation of other people's experience, logical guesswork or a computational tool that is based on data.

Experience is invaluable for obtaining an intuitive feel for how the forest is likely to respond, but is unsuitable for use in comparisons of alternative strategies or in making numerical predictions. In general, experience is also not available for a particular strategy and forest type, especially in Indonesia, where most selective forestry is still within the first cutting cycle. Logical guesswork is the usual resort in silvicultural decisions, and thus the decisions are based neither on data from the forest or a quantitative, scientific approach.

SYMFOR is a computer program that is designed to be a tool for investigating the effects of forest management. Using SYMFOR, it is possible to compare silvicultural alternatives numerically and scientifically, and thus inform the decisions on forest management and forest policy. It is also an extremely useful tool for education, because it captures the ecology of the forest from the data, and demonstrates how the interaction of the ecology and the management together affect the forest.

2. Wot is it?

SYMFOR is a Windows-based program that reads in forest data in a simple format, simulates the behaviour of the forest over a period of time and outputs data about the resulting forest according to the user's requirements. It contains models of the way the forest grows (based on data), and also models of forest management that can be changed by the user. It has some graphical displays that can show the user some information about the way the forest is changing, or its state at any particular point in time. It has advanced interfaces allowing the user to change the management strategy at all levels very easily. Perhaps most importantly, SYMFOR has on-line help pages and has been used for real applications many times before, so it is a tried-and-tested tool.

3. Wot can it do for u?

The input data files are simply made from PSP data, containing only the tree number, diameter, species and position within the plot, which is usually 1ha in size. All trees larger than 10cm are used. Output data files may be similar information, but projected many years into the future, or SYMFOR can output additional data that reflect the

changes to the forest during the simulation. Data may be output at any point(s) during the simulation. In this way, information about felled trees, the amount of damage to the stand, the recovery rates of the stand, changes in species composition and much more may be obtained.

4. How should it be used?

A typical usage may be as follows: A data analysis of PSP data shows that they are of high quality, and are suitable for supporting a forest management or policy decision. The alternatives for the decision are specified clearly, so that they may be implemented in SYMFOR. The PSP data is converted to SYMFOR input files – a simple process. The user starts SYMFOR, and selects the management options that they want to see the effects of. They select an input data file, and choose what data to output to what file, and when during the run they would like it to be output. They set the run length, in simulated years, and start the simulation. Some graphics can help to understand what is happening to the forest as a result of the management options. When the run has finished, to get the full benefit from the simulation, the output data can be analysed to show the details required. Often a comparison between different plots is made, so there is an option for the simulations (runs) to be repeated for an in-depth analysis.

The important point here is that the final results are made following analysis of data – both the initial PSP data, and the SYMFOR output data. SYMFOR is simply the tool that simulates the way the data changes over a period of time, as a result of a combination of growth of the natural forest and forest management.