

# How to be successful in plantation development

**Abiding by seven principles of good plantation management will help ensure plantation viability**

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**No decline:** a network of long-term productivity plots in this sub-tropical pine plantation in Usutu Forest, Swaziland, shows no significant evidence of yield decline after three complete rotations. The forest owner maintains an active forest research team that underpins this successful forest estate. *Photo: © J Evans*

**W**E EITHER love or hate forest plantations. To some, they are just efficient and productive fibre factories; to others, they are hopelessly impoverished and impoverishing replacements of rich natural forest.

Both views are misplaced. A plantation can never just be a place to grow pulpwood or any other industrial product. It is too big and too long-lived: unavoidably it will have many other impacts on people, wildlife and the environment. But, equally, a plantation today is rarely a replacement for natural forest. The great bulk of plantations grow on long-denuded or degraded land, waste areas or other impoverished sites; compared with natural forest they are poor in wildlife and some environmental values. Nevertheless, on such sites tree plantations generally improve both non-timber and timber values.

The tension created by the polarised views of plantations needs resolving, and seven principles of successful plantation development will help. These principles are holistic, not sequential, and all must be in place sooner or later; otherwise, sooner or later, the plantation project or program will fail. The principles apply equally to industrial-scale and farm- or village-scale plantings, though sometimes the emphasis differs. This article focuses on the tropics and subtropics, and presents my personal view.

But what is success? We shall define it by saying that a successful plantation is one that meets the objectives of its owners in ways that do not compromise the environment or the livelihoods of others nearby. Aracruz Celulose's highly

productive short-rotation pulpwood plantations in Brazil (see page 15 of this edition), Kerala's long-rotation teak stands in India, the many blue gum (*Eucalyptus globulus*) woodlots in the Ethiopian highlands, and the *Casuarina* shelterbelts that help stabilise sand dunes in China are all successful to a greater or lesser extent. Failures are more difficult to cite, because failure is rarely complete (or well reported). Malawi's Viphya Plateau plantations, based on *Pinus patula*, grew well but for a long time didn't have an adequate industrial outlet. Many *Acacia mangium* stands in Southeast Asia are quite well stocked but will not live up to expectations owing to high levels of butt rot and other problems attributable, in part at least, to poor site selection. And across the African Sahel region numerous small plantations have only the odd surviving tree due to poor weed control, termite damage, browsing by sheep, goats and sometimes camels, or simply neglect and lack of interest. So what are the seven ingredients of success?

## **Know what rights you have: tenure**

Because plantation forestry is a long-term business, one must be sure that legal right to the land or the trees grown is secure and in place. No one will invest in tree-planting if there is doubt about who will own the plantation or who can sell or use its produce in years to come.

Establishing legal tenure is often complicated by the array of land ownership traditions or rights such as customary ownership in many Pacific islands or in parts of Africa, where use of land has long been the prerogative of a clan

or tribal chief. Sorting these matters out is a prerequisite for successful plantation development, however big or small.

### **Stakeholder participation**

'Stakeholder participation' is today's jargon for making sure that everyone who has a significant interest in the plantation participates appropriately in decision-making. I can do no better than refer readers to a chapter by Bass in *The forests handbook* (Evans 2001) titled 'Working

with stakeholders'. Drawing on experience from across the tropics, Bass discusses the dozen or so stakeholder groups who commonly have an interest in forests, how to identify the main

ones, and how to have effective and meaningful relations with them using tools ranging from village meetings through participatory mapping to market research and social impact assessment. All this teaches that, today, any successful plantation project must be rooted, to use a suitable metaphor, in the fertile and often fraught ground of interest groups and interested parties.

Let me illustrate the point using a picture from Evans (1992) shown on page 5. Apart from seeing the author as he was nearly 20 years ago (white, bearded, to the right of centre), all the key actors (with the lamentable exception of women) in the 800-hectare Bilate River community forestry project in Ethiopia are present. To the left are local villagers and farmers who will decide what land is included and who will give of their labour; in the middle, between a missionary and myself, are men from the development arm of a local non-government organisation, the Kale Hywet Church; and to the right in the foreground is the local government administrator and behind him (far right) is a forester with certificate-level training who was to oversee the whole project. The photograph was taken in 1982 at the inception stage of the project and illustrates one phase of engaging

with stakeholders: we had all just walked over the site together and were about to sit down to discuss what were mainly the villagers'

ideas for growing trees (for soil erosion control, firewood and pole supplies), alongside the local administrator's vision for developing the locality. Little did we know that Ethiopia was on the brink of its most severe drought and famine for centuries and that this project would help the survival of several thousand families through food-for-work. This makes the point that stakeholder participation leads to 'ownership of' or 'buying into' a project conceptually even if not physically, which in years to come repays handsomely.

### **Know about the land, not just its fertility: land allocation**

A critical issue for any plantation project is deciding what land is included; this is a process with which stakeholders

should be involved. It will do much to alleviate future disputes if all parties agree up front about boundaries, the land types to be used, what is to be reserved from planting, and so on. Plantations can be very large; it is likely that some land within a potential project may have conservation or archaeological importance or have enjoyed traditional usage or spiritual associations. Such land should normally be excluded from planting; both the process of finding this out and the act of deliberately not planting all land build good relations and demonstrate sensitivity. Like justice, the sensitive allocation of land should not only be done but be seen to be done.

A prerequisite of any plantation project is to work with stakeholders to map out the areas for planting and for exclusion from planting. This is a good time to decide how to augment natural features for biodiversity conservation such as remnant natural forest, watercourses, exposed rocks and crags, and wetland areas. It is also a good time to weigh very carefully the need to plant all the least-fertile land in a project area. In many projects, every last hectare of land is planted for completeness or simply tidiness or to satisfy national program targets, despite the fact that some land will, at best, give only marginal yields. To save resources and to save having to decide later on what to do with a poor crop, it is far better to invest the effort in productive stands.

### **Sound silviculture**

In the past, most effort surrounding plantation development has focused on practising sound silviculture: matching species to sites; preparing ground, controlling weeds and taking steps to protect trees; using fertilisers to correct nutrient deficiencies; thinning stands to aid growth of the final crop; and so on. This solid base of good husbandry is no less essential today than in the past. Even if every other principle in this article is complied with, the neglect of basic silviculture would be sheer stupidity.

But I would add a rider: sound silviculture should be viewed as a whole and not as a series of isolated operations. This is particularly true when felling one crop and planting or regenerating the next. Don't neglect replanting by focusing solely on minimising harvesting costs. Plan the entire sequence of operations to minimise damage to soil and maximise the next crop's chance of success.

### **Selling what you grow: markets**

It is self-evident that investment in a plantation intended to yield products must have every expectation of a market existing for that product. Many advocates of plantation development have assumed that a market for the produce will develop while the plantation is growing. This notion is beguiling because the gap between the planting event and harvesting is almost always more than a decade—plenty of time, one might think, for a market to develop. It isn't. I have already cited one example. Another, very different

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case, is the Usutu Forest in Swaziland, a 62 000-hectare plantation estate of subtropical pines first created in the 1950s with the intention of growing sawntimber. By the time thinning should have commenced to maximise sawlog out-turn, management had been switched to pulpwood production with no thinning because market conditions had changed. Now for nearly 40 years it has been a successful, vertically integrated plantation forest and kraft mill set-up producing baled pulp for export (see photo page 3).

## Never relax: building the research base

Plantation forests, whether large or small, are an investment. Such investment deserves underpinning by research either with one's own dedicated unit or, if small, by participating in a group-support scheme. Research plays three crucial roles:

- 1) pest and disease surveillance and remedial action: a good example of this is South Africa's successful Tree Pathology Co-operative Programme (TPCP) led by Professor Mike Wingfield at the University of Pretoria;
- 2) evaluating silvicultural strategies relevant to the project including, crucially, genetic tree improvement. A program of tree improvement, or access to the fruits of one, is the guarantor of maintaining and increasing yields over time; and
- 3) monitoring what is happening to site and soil. Successful plantation forestry should include knowledge of the effects of one's operations, and this is often a role of research trials. My own long-term assessments over more than 30 years in Swaziland allows the Usutu Forest plantation managers to claim that their actions have caused no yield decline after three rotations and more than 50 years of intensive pine cultivation (Evans 1999; see photo p 3). We know it is true because the data have been collected.

## The real commitment: time

This final principle is obvious, but often neglected. Plantation forestry is a long-term business; therefore, the investor must be committed to the long term. This is why many investors in the tropics look carefully at a country's politics. Will the nation be stable enough over the life of the plantation so that the investment will not be jeopardised? No one can ever answer that question with certainty.

The above remarks are self-centred and doubtlessly sensible economics, but there is another dimension to the time commitment. I refer to social, community or rural development planting where the single greatest cause of failure is a lack of commitment over time: initial enthusiasm that fades with time is the death-knell of many a project. All stakeholders must be committed to this dimension of



**Putting heads together:** stakeholders gather at the start of the Bilate community forestry project in Ethiopia, which led to the formation of 800 hectares of plantation over ten years. Bringing all interested parties together is essential for successful plantations. Photo: © J Evans

time: plantations are not a quick fix. Part of the success of the Bilate community forestry project was that all stakeholders stuck to working together, although not always harmoniously, over some 15 years. My first visit was in 1982 and my most recent in 1995 with several in between. Commitment over time shows interest in the project and also in the other parties involved. To reiterate: plantations are not a quick fix.

## Concluding remarks

These principles are not all-encompassing; for example, I have not mentioned profitability and other economic realities or certification issues; nor have I commented much about environmental imperatives. Nevertheless, I believe the seven principles provide a solid foundation: do right by the stakeholders and by the trees planted and everything else will usually slot into place.

## References

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