



# **HEMP AS A WOOD PAPER PULP SUBSTITUTE: ENVIRONMENTAL SOLUTION OR DIVERSION FROM SUSTAINABLE FORESTRY?**

*The original version of this article was written in April 1996 as an annual contribution to the newsletter of Permaculture North, a local permaculture group covering the north shore suburbs of Sydney. It was, in part, a reply to an article in the previous issue advocating hemp as an environmentally sound alternative fibre crop. The reality and potential of forestry as a sustainable land use expressed in **Creating A History Of The Australian Search For Sustainable Land Use** (Article 13) and in the **Wombat Forest Submission** (Article 17) also comes through in this article written around the same time but expressing long held views.*



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For several years now many environmentalists have advocated the growing of hemp as an alternative to trees for both paper production and as a substitute for cotton. A small market for hemp products is developing gradually around its “green” credentials. Hemp is a very useful fibre crop with great potential which has been ignored because of the legal prohibition on *Cannabis sativa* growing<sup>1</sup>. I believe the argument for using hemp as a substitute for cotton is environmentally sound but that the idea that it should replace trees as a major source of paper pulp would be a retrograde step. In any discussion about the potential of new crops I think it is important to avoid the “miracle crop syndrome” when looking for answers to fundamental land use problems.

The author did point out hemp’s high nitrogen requirement as one of the limitations to hemp’s environmental status but repeated the often-claimed potential of hemp to replace wood fibre for paper pulp. I’m sure this is technically possible. But I believe it would be environmentally and economically unsound.

In *Permaculture One*<sup>2</sup> Mollison and I emphasised the problems with annual cropping especially on a broad acre scale where soil cultivation is generally necessary to create a seed bed and control weeds. Land which is in any way suited to broad acre cropping (arable) on a sustainable basis is a limited resource, especially in Australia. Broad acre hemp production would have to be done on these limited and fragile arable soils. If hemp was grown as a fibre to replace cotton (which requires first class arable soil) then the environmental benefits would be considerable. Cotton not only requires very fertile soil but also needs abundant irrigation and heavy use of pesticides. Hemp on the other hand can be grown unirrigated and has little need for pesticides even though its nitrogen requirement is higher than most grain crops.

As a source of high quality fibre for clothing, ropes and other durable products (including some special purpose papers) broad acre hemp production makes sense. As a weed suppressing and disease breaking rotational crop with grains and other food crops it would help shift existing broad acre cropping systems towards sustainability and provide more economic options for grain farmers.

Using hemp to replace trees for bulk paper production is another matter. Eucalypts, pines, wattles or most other prospective tree species can be grown for pulp on very poor quality land (steep, stony, infertile). To use arable land to grow a fertilised annual crop as an alternative to wood pulp plantations would be poor allocation of resources and increase overall environmental impact. This is especially so when we realise that the average useful life of paper products is very low.

So what about replacing the dreaded wood chipping of native forests? Most environmental groups have for years advocated establishment of plantations on marginal farm land

1 The recreational drug marijuana is made from the resinous head of *Cannabis sativa* while the stem fibre is the source of hemp. However varieties producing good quality hemp yield very poor quality marijuana

2 Mollison, B & Holmgren, D. *Permaculture One* Corgi 1978

to supply wood pulp. A small but rapidly expanding plantation eucalypt industry is developing. Some plantings on farms needing reforestation to address salinity and other Landcare issues are showing an environmentally progressive lead and in some notable examples the plantations have been established in ways which reflect whole farm planning principles. However we are yet to see many examples of mixed species plantations reflecting permaculture principles<sup>3</sup>. We need to see plantation forestry as a pioneering process for developing productive **mixed** forests rather than short rotation monocultural crop, dependent on fertilisers and herbicides.

Perhaps the most fundamental point about more sustainable wood fibre production is that it should be harvested as a **byproduct** from thinnings and heads of trees in forests and plantations grown for higher value wood products (eg sawlogs). The idea of growing a whole forest for one product yield is a contradiction of the most basic principles of forestry and reflects a misunderstanding of how trees and forests grow.

In trying to explain this point to wood producers at a farm forestry conference Neil Barr, one of New Zealand's foremost farm foresters put it this way *"aiming to produce pulp from trees is like a wool grower aiming to produce dags from sheep"*. Pulpwood and firewood are the inevitable byproducts of any forestry system designed to produce high value wood products from poles, sawlogs and veneer logs.

If this is true for plantations it is even more true for native forest, where the greater diversity of trees and growing conditions means only a limited number and parts of trees are suitable for sawlogs. Unfortunately, the very valid point that sustainable native forestry needs markets for low grade waste wood has been discredited in Australia because of the way waste utilisation (wood chipping) has become the tail wagging the dog in public forests.

The irony is that as the calls for excluding wood chipping from native forests become stronger, there are huge volumes of wood which need to be removed by thinning from our vast regrowth forest areas. There is no major use for this wood other than paper pulp. CSIRO has done the research<sup>4</sup> to prove the benefits for future sawlog production, while the environmental benefits of thinning are also substantial. The thinning job has the potential to create enormous employment in rural areas. Unfortunately, the heritage of mismanagement and greed which has characterised public forestry in Australia will probably mean these forests are abandoned to return to "wilderness" (in the old sense of the word) racked by frequent fire and regeneration cycles, without ever developing into the great park like forests of pre-european Australia.

While we need to see a massive increase in plantation forestry on marginal farmland to produce timber, to abandon management of native forests would be as tragic as the

3 Holmgren, D. *Trees On The Treeless Plains* Holmgren Design Services 1994

4 CSIRO Young Eucalypt Research Project

current mismanagement. Fifteen years ago, I became convinced that the public forest debate would have no productive resolution and that new models for Australian forestry would emerge from small scale private forestry which in the future might be reapplied to abandoned public forests.

Today, we see in innovative Landcare farm forestry and the portable sawmill and wood craft revolutions, some of the elements of the new forestry. My own contributions to the new forestry are now focused on the management of Fryers Forest, a rural residential community where management of the regrowth box forest for amenity, conservation and timber production will be a primary focus. Hopefully history will show that out of the ashes of the public forest debate, forestry was reborn as the sustainable land use against which all others are compared.