Textile and Composite Industries Pty. Ltd.

14 Denholm Road, Ballan, Victoria, Australia 3342.
email: adrianc1@optushome.com.au
Mobile +61 (0) 413 721 633
www.textilecomposite.com.au

26th April, 2012.

The Secretary, Environment, Resources and Development Committee
Parliament House,
Hobart TAS 7000

RE: Tasmanian Hemp Industry Inquiry.

Dear Sir,

We are a Victorian Company, directors of which have been involved in developing the non-drug Industrial Hemp Industry since 1994.

In fact our Directors, Anthony Clarke and Adrian Clarke, successfully lobbied the Victorian Kennett Liberal Government to legalize the farm production of Industrial Hemp in Victoria. The Kennett government allowed three years of small field production throughout Victoria. Those trials proved conclusively to the Kennett Liberal Government that Industrial Hemp did not spontaneously evolve into Marijuana, that it could be grown throughout the state regions and that there was a market for its products – both domestic and export. The new act passed through the Autumn session of Victorian Parliament in 1998.

We realized as early as 1994 during preliminary research that it was not possible to do anything with hemp until it was decorticated. That is, the woody pith core of the stem must be separated from the fibrous out skin of the stem for either part to have value.

Once that separation is done, each of the two products (fibrous skin and woody hurd) has value and can be sold: each into a multitude of markets from Textiles and composites for the fibre; and building materials and cellulose for the hurd. Both Bast skin fibre and Hurd can be used to make paper.

Knowing this to be a TRUTH about the industry, we set about to design a new type of low cost decortication and production system for Australia. That was the use we made of the 3 year grace period prior to the new legislation.

We studied the traditional methods used throughout Europe, the Americas and Asia. Field and Dew retting is not easy to do in Australia because there is rarely a morning dew sufficient to carry the development of gum eating fungus through the process. Water retting was not an option either because we cannot allow the wastage and tainting of water for such purposes. Also both such methods are very labour intensive and onerous.

So we developed an entirely new approach which has resulted in various production pathways which can process standing green hemp or dry stored hemp into a vast array of products.

Our system is so economical, that any group of farmers can set up regional co-operatives or similar organizations to process hemp on or near their farms and add value before transport to any further processing is done.

Tasmania has a long history in growing hemp starting with the courageous work of Patsy Harmsen in growing hemp. We had the benefit of using many of her bales in the development of our early prototype decorticators in the late 1990s.

We have long cherished an ambition to provide our technology into Tasmania so that a parallel stream of farm based fibre products can be created along with the timber industry and other farming activities.

We have grown several crops in Tasmania to study seed variety performance and mainly to provide material for the development and proving of our technology system. We have taken material grown in Tasmania to the International Fibre Centre in Geelong (which was established as the foremost Textile and Fibre R and D centre in the world by the Kennett Liberal Government and inexplicably dismantled by the incoming Bracks Labour Government) and processed it into very superior textile fibre. In fact, we have proven that if we established our systems in Tasmania, it could rival the Cotton Industry in northern Australia as a bulk producer of quality, grown cellulose fibre for textiles.

We processed a section of an excellent crop grown by the University of Tasmania in 1998. Part of that crop also went into our R and D work at the IFC at Deakin University in Geelong.

Indeed several Chinese cotton mills have expressed interest in Tasmania as a supplier of our type and style of short hemp to make up the frequent shortfall of cotton supplies.

We have also been involved – especially in recent months – in the campaign to bring Australian into the hemp grain foods market by encouraging any and all governments who are open to the facts and who accept the true research on the matter – to allow FSANZ to enact their own recommendation, that hemp foods be legal to consume throughout Australia. We could then enjoy supplying into the vast Hemp food market that is dominated in the USA by Canada. We could also supply excellent Hemp food products to the European and Asian markets. Until we do so, we are denying Tasmanian farmers an extra opportunity for export income.

I attach to this submission a market study which we commissioned from the Textile Institute based in Manchester and written by their senior consultant, Mr. Robert Franck in 1999/2000 which explains the market gap between the rather static and peak production of cotton and the ever increasing market demand for a grown cellulose fibre. He also says that once we are enabled and permitted to develop the hemp industry using our technology, the industry will be producing between $1.5 and $3.5 BILLION per annum in fibre sales. Of course this would increase dramatically if the infrastructure for value adding like spinning and weaving were also established. Such an industry would be significant in Tasmania.

A farmer could produce a tonne of hemp stem for about $200 a tonne. This tonne could be instantly converted by the simple act of passing it through our low cost farm or regionally based decorticator into 1/3 of a tonne of bast fibre with a possible conservative value of $3000 a tonne and 2/3 of a tonne of hurd with a possible value of $600 a tonne. That makes the farmers $200 investment in producing one tonne of stem worth approximately $1,000 in fibre and $400 in hurd. This is a total new value of approximately $1,400 (seven times cost) by simply using our low cost decortication system either on or near the farm point of field production.

Usually a farmer can produce 3 tonnes of bast and 7 tonnes of hurd per hectare.

I refer your attention to the attached document called: The Terrible Truth About Hemp.

I also refer you to the links to our Website and other links in the signature block of my email.

By viewing the material and videos on these links you will be able to see the size and efficiency of our decortication machine and also the method we can establish to make a fibre which can spin in cotton systems to end up as high value textile cloth and clothing.

We request that the Tasmanian Government work with us to discover the best ways in which Tasmanian farmers and manufacturing industries can benefit from this fibre and food industry to maximize its value for the whole community.

In our decortication and value adding technology, we have the simple key to unlocking the vital power and extraordinary wealth the hemp industry can generate.

We are keen to bring its inherent multiple opportunities into Tasmania as a unifying asset for the whole state.

I am,
Yours sincerely

Adrian Francis K. Clarke

0413 721 633.

Attached: Robert Franck Report and THE TERRIBLE TRUTH ABOUT HEMP.

Best Regards,

Adrian

Adrian Francis K. Clarke
Managing Director,
Textile and Composite Industries Pty. Ltd.
+61 (0) 413 721 633
adrianc1@optusnet.com.au

WEBSITE: www.textilecomposite.com.au

http://www.youtube.com/watch?v=U8LFErsq6wI

http://www.youtube.com/watch?v=vgHKkvE94uo

http://www.youtube.com/watch?v=E_IdevrLFTs

THE TERRIBLE TRUTH ABOUT HEMP –

TO WANT A PROFITABLE HEMP INDUSTRY

IS TO WANT TO DECORTICATE WITHOUT RETTING

AND

TO HAVE A DECORTICATOR THAT DOES NOT DAMAGE THE FIBRE.

Tasmanian Hemp Crop

Hemp is only useful as a raw material or feedstock when the fibre (bast) and the core (hurd or shives) have been separated without damage to the fibre.

Then and only then – thousands of products can be made from it!

The success of any hemp industry depends on how easy it is to extract fibre from the stem without damaging it.

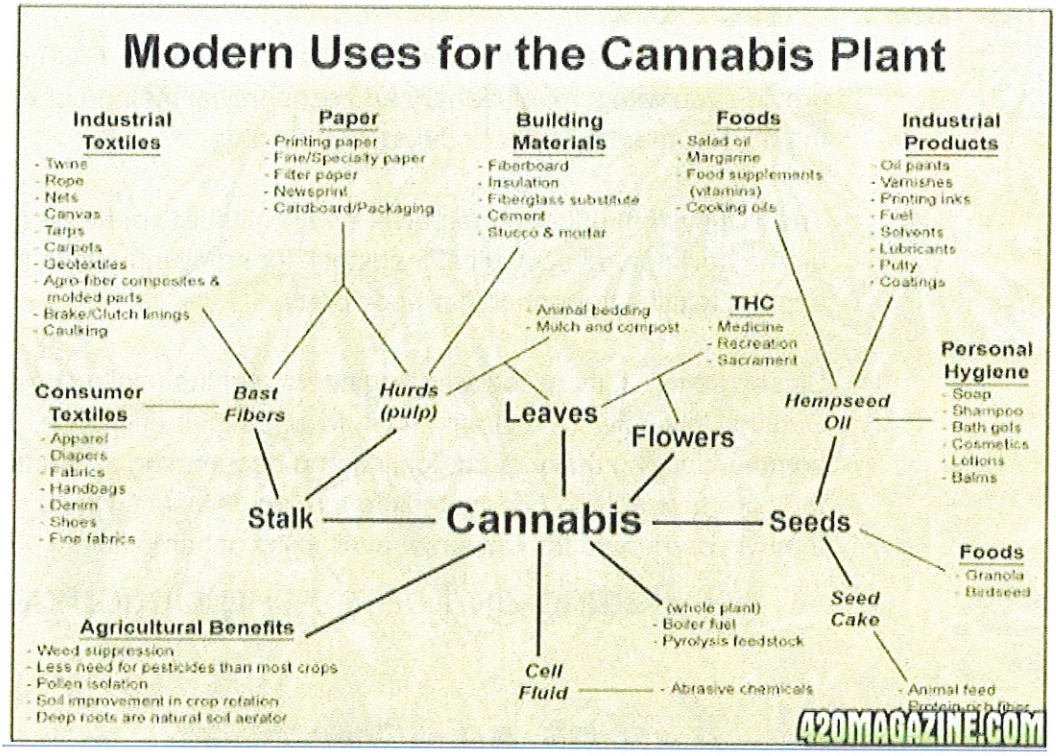
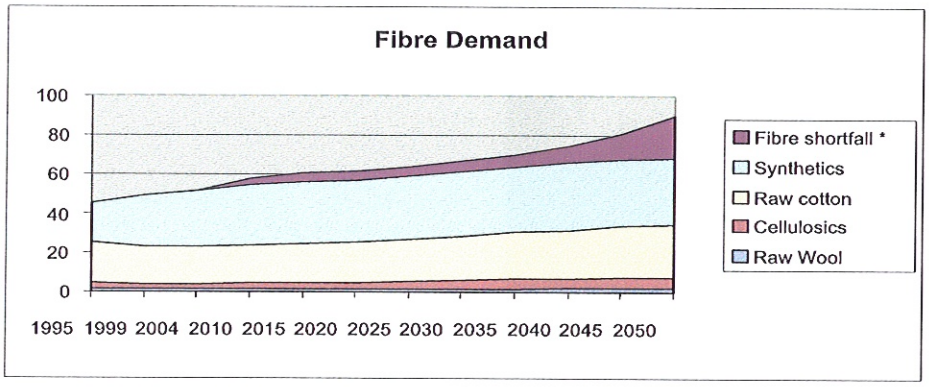


Exhibit 3

Demand & Projected Shortfalls

Assumption: There is an average of 25-50% increase in the production and supply of existing fibres over the next 50 years. Market complementary, not competitive.



Meeting even a small part of this Textile Fibre Shortfall demand will require many thousands of hectares of hemp and that the fibre be extracted in good condition.

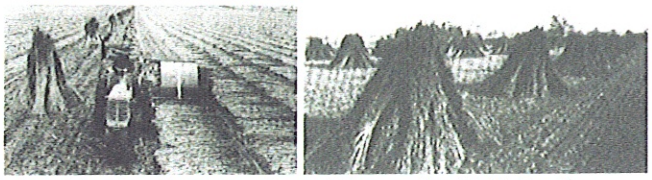
The Non-Textile marketplace could be even bigger as full strength undamaged recyclable hemp fibre can be the ecological fibre in almost all composites.

Textile and Composite Industries Pty. Ltd. of Australia (TCI) can provide you with a revolutionary and economical method of extracting the fibre from hemp without damaging the fibre.

The TCI system unlocks the power and profitability of hemp and lets it be the new natural ecological feedstock for many industries from apparel textiles through to car body parts.

Since 1994 TCI, its associated engineers and the textile specialists at Deakin University in Australia, have focused their efforts on commercializing these decortication and degumming systems so that they are now able to offer complete turnkey solutions which remove the twin barriers to the universal availability of hemp fibre : -

– Retting and damaging Decortication.



Labour Intensive, time consuming and fibre spoiling Old field retting.

The TCI system comes in two parts:

The First Part is the Decorticator.

Processing fresh green hemp in the field Yorkshire England EU

Processing dry bales with the same machine in Yorkshire England EU


Heading into the hemp field NSW, Australia.

•This decorticator can be installed within a harvesting machine to decorticate green fresh hemp as it is being harvested for the finest hemp textile fibre.

•It can harvest dual crops for their seed, fibre and hurd.

•It can be set up as a static decorticator to work on stored hemp all year round.

• After the action of this first system, virtually all the fibre can be immediately used in composite systems OR passed on to the second system to be further value-added into textiles.

The Second Part is the degummer.


Pressure dye vats with our formula.

• This is an industrial process that removes the gums so completely that the fibre can be spun in standard cotton systems.

• This system can degum green fresh hemp skins and dried hemp skins with NO RETTING required.

• This system completes its work by opening and preparing the

fibre for carding and spinning in standard cotton mills.

Unlike the costly, time consuming, labour intensive systems of the past when retting took up the fields for many weeks during which too much dry or too much rain could ruin the crop, the TCI method recovers virtually all the fibre in the field.

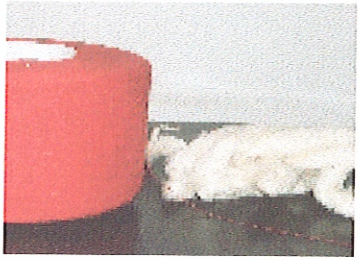
Russian Field occupied for weeks by retting during traditional processing.

"The commercial development of green decortication and degumming for hemp could change the balance of world fibre markets, and increase the range of applications for hemp fibre."

UK Flax and Hemp Production (**flaxhemp-report DEFRA 2005.pdf)ADAS, Centre for Sustainable Crop Management, Cambridge. UK for Department for Environment, Food and Rural Affairs July 2005.**

The TCI Decortication system is a proven Green Decortication system!

This green material was degummed on the same day that it was harvested and decorticated and then spun into yarn the next day.



With TCI's decorticator system, dreams of successful national hemp industries suddenly, instantly and miraculously become very REAL. Hemp processed by TCI systems can create real Industrial and Environmental benefit; it can provide real value to farmers, it provides real regional income and real employment opportunities.
Real and solid plans for follow-on industries can be made.
Sound investments can be made. All this can happen when you have our low cost efficient decorticator working locally on farms to provide value adding production chains and jobs.

TCI's technology can be regionally based to value add to fibre for collectives of small farm producers and this makes it ideal for the your cultural needs.

When we deliver and establish our first hemp system for your next harvest, you will have grown hundreds of hectares of hemp ready for its operation.

Fibre:
Some of the fibre will be processed green and fresh for textiles
Some will be processed green and fresh for strong composites
Some will be processed as mature crops giving seed, fibre and dry hurd.
Some will be processed as dried windrowed or stored stems

Hurd:
Some of the unretted hurd will be used as compost to nourish the soil and the next crops.
Some of it will be pulped for paper
Some of it will be digested for fuel ethanol

Some of the unretted dry hurd will be in building products and insulation
Some of it may be burned as fuel.

Skin and yarn

Fine quality knitted hemp jacket.

When more TCI systems are established, several such systems will funnel their fibre into the central textile mills and an industry will be established and expand along with sales.

We can commence to build the system as soon as you chose the commercial arrangement that suites you best.

You wish to establish a hemp industry in your region and to expand into neighboring regions. We wish to supply to you the systems that will enable you to achieve that plan -

AND SOLVE FOREVER "THE TERRIBLE TRUTH ABOUT HEMP"

We look forward to your proposal and remind you that we need time to build the machines so that they will be in place ready for work in your fields at Harvest Time.

Contact : Adrian Francis K. Clarke

Managing Director

Textile and Composite Industries Pty. Ltd.

+61 (0) 413 721 633
adrianc1@optusnet.com.au

RAFEX (EUROPEAN) Ltd

HEMP
THE PRESENT AND POTENTIAL WORLD MARKET

Summary

Cotton, Polyester staple fibre (PESF), Flax, and Hemp share the market for 'cotton type textile consumer products' and their relative share of this market is strongly influenced by price. At the moment cotton and PESF prices are around US$1/kg whilst flax And hemp are 50% to 100% more expensive.

At the present time hemp fibres occupies a very small place in the textile industry. This situation could change dramatically in the next 5 years if the present development work being carried out in Australia enables hemp fibres to be produced at a price below that of Flax but still somewhat above that of cotton.

Hemp's share of the market would be further increased if, as is expected, the hemp fibres produced by the new technology enable the fibres to be spun into finer yarns, thus enabling them to be used for lighter weight fabrics than at present

There are also substantial markets to be developed in non-textile areas.

It is expected that if the above conditions are met the market could reach between 3 and 6 million tonnes per years in 5 years time, at a value of between US$1.25 and 3 Billion.

1 Background

Hemp (Cannabis Sativa) is one of the oldest textile fibres known to humankind. Probably its first mention in written history (although previous archaeological evidence exists} is in an Edict issued by Charlemagne around 800 AD decreeing that every farm in his empire should grow flax and hemp. From perhaps 5000 BC its fibres were used to make ropes and other heavier textile products.

From the middle ages until the mid 20th century it was the principle fibre used for marine and other cordages, sailcloth and other industrial textiles, although the finest fibres were spun to produce yarns for lighter weight furnishing and apparel fabrics.

2. The Present Market

2.1 As with flax, hemp began to loose its market share of textile fibres to cotton in the mid 19th century, and this decline in its use accelerated in the mid 1950s when the first synthetic fibres, particularly polyamide (nylon) and polyester, and later, polypropylene started being manufactured in substantial quantities

Hemp for textiles is grown and manufactured at present in Hungary, Romania, Poland, Russia and China. Smaller quantities are produced for other purposes (paper, animal litter, building insulation and composite products in the UK, France and several other countries.

Total world production at present is approximately 70.000 tonnes of fibre.

The quantity of hemp produced for end uses other than textiles is difficult to establish, and is not immediately relevant to our present purpose.

2.2 Legal Constraints to the present Market. The drug marihuana is produced from hemp and for this reason its cultivation is unlawful or strictly controlled in many countries, and in particular most of those which constitute the principle consumer markets for hemp fibre (North America and Western Europe).
However this situation is changing for two reasons:

i) Low content TCH (the active ingredient of the drug) varieties of hemp exist and practically all, if not all, European hemp fibres are at present produced from such varieties.

ii) In the main consumer markets the public and political attitude towards the drug itself is to a certain extent changing, principally due to its potential medicinal qualities.

3 The Textile Fibre Market

3.1 Competition. The sensible way to look at competition between textile fibres is not to concentrate on the prices and technical qualities of the fibres themselves but to look at the final products made from these fibres and assess the competitive position of these in relation to each other.
Hemp's principle end-uses are string, twine and rope, and heavy canvas fabrics. A certain quantity is now also being used for clothing (Trousers, sportswear)
Polyester, cotton and flax are also used for these end-uses and synthetic fibres, principally polypropylene, nylon and polyester are dominant in the cordage market.

3.2 World Fibre Production/Consumption. Taking one year with another the world's production and consumption of textile fibres are in balance. The worldwide demand for 1999 was:

Fibre	Annual Production (K tonnes)		% Total	Price US/kg
Cotton	19.000		33	0.80 – 1.00
Hemp	70		0.1	1.40
Flax	625		1.1	2.00 - 2.40
Synthetics	30.000	(10.000)*	52.5	0.80 – 1.00
Other (wool, jute, etc)	7.500		13	
Total	57.195			

*Polyester staple fibre (PESF) Sources: The Textile Institute, Textil Organon (For hemp: RRF)

The important factors to consider are:

i) That cotton has the major part of the total market (33%) at a price slightly above that for polyester staple fibre, that hemp and flax are used for end uses that are dominated by cotton but they are 2 to 2.5 times more expensive

ii) That the major part of PESF is used in 'cotton type end-uses, making a total market for these end uses of the order of 24.000 K tonnes

iii) That world production of cotton has probably nearly reached its maximum because

a) Cotton requires good, well watered land in Mediterranean or semi-tropical climates,

b) For this land cotton competes with food crops.

c) Not only practically all such land in the world is now being cultivated but that the available area is diminishing due to over-cultivation (Kazakhstan, for example)

iv) That the world's population is increasing at about 2.5% per year, that the world's fibre and food crop needs are increasing at a greater rate (probably around 4%) due to the overall increase in purchasing power.

v) That this will lead, possibly in the next 5 to 10 years, to a shortage of appropriate land and that in competition for this land, food is likely to win over cotton.

vi) That this, in turn will lead to:
a) An increase in the price of cotton,
b) An increase in the production of polyester staple fibre. (see below iv).
c) Greater opportunities for flax and hemp.

vii) Evidence that the world production of cotton has just about reached its maximum is that its consumption has remained static for the last five years whilst polyester staple fibre (PESF) has increased by 23%. PESF is the only possible replacement fibre for cotton in the present price range)

4 Hemp versus Flax.

4.1 Fabrics of similar construction and weight made from 100% hemp and !00% flax are, as far as the consumer is concerned, indistinguishable. Microscopical examination of individual fibres is necessary to identify each fabric. Their performance is also similar, with some possible advantages to hemp (abrasion resistance)

4.2 Flax, however, has two serious advantages:

a) It is better known, has an excellent image of quality and luxury and has been well promoted in the past.
b) It can be spun to much finer counts (thinner yarns) thus providing a far greater range of fabrics, from very light weight cambric handkerchiefs and blouse cloths to heavy furnishing fabrics. Hemp, on the other hand, is limited, <u>at the moment,</u> to heavier weight cloths and industrial end-uses. It does have the advantage, however, of being more ecologically sound as it needs no chemical weed killers (it grows so fast that weeds are smothered) and it requires little, if any, fertilising.

4.3 <u>Price</u> When comparing the prices of the two fibres, and hence fabrics made from them, it is unwise to base conclusions on price comparisons taken at a specific time. This is because their prices are even more volatile than those of other textile fibres. For example the price of good quality flax has doubled over the last nine months.
A safer planning assumption is that, historically, hemp is in the same price range as flax, thus placing it at a severe disadvantage, due to the factors set out in 4.2 above.

4.4 However, this situation may be about to change dramatically in the near future because:

a) Trial plantings of appropriate varieties in Northern Australia and Tasmania, and through genetical engineering in Poland have produced plants 4 metres high. Usual growth maxima are about 3m. This increases the 'dry yield' per Ha. by about 50% and is bound to bring the price down. It will be very difficult, and in the writers view not possible to increase the yield of flax to anywhere near the same extent in the medium term as all that can be done as far as agricultural husbandry is concerned has been done. The yield of flax fibre per Ha. in Northern France has doubled over the last 40 years and is, on average, more than twice that of Eastern Europe and China.
b) Improvements in the technology of decortification (scutching), could increase the proportion of long to short fibre in the yield (long fibre can be worth five times more than short fibre), increasing the total yield of fibre per Ha. and also increasing the efficiency and thus reducing the price of the decortification operation. Work in this area is well advanced in Australia, Austria and Germany.
c) Whilst this has not been demonstrated yet it seems likely the hemp fibre produced by the Australian decortification technique can be spun to finer counts than is possible at present. This would lead to a considerable increase in the size of the potential market, as it will enable a greater variety of fabrics to be produced for a greater variety of end-uses.

5 The Market Potential for Hemp

5.1 The eventual size of the market will depend on:
a) The price of the fibres produced (long and short) 'ready for spinning' relative to cotton and flax. The closer to that of cotton the bigger the market.
b) The skill with which the market(s) is/are developed. (Marketing, End-product development, Promotion)

5.2 The total market consists of several distinct markets.
a) The Textile market, which itself divides into markets for long and for short fibres, and within these two categories, for end-uses requiring 100% fabrics or fabrics in which the hemp would be mixed with other fibres such as cotton, flax, wool, silk, polyester, acrylic.
b) Non-textile markets. Building insulation, paper making, fibre re-enforced composite products.(All these are recently developed products in Europe whose markets' are growing)

In addition there would be markets for waste and other derived products such as shive, hurds etc. These markets are animal litter, (especially chickens and horses), cellulose pulp (for paper manufacturing) and chip board. (All these are existing products in Europe whose markets' are developing)

6 Market Objectives

6.1 It is always difficult to assess the size of a future market for a good that is not yet, to all intents and purposes, on the market. It is relevant, however, in this context to bear in mind the very rapid growth of synthetic fibres shortly after they appeared on the world market in the 1950s. The figures for polyester, which is the fibre of most interest to us as it is used for many of the same textile end uses as hemp, are shown in the appendix and indicate how fast a new fibre, properly priced and marketed, can penetrate the textile industry. It should also

be remembered that PESF was launched at a price closer to that of merino wool than that of cotton.

6.2 If we assume:

i) That the new Australian produced hemp is launched on the market in 2001 at a price of US$1.80/kg, cheaper than flax but higher than cotton, in order to test the market and carry our commercial development trials, both of 100% hemp fabrics and fabrics produced from blends of hemp with other fibres.

ii) That over the next 5 years, as economies of scale (both in hemp fibre production and in the manufacture textile products made from these fibres) come into effect, the price of hemp gradually decreases to US$1.20/kg

iii) That world fibre consumption will continue to increase at 4% per year and that therefore in 5 years time the market for 'cotton type' textile products will be around 30 million tonnes.

iv) It would therefore not be unreasonable to aim for a market of between **1.5 and 3 million tonnes** of hemp fibre, that is between 5% and 10% of the market for 'cotton type' textile products. At US$1.20 per Kg this would yield **revenue of between 1.25 and 3.5 Billion $US.**

R.R. Franck
C.Text, FTI, FRSA

6th December 2000

Appendix: The Growth of Polyester

Polyester started being developed By Imperial Chemical Industries in the mid 1950s. In addition to developing its own markets in the UK and the Commonwealth by 1960 ICI was beginning to grant licences under its patents to several other companies, in France, Germany, The USA, Italy, USSR, China and Japan and world production increased rapidly.

Year	000 tonnes	% all fibres	% cotton	RPI*
1955	Pilot plant			
1960	122	0.9	1.3	4.17
1965	456	2.4	3.8	2.94
1970	1645	7.6	14.0	1.33
1975	3366	14.0	28.0	0.85

*Relative Price Index: Polyester price (!.7 decitex staple fibre) divided by the cotton price ("a" Index, middling. (1.3/32 inches} CIF Northern Europe Source CIRFS.

Since 1975 the RPI has hovered above and below unity by some 20 points.

File: Adrian Clarke Australia