Commercial Viability of the Australian Alpaca Industry

Report to the Australian Alpaca Association

7 May 2001

Prepared by

ACN 058 284 521

CANBERRA OFFICE
ACIL House
103-105 Northbourne Avenue
Canberra ACT 2601

Telephone +61 2 6249 8055
Facsimile +61 2 6257 4170

SYDNEY OFFICE
Level 2
181 Miller Street
North Sydney NSW 2060

telephone +61 2 9957 6363
facsimile +61 2 9957 1805

BRISBANE OFFICE
Level 15
127 Creek Street
Brisbane QLD 4000

telephone +61 7 3236 3966
facsimile +61 7 3236 3499

MELBOURNE OFFICE
Level 3
95 Queen Street
Melbourne VIC 3000

telephone +61 3 9600 3144
facsimile +61 3 9600 3155

Economics · Policy · Strategy

Reliance and Disclaimer

ACIL's professional advice is prepared for the exclusive use of the party or parties specified in the report (the addressee) and for the purposes specified in the report. The report is supplied in good faith and reflects the knowledge, expertise and experience of the consultants involved. ACIL accepts no responsibility whatsoever for any loss occasioned by any person acting or refraining from action as a result of reliance on the report, other than the addressee.

In conducting the analysis in the report ACIL has endeavoured to use what its consultants consider is the best information available at the date of publication, including information supplied by the client. ACIL's approach is to develop analyses from first principles, on the basis of logic and available knowledge. Unless stated otherwise, ACIL does not warrant the accuracy of any forecast or prediction in the report. Although ACIL exercises reasonable care when making forecasts and predictions, factors in the process such as future market behaviour are uncertain and cannot be forecast or predicted reliably.

Contents

Tables

Charts

Executive summary

This report and analysis was commissioned by the Australian Alpaca Association (AAA), to provide independent evidence to support applications to the Commissioner of Taxation to exercise his discretion under Division 35 of the Australian Taxation Legislation. This discretion, if exercised, allows the losses incurred by an investor to be offset against other income during the period of development that is considered normal for a business activity in the alpaca industry.

Within a period of 12 years, the alpaca industry in Australia has grown into a reasonably large size. With careful strategic management, the industry has the potential to develop into an important natural fibre producer. Today the industry has more than 2000 participants, the majority of whom are members of a strong industry association, managing a national herd of about 40,000 animals with a value of over $90 million. The current industry is primarily focused on breeding, but the future for the industry is as a fibre producer. The current herd produces around 60,000 kg of fibre a year. The national herd is projected to grow to 200,000 animals by 2007 and produce in the order of 500,000 kg of fibre annually.

The AAA with around 1,700 members is a national body promoting and growing the alpaca industry as a viable and sustainable primary industry. A major function of the AAA is to influence the future direction of the industry. This is particularly important as the industry moves from its fledgling state where the focus is on breeding to that of large scale fibre production.

The rate of industry development has been substantial with the national herd growing at 22 per cent per annum over the last 7 years. An even higher annual growth rate of 29 per cent is projected over the next 7 years. This forecast should be achievable for the following reasons:

- A base herd is now established in Australia, providing both the numbers and the genetic diversity to enable producers to go forward.
- The production science and management requirements for alpacas is established and well supported by continuing R&D in Australia and overseas. High animal value has encouraged extensive veterinary, nutrition and management R&D and its adoption by Australian breeders.
- Breeders have demonstrated their individual capacity to increase herd size.

- The economics of breeding have greatly favoured herd expansion. This expansion has been facilitated by taxation provisions enabling taxpayers to claim losses from a business enterprise against other income — provisions that have applied across all industries.
- Breeders have a strong commitment to the industry.
- Breeders, and the growing number of commercial interests, are encouraged by the knowledge that the market for alpaca fibre is established.
- Considered from a commercial perspective, alpaca breeding and fibre production is currently competitive against other land, labour and capital uses.

There are two ways to enter the alpaca industry in Australia – one is as a registered breeder and the other is as a fibre producer.

The more popular entry to date is as a registered breeder where the initial investment entails a relatively small, if highly valued, herd and allows the entrant to develop the expertise to manage and operate the business activity.

The fibre producer, for obvious reasons, requires a considerably larger herd and along with this, experience in animal husbandry for managing a large livestock herd.

The analysis undertaken by ACIL, which is based on current prices and industry parameters, has determined that in each case with a reasonable initial investment of livestock, a development period of 7 years is required for an alpaca business activity to become commercially viable. Commercially viable means producing a tax profit or meeting one of the tests set out in Division 35 of the Income Tax Act. The livestock also require an investment in a certain amount of infrastructure to support the business activity.

However, for each case, the initial minimum investment differs as far as herd size and make up are concerned. This also impacts on the infrastructure and pasture requirements.

The prognosis for the two cases is:

Registered Breeder

Requires an initial investment of at least 7 breeding females and a 7-year development period to become commercial viable. Commercially viable in the context of the registered breeder means achieving a sustainable annual turnover of $20,000. During the 7 years of development, all female progeny would be retained while all male progeny would be sold as wethers. From year 8, three breeding females are sold annually. There is an allowance for two females to be sold annually for commercial purposes as they will have reached the end of their genetic breeding life. From year 8, the herd is sustainable with 11 breeding females.

Fibre Producer

Requires an initial investment of at least 33 females and 40 wethers and a 7-year development period to become commercially viable. Commercially viable in the context of the fibre producer means achieving a herd value of at least $100,000. All progeny would be retained during the 7-year development period. The build-up in herd value allows for an annual mortality/culling rate of 12 per cent from year 2.

This report and the underlying analysis has been prepared using data supplied by the AAA, as the national industry association. Due to the fledgling state of the industry, official statistics on the industry both nationally and globally are not readily available.

1. Purpose of the Report

This report and analysis was commissioned by the Australian Alpaca Association (AAA), as the industry body, to provide independent evidence to support applications to the Commissioner of Taxation to exercise his discretion under Division 35 of the Australian Taxation Legislation. This discretion, if exercised, allows the losses incurred by an investor to be offset against other income during the period of development that is considered normal for a business activity in the alpaca industry. The period of development is the time that it is expected to take an investor investing in alpacas to grow the activity to produce a tax profit or meet one of the tests specified in Division 35.

2. Findings

Within a period of 12 years, the alpaca industry in Australia has grown into a reasonably large size. With careful strategic management, the industry has the potential to develop into an important natural fibre producer. Today the industry has more than 2000 participants, the majority of whom are members of a strong industry association, managing a national herd of about 40,000 animals with a value of over $90 million. The current industry is primarily focused on breeding, but the future for the industry is as a fibre producer. The current herd produces around 60,000 kg of fibre a year. The national herd is projected to grow to 200,000 animals by 2007 and produce in the order of 500,000 kg of fibre annually.

With this development, there will need to be structural changes in the industry as the dynamics of the industry change, for example the current prices of livestock outside the stud stock may reduce to come into line with the value of fibre.

There are two ways to enter the alpaca industry in Australia – one is a registered breeder and the other is a fibre producer. Each case entails a different initial minimum investment.

Based on ACIL's analysis, the period within which an alpaca business activity in each case would normally become commercially viable after 7 years. This analysis is based on the current range of prices for alpaca livestock and fibre. No attempt has been made to project future prices for the industry.

The nature and extent of the initial investment differs for each case and has been determined according to current industry norms and takes into account the physical characteristics of the alpaca.

The minimum investment in livestock for a new entrant into the alpaca industry in the two cases are:

- for a breeder, an initial herd of 8 breeding females;
- for a fibre producer, a considerably larger initial herd is necessary. Our analysis puts the initial herd at 60 commercial breeding females and 70 male wethers.

3. Methodology

ACIL adopted the following approach in undertaking its analysis;

- a review of the modern alpaca industry in Australia since it started in 1989.
- Understanding the characteristics of the alpaca animal and the fibre that it produces.
- Examining the structure and principles of the Australian Alpaca Association, as the national industry body.
- Reviewing the current markets for alpacas – both livestock and fibre.
- Reviewing the current structure of the alpaca industry as a fledgling industry.
- An analysis of world production and demand for alpaca fibre.
- Assessing the industry development and expectations.
- An assessment of the minimum investment requirements and the lead time required for a business activity in the alpaca industry to become commercially viable. This assessment was undertaken on two case studies – a breeder and a fibre producer.

The AAA, as the industry body, provided most of the data and projections used in the analysis.

4. The Alpaca Industry in Australia

4.1 History in Australia

The alpaca industry only started in earnest outside of South America in the early 1980s when the United States and Canada imported their first alpacas. The alpaca industry in Australia and New Zealand began a few years later in 1989 when a few animals were imported from South America. Through further importation and intensive breeding programs, there are now approximately 40,000 alpacas in Australia. Alpacas are being successfully bred in Australia in a range of climates and conditions, from Queensland and Western Australia to Tasmania.

Currently Australia has the largest national alpaca herd outside South America. The United States has the second largest herd with an estimated 26,000 animals. Other countries have shown interest in the alpaca industry and alpaca herds have now been established in Britain, France, Germany, Switzerland, Israel, Japan and China.

The AAA was formed in 1990 as participants in the fledgling industry recognised the need for a national association to promote and grow the concept of alpaca as a viable and sustainable primary industry.

The Australia alpaca industry quickly recognised the potential value of the alpaca fibre market and has embarked on a robust growth initiative. This strategy currently has a focus on building up the national herd and improving animal genetics in fibre production. This initiative also permits the on-going importation of alpacas to improve the genetics of the national herd. Other countries such as the United States have been slower in developing industry strategies and as a result their national herds are growing at a lesser rate.

Research and development is important in a fledgling industry. Since 1993 about $2 million has been spent on research and development projects in the alpaca industry. Currently the Australian industry is strongly focussed on a number of areas. There have been strong links established with fibre research, processing, manufacturing and marketing organisations. The industry continues to improve animal genetics and fibre style through good breeding, using both Australian born and imported sires. While the industry is still stud based, there is a strong expectation that it is close to seeing larger commercial fibre farming enterprises commencing.

4.2 Unique characteristics of Alpacas

Alpacas originate from South America, where they, together with their close relative the llama, have provided clothing, food, transport, fuel and companionship for many thousands of years. Today, alpaca farming is

concentrated in the high altitude regions of Southern Peru, Bolivia and Chile where conditions are extremely difficult. Alpacas not only have to endure a harsh climate in these regions, but also receive few of the benefits of modern animal husbandry. Yet, they survive, although in relatively small numbers. Peru has the largest national herd with approximately 2.5 million animals followed by Bolivia with around half a million animals while there are only 50,000 animals in Chile and Argentina combined.

Over the last 20 years, alpacas have been successfully introduced into a number of countries outside South America. In addition to Australia and the USA, there are now reasonable herds in Canada, New Zealand, Britain, France and Israel. The animals have proved that they can easily adapt to most conditions and climates, although they are more successful in moderate climates like that of Australia.

4.2.1 Livestock

There are two main type of alpacas:

- Huacaya: the most common in both Australia and South America and is the hardiest of the species; and
- Suri: only a small percentage of alpacas in Australia are suris.

Alpacas live to between 15 and 25 years. They grow to about one metre and weigh up to 100 kilograms. They are not ruminants and do well on low protein hay or pasture.

A significant benefit of running alpacas is that they do less damage to the land than other livestock. With soft padded feet, the alpaca has a low impact on fragile landforms. Alpacas do not overeat but browse gently allowing faster regrowth. Their dung makes excellent fertiliser and it is conveniently dropped by the animals in the same area.

The gestation period for alpacas is between 11 and 12 months, but pregnancies that go for over a year are not uncommon. Although females are capable of producing one offspring a year for around 20 years, a realistic expectation for a mature female is to produce three offspring in four years. In addition, the genetic breeding life of a female is considered to be around 7 years. Within this period, a female can be expected to produce five progeny. Twinning in alpacas is extremely rare.

When born, babies (crias) weigh between 6-8 kilograms and are weaned at five to six months of age. Females can become pregnant at around 12 to 18 months.

Alpacas are shorn once a year, usually in spring. Shearing is the biggest maintenance component in the alpaca industry. It usually takes around five to ten minutes per animal for an experienced alpaca shearer using conventional sheep-shearing equipment.

When alpacas were introduced into Australia just over 10 years ago, the average alpaca fleece cut was 1 ½kg of 29+ micron. Today, through careful breeding, the average cut is around 2 ½kg of under 26 micron. The industry is looking to improve the yield to over 4 kg of 24 micron.

Alpacas require very little in the way of specialised infrastructure and equipment. A modest shelter against extreme weather conditions is generally considered desirable in Australia. There are no special fencing requirements with sheep fencing being quite adequate. A small pen or yard is useful for catching and handling the animals.

Compared with other livestock, alpacas are relatively disease free but do require a similar vaccinating routine to that used for sheep and goats.

4.2.2 Fibre

Alpaca fibre is highly prized for its very soft feel (handle), its high thermal properties, its durability and its variety of natural colours. It has an unique handle and lustre which allows it to be classed as a luxury animal fibre. It is lightweight, yet warm; feels soft and silky; garments keep their shape well; does not easily pill; has a higher tensile strength than sheep's wool; and is softer than merino, but more durable.

It is processed into high quality fashion garments such as suits, jackets, skirts and coats. Jumpers knitted from alpaca fleece are soft, light and warm. Because of its natural warmth, it is also used as a continental quilt filling. Coarser fibre can be used to make car seat covers.

Alpaca's come in 22 recognised colours, ranging from pure white, fawn, chocolate brown, a range of grey tones and jet black. Colour is a limiting factor in the fibre. Currently 30 per cent of the fibre produced in Australia is white; the industry has set a goal to push this up to 80 per cent. The benefits of a white fibre are that it can easily be dyed and/or blended with other natural fibres.

Raw Alpaca fibre has much less grease and consequently a higher yield compared to Merino wool.

4.3 Australian Alpaca Association

The AAA was incorporated in 1990 as participants in the fledgling industry recognised the need for a national association to promote and grow the concept of alpaca as a viable and sustainable primary industry. The AAA has been structured as a national body through the establishment of regions, which in some cases overstep State boundaries and traditional allegiances. The AAA was primarily focussed as a breed society but quickly moved to be an industry body.

The AAA generates an annual income in excess of $1.1 million from membership fees, levies, registration and transfer fees and other income producing activities. It also owns its administration building valued at $400,00 in Mitcham, Victoria.

The management is entrusted to the National Committee, which is democratically elected by the membership. The President, Vice President, Secretary and Treasurer form an Executive within that Committee. Regions are managed by their own committees who are independent of the National body but are charged to operate within the framework of the Rules of the Association.

The Association operates a national office in Melbourne with an administration staff of one part-time and three full-time employees. In recent years the membership has placed considerable pressure on the National Committee to become very active in the marketing of animals as the industry moves from its stock build-up phase of development to the commercialisation of non-stud stock and fibre production.

The Association also operates the International Alpaca Registry. The Agricultural Business Research Institute (ABRI), associated with the University of New England, in Armidale New South Wales, manages the Registry. The Registry is conducted on accepted best practice standards and is recognised world-wide.

There are four distinct functions within the Association:

4.3.1 Administration and communication

This covers:

- Animal registration - provides a world class animal registry that is fundamental to the efficient and ethical management of a breed society and stud stock association
- Member Services - responsible for the provision of quality and relevant services and communication to members.
- Legal and Ethics - to establish and monitor good moral and ethical behaviour and corporate governance.
- Publications - to provide members with timely and informative material.
- Financial Advisory Panel - to identify mechanisms to secure a solid financial base that will support future growth and stability in the industry.

4.3.2 Industry development

This strategic function influences the future direction of the industry, and covers:

- Research and Development - an area of vital concern in an industry of imported "exotic" animals with limited historical production information available.
- Breed Standards - defines, establishes and manages definitive standards for both huacaya and suri animals in both conformation and fleece quality.
- Showing and Judging Standards
- Industry Affairs - to develop beneficial and ongoing relationships with other organisations including governments relevant to the industry.
- Animal Health and Welfare - responsibility to maintain and monitor health issues relating to the national alpaca herd.

4.3.3 Marketing and promotion

This function is divided into three areas:

- Advertising and Public Relations
- National Conference - The aim of each annual conference is to provide education for new members, to update existing members on recent industry trends and developments, and to inform the membership on global activities within the industry.
- National Show and Sale

4.3.4 Education and training

This function provides educational material for members, such as basic fact sheets on alpacas, animal husbandry, as well as education to the general public regarding alpaca fibre and products.

4.3.5 AAA Membership

The AAA currently has 1687 members representing ownership of some 32,000 alpacas with an estimated value of $90 million. Ninety two per cent of the members are registered breeders.

The average herd size per member has increased from 6 animals in 1994 to 21 animals in 2001, an annual growth rate of 20 per cent.

A survey of AAA members undertaken in 1999, where 23 per cent of the members responded fully, revealed that:

- 91 per cent of members derive the majority of their income from sources other than alpacas;
- the majority (56 per cent) care for their own alpacas, a further 18 per cent also agist for other people, and 26 per cent only agist them.

4.4 Markets

The Australian alpaca industry is currently stud based with a focus on the sale of breeding stock for the immediate future. As such the current major market is in livestock sales, where in 1999 members of the AAA sold around 2,000 animals at an average price of $6,000, giving an annual turnover total of $12 million. At this stage the fibre market is considerably smaller with an estimated annual production of 60,000 kg, valued at about $1 million using an average realised price of $18 per kg.

The future of the industry is in fibre production and quality breeding stock. As such the significance of the various markets will change. This change is expected to take place over the next several years as the national herd is projected to increase from around 40,000 to over 200,000 animals by 2008. This projection is based on the reproduction dynamics of the current national herd having 18,500 females of breeding age. This growth in herd size together with an anticipated gain in the individual fleece cut could increase the annual fibre production to around 600,000 kg.

Fibre markets

There are currently three commercial options for selling raw alpaca fleece in Australia:

- The Australian Alpaca Co-operative Ltd, which is made up of shareholders that are mostly alpaca breeders. The Co-op classes fibre and gives returns to growers as either direct payment or extra shares. It develops and markets finished products for retail sales. The Co-op also holds a 15% interest in Elite Fibre mill in Geelong. This mill was purpose-built to process and value-add Australian grown alpaca fibre.
- the Australian Alpaca Fibre Marketing Organisation (AAFMO), which is a privately owned company that collects, classes and sells fibre to local and overseas buyers. Payments are made to growers once the fibre has been sold. and
- local spinners where a few alpaca owners prefer to home spin their fibre. Commercial prices depend on quality with a premium paid for finer micron fibre. Sales to home spinners can be at considerably higher prices.

The Australian Alpaca Co-operative publishes fleece price lists from time to time. The current prices (December 2000) offered by the Co-op are listed in Table 1.

Table 1: Australian Alpaca Co-operative Fleece Prices (December 2000)

		Member Price $/kg	Non Member Price $/kg
<20 micron	"Royal Baby"	$45.00	$20.00
20.1 to 23 micron	"Baby"	$35.00	$13.00
23.1 to 27 micron	"Fine Adult"	$25.00	$8.00
27.1 to 32 micron	"Adult"	$5.00	$1.00
32+	"Strong"	$1.00	-

Discount of $5 per kilogram for brown fibre.

Source: Australian Alpaca Co-operative Ltd

While there is a strong demand for bulk alpaca fibre as a stand-alone fibre at the present time, there are some fundamental issues for the industry:

- Animal numbers are currently not at a critical mass for a fibre industry.
- Limited international market intelligence including current knowledge of stockpiling in competitive and customer markets and in the manufacturing chain.
- Potential unstable markets with fluctuating prices due to the small volume produced.
- Competition from cotton and man-made fibres which both have greater control over supply and considerably lower and more stable prices.
- Changes in fashion can significantly affect demand for fibre.

The future for the alpaca fibre market is likely to be in blended fibre. Alpaca fibre blended with Merino wool, in a 50:50 ratio, reputedly produces a superior product compared to plain wool. Currently, there are a number of current research projects being undertaken looking at techniques for blending alpaca fibre with other fibres. To become a sustainable industry in the future, the alpaca industry needs to closely align itself with the wool industry.

Livestock prices

Trade in livestock tends to be by private sale or through auction. Breeders generally advertise livestock in agricultural journals and, in the case of the more established breeders, via individual websites.

At a recent Australian auction in November 2000, 14 thoroughbred animals were offered for sale. Seven of the animals were sold with a stud male being sold for $125,000 while the price for females ranged between $14,000 and $36,000.

During February 2001, the agricultural publication, The Weekly Times, advertised livestock for sale with the following price ranges:

Male wethers	$350-1,000
Young males	$250-350
Pregnant females	$2,000-3,500

The pet and companion animal market currently generates a reasonable demand for animals. This demand tends to support the current price levels for livestock moving into the fibre producing sector.

An issue for the alpaca industry is that the present high animal values are not proportional to the return on fibre production. This is understandable in the build up phase, but there will need to be an adjustment when the fibre-producing sector becomes the dominant market in terms of size.

5. Global Markets for Alpaca Fibre

The quantity of alpaca fibre on the world market is very small compared to wool — about 0.1%, as shown in Table 2. Alpaca fibre's place in world fibre markets — synthetic and natural — is insignificant, considering that animal fibres only account for 3% of all fibres used world wide.

Despite this, there is a demand for alpaca fibre on world markets, as it is a niche product, and in short supply world-wide.

In Australia, a strong local market has been established around spinners and weavers producing hand made clothing, rugs, wall-hangings and many other cottage industry products. There are now several Australian companies manufacturing alpaca garments and yarn. Internationally, there is an increasing interest in the fibre among fashion houses.

Table 2: Estimated World Natural Fibre Production

Fibre	Major producers	Production levels (tonnes)
Llama	Bolivia	600
Alpaca	Peru	4,000
Cashmere	China, Iran	5,000
Angora	China, France, Chile	8,500
Mohair	South Africa, USA, Turkey	22,000
Wool	Australia, China, New Zealand	1,851,000

Source:International Alpaca Association website http://www.aia.org.pe/about_alpaca.html

ABARE report that world production of clean wool for the year 1999/2000 totalled 1.37 million tonnes.

It is unlikely that alpaca fibre will be overproduced, as supply is limited and will continue to be restricted in the near future for a number of reasons:

- alpacas reproduce slowly;
- many breeders retain their offspring as they build up their herds;
- importing animals from South America is restricted, as well as difficult, risky and expensive;
- mass production of cria, or babies, via embryo transplant is not feasible, since there is no available supply of suitable host females;
- the limited size of the national herds in each country outside of South America will restrain growth for some time to come;
- some South American countries have developed export limitations to protect their national herds; and

- the USA has imposed stringent import criteria for alpacas, virtually preventing any animals being imported. This will also further limit the US herd growth.

5.1 World production

There are an estimated 3 million alpacas world-wide — over 2 million are in Peru. Some 4,000 tonnes of fibre are produced annually with Peru the obvious dominant producer. At this point in time, Australia's production of alpaca fibre is low at around 60 tonnes.

Table 3: Estimate of World Alpaca Herds and Annual Fibre Production

	Country	National Herd	Production (tonnes)
1	Peru	2,500,000	3,500
2	Bolivia	500,000	800
3	Australia	35,000	60
4	USA	25,000	50
5	Chile	25,000	40
6	Argentine	25,000	40
7	Others	40,000	50
	Total	3,150,00	4,540

Source: ACIL analysis

Peru as the major producing country exports over 3,000 tonnes a year of alpaca fibre in various forms.

However, the Peruvian alpaca industry is static due to over-grazing, poor management and lack of commitment to selective breeding and is not expected to increase its production.

5.2 Major consumers

The major importing countries for alpaca fibre and products are China, Italy, Britain, Japan and Germany. Asian countries have the potential to become the largest consumer of alpaca tops while Europe should remain the main consumer of top-end fibre.

6. Industry Development and Expectations

6.1 Industry expectations

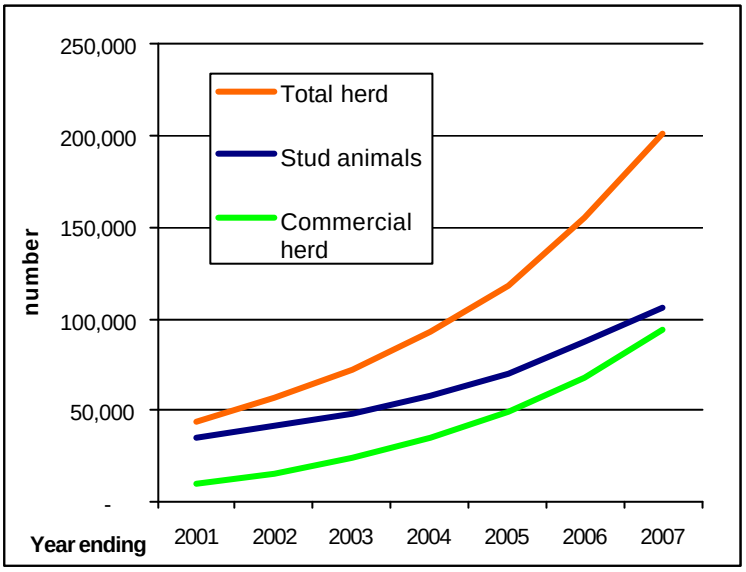
Industry growth to date has demonstrated the technical and financial capacity of Australian growers to expand and improve the Australian Alpaca herd. This trend can be expected to continue.

Based on current industry achievements in breeding, weaning and management, the AAA predicts the herd to increase fourfold by 2007 to around 200,000 animals (Chart 1), with

- stud numbers of 106,000; and
- a commercial herd of 96,000.

On today's average fibre production of 2.5kg per head, the annual clip would approach 500,000kg. However, given the genetic progress made to date and continuing, the average cut and the quality attributes will have improved by 2007.

Chart 1: Alpaca Herd Australia: Projections to 2007



Notes: *Female:*
32% weaning rate growing by 1%p.a in stud stock
32% weaning rate to 2004 then 34% p.a. in commercial stock
15% culled for age in stud stock
20% mortality in commercial stock in 2001: 12% thereafter
Culled for age stud stock transferred to commercial herd from 2002 thereafter
Females born prior to 1994 not included
Males (wethers):
Same assumptions as above but slightly higher culling rate

Source: Australian Alpaca Association

The herd investment, if valued at 2001 animal prices for stud and commercial, would total $400 million in 2007 with the annual clip (again at current values) worth $9 million.

6.2 Industry capability to reach projections

By any measure, this rate of industry development is substantial. The implied high annual average rate of growth of 29 per cent is, however, achievable.

- A base herd is now established in Australia, providing both the numbers and the genetic diversity to enable growers to go forward.
- The production science and management requirements for Alpaca is established and well supported by continuing R&D in Australia and overseas. High animal value has encouraged extensive veterinary, nutrition and management R&D and its adoption by Australian breeders.

  The Rural Industries Research and Development Corporation (RIRDC) has been a significant supporter of and contributor to the alpaca R&D programs. Since 1993, RIRDC has funded more than seven alpaca R&D projects as well as publishing and presenting a number of papers on the industry.
- Breeders have demonstrated their individual capacity to increase herd size. Coupled with additional imports from South America, the Australian herd has grown at an average rate of 22 per cent per annum over the last 7 years.
- The economics of breeding have greatly favoured herd expansion. This expansion has been facilitated by taxation provisions enabling to taxpayers to claim losses from a business enterprise against personal income — provisions that have applied across all industries.
- Breeders have a strong commitment to the industry. The level of investment, even for new entrant small breeders is substantial — often in excess of $100,000 when livestock, land and fixed improvements are taken together. Further, the managerial and labour inputs in securing appropriate bloodlines, developing production systems and marketing and promotion of sale animals are typically substantial, particularly for new entrants establishing their business. In these endeavours, breeders have been well supported by the AAA and commercial advisors through publications, field days and information schools. The fact that many breeders are reliant on other income to support their alpaca investment provides a strong financial base to underwrite development costs and secure growth.
- Breeders, and the growing number of commercial interests, are encouraged by the knowledge that the market for alpaca fibre is established. Alpaca fibre is a part of the textiles market — it does not have to speculate as to potential applications or develop product uses. This contrasts markedly with the so-called infant industries which have sought to become established in Australia but have failed to secure a prosperity because they have lacked (or not developed at an early enough stage) the required market/processing technologies.

- Considered from a commercial perspective, alpaca breeding and fibre production is currently competitive against other land, labour and capital uses. As a breeding enterprise it provides an attractive return for small and traditional farmers alike. Given credible animal and fibre prices it will continue to do so. Independent analysis shows that an alpaca breeding and production operation can offer a rate of return of 12 per cent (Table 4). On this basis the industry will be competitive against agricultural enterprises such as fine wool and beef production.

In summary, the industry prospects are sound. Therefore, it is not surprising that there is a significant level of investment interest.

Nevertheless, three broad questions face the potential investor.

- What are the economics for a new entrant investor looking to enter the industry at this time and in particular what is the timeframe for commercial viability?
- Will breeding and commercial animal prices hold up for the breeder?
- Will fibre prices withstand the projected increase in fibre supply?

6.3 New entrant economics

While the above analysis of a larger scale operation of 50 breeders shows a profitable return, many entrants to the industry do not have access to the capital investment required nor are they sufficiently confident in their capacity to operate and manage such a sizeable breeding operation. Understandably, and consistent with business/investment advice to new investors in any activity, alpaca breeders will start small. For some this has meant a herd of one or two breeding females and using a sire on a service paid basis. Analysis of industry 'entrants and exists' shows that the majority of new breeders who began as very small (up to two breeding females) have continued in the industry and successfully increased their herd. Others have entered the industry on a more significant scale.

Table 4 Budget Analysis: Alpaca Herd of 50 Breeding Females

Description:	**Alpaca - Progeny & Fibre**	
Analyst:	Hassall & Associates	
Date:	April 2000	
Key Assumptions:		
Enterprise scale	50	breeding females
Geographic location	Southern NSW	
Initial investment	$ 898,056	
Typical recurrent input costs	$ 34,931	
Key yield factors		
Farm gate (or other) prices	$25/kg fibre, various stock prices	
Discount rate	7%	
Inflation rate (if any)	n/a	
Analysis period	20	years
Present Value @ 7% over 20 years:		
Investment inputs	$ 902,609	
Recurrent inputs	$ 303,448	
Revenues	$ 1,530,289	
Residual values	$ 33,004	
Net Present Value of Enterprise @ 7% over 20 years	$ 357,235	
Financial Analysis Results:		
Return on recurrent inputs	687%	static state
Return on investment and recurrent inputs	77%	static state
Internal Rate of Return	12%	
Benefit Cost Ratio @ 7%	1.30	
Breakeven on cumulative discounted basis after	13	years
Threshold Analysis Results:		
Net Present Value of Enterprise equals ZERO when.....		
Yield / Prices decreased by	23%	
Investment Expenditure increased by	40%	
Recurrent Inputs increased by	118%	
Major Risks to Financial Viability:		
These results are reliant on persistent marketing and the establishment of a good reputation in the industry. Quality bloodlines and appropriate breeding must be used.		

Yields estimated per: breeding female
Prices estimated per: Product Unit

	Product	Product Unit	Unit Yield*	Farmgate Price	Income	Source
Primary product	Fibre	kg	8.88	$ 25.00	222	Co-op
By-product #1	Male Progeny	head	0.00	$ 5,000	0	H&A
	High Qual Male	head	0.08	$14,000	1,120	H&A
	Highest Qual Male	head	0.02	$25,000	500	H&A
By-product #2	Female Progeny	head	0.34	$ 7,000	2,380	H&A
TOTAL:		Per breeding female per year			$4,222	

*Unit yields for the whole herd are calculated and reported on a per breeding female basis

Source: Hassell and Associates Pty Ltd, The New Rural Industries, Volume 2, Financial Analysis, Rural Industries R&D Corporation, September 2000, p.

7. Commercial Viability

7.1 Overview

In assessing the commercial viability of an investment in the alpaca industry in Australia, two cases have been considered for a new entrant, namely:

1) as a registered breeder;

2) as a fibre producer.

The analysis seeks to determine for each case:

- the minimum number of livestock; and
- the development period that can be considered appropriate for the investment to become commercially viable.

Commercial viability is deemed to be meeting one of the tests set out in Division 35 of the Australian Taxation Legislation.

The analysis relies on the current pricing ranges for both livestock and fibre.

7.2 Assumptions

The assumptions used in the analysis are:

Livestock prices

Females for stud purposes	$6,000
Female yearlings	$2,000
Females for commercial purposes	$1,000
Male wethers	$200

(Based on current price ranges for livestock and AAA analysis)

Weaning rates

Breeding female	32% increasing by 1% pa for female progeny
	32% increasing by 1% pa for male progeny
Commercial female	32% increasing to 34% in year 4 for each of male and female progeny

(Estimates supplied by the AAA, Feb 2001)

Fleece cut

Males	3.3 kg
Females	2.2 kg
Genetic gain	0.147 kg per annum over 8 years

(Based on a paper prepared by Dr Raul W. Ponzoni, Principle Research Scientist (Livestock Breeding and Genetics) South Australian Research and Development Institute, May 2000)

Fibre prices

$18.85 per kilogram based on the analysis in Table 5

Table 5: Fleed Yield and Value (N Veltjens)

Quality	Colour	$/kg	% of cut	Realisation
< 23 microns	All except brown	$ 35.00	15%	$ 13.13
	Brown	$ 30.00	10%	$ 7.50
23 -27 microns	All except brown	$ 25.00	25%	$ 15.63
	Brown	$ 20.00	15%	$ 7.50
27-32 microns	All colours	$ 5.00	25%	$ 3.13
+ 32 microns	All colours	$ 1.00	10%	$ 0.25
			100%	$ 18.85
Annual fleece yield (kg)				2.5

(Based on fleece yield analysis prepared by N Veltjens and the December 2000 price list supplied by the Australian Alpaca Co-operative Ltd)

Culling

Breeding females	15% pa from year 4

(Note: In this context breeding females are sold to fibre producers at the end of their genetic breeding life)

(Estimates supplied by the AAA, Feb 2001)

Mortality

Commercial animals	12% pa from year 2

(Estimates supplied by the AAA, Feb 2001)

7.2.2 Registered breeder

The analysis establishes that a minimum livestock investment of 7 breeding females would enable a new entrant to achieve a sustainable annual turnover of more than $20,000 from year 8.

During the 7 years of development, all female progeny would be retained and all male progeny sold as wethers. From year 8, three breeding females are sold annually. There is an allowance for two females to be sold annually for commercial purposes as they will have reached the end of their genetic breeding life. The herd is sustainable with 11 breeding females. Table 6 details the herd inventory dynamics over the first 10 years.

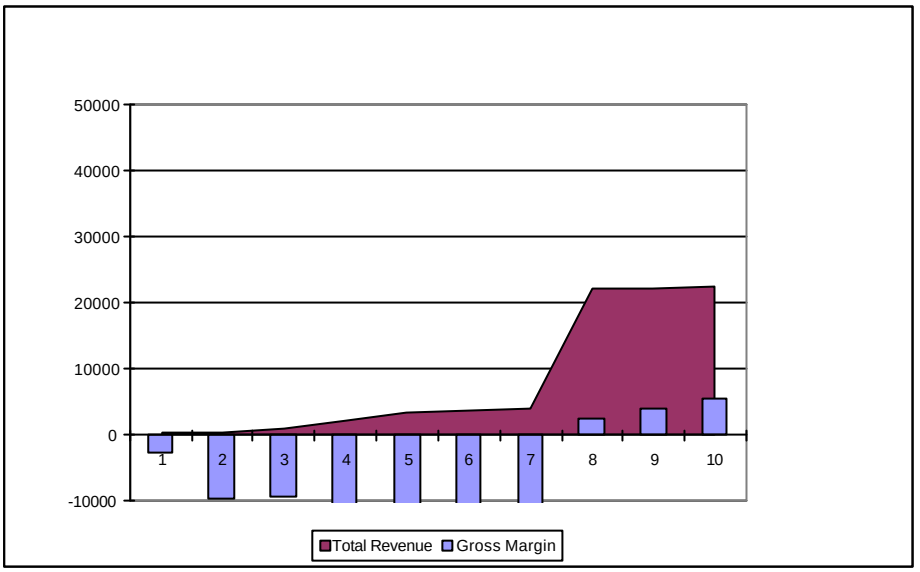
Table 6: Registered Breeder Herd Build-up

Year	1	2	3	4	5	6	7	8	9	10
Opening herd	**7**	**11**	**15**	**17**	**20**	**24**	**27**	**29**	**30**	**31**
Breeding females	7	7	7	9	10	10	11	13	12	11
Female yearlings		0	2	2	2	3	4	4	4	5
Female weaners		2	2	2	3	4	4	4	5	5
Wethers	0	0	2	2	2	3	4	4	4	5
Male weaners		2	2	2	3	4	4	4	5	5
Total Progeny	**4**	**4**	**4**	**6**	**8**	**8**	**8**	**10**	**10**	**10**
Females	2	2	2	3	4	4	4	5	5	5
Males	2	2	2	3	4	4	4	5	5	5
Total Sales	**0**	**0**	**2**	**3**	**4**	**5**	**6**	**9**	**9**	**10**
Females to stud	0	0	0	0	0	0		3	3	3
Females to commercial				1	2	2	2	2	2	2
Male wethers	0	0	2	2	2	3	4	4	4	5
Culling										
Females	0	0	0	0	0	0	0	0	0	0
Males	0	0	0	0	0	0	0	0	0	0
Closing herd	**11**	**15**	**17**	**20**	**24**	**27**	**29**	**30**	**31**	**31**
Breeding females	7	7	9	10	10	11	13	12	11	11
Female yearlings		2	2	2	3	4	4	4	5	5
Females weaners	2	2	2	3	4	4	4	5	5	5
Wethers	0	2	2	2	3	4	4	4	5	5
Male weaners	2	2	2	3	4	4	4	5	5	5

Source: ACIL analysis

Chart 2 reflects the build up of annual revenue over the 10-year period. In addition to revenue from livestock sales, there is a small amount of revenue generated from the sale of alpaca fibre each year.

Chart 2: Registered Breeder – Annual Revenue Build-up



Source: ACIL analysis

7.2.3 Fibre producer

The analysis establishes that for a new entrant to start in the industry as a fibre producer, a minimum livestock investment of 33 commercial breeding females and 40 wethers would be required to achieve a herd value of $100,000 by year 8.

All progeny would be retained during the 7 years of development. The build-up in herd allows for an annual culling/mortality rate of 12 per cent from year 2. Table 7 details the herd inventory dynamics for a fibre producer over the first 10 years.

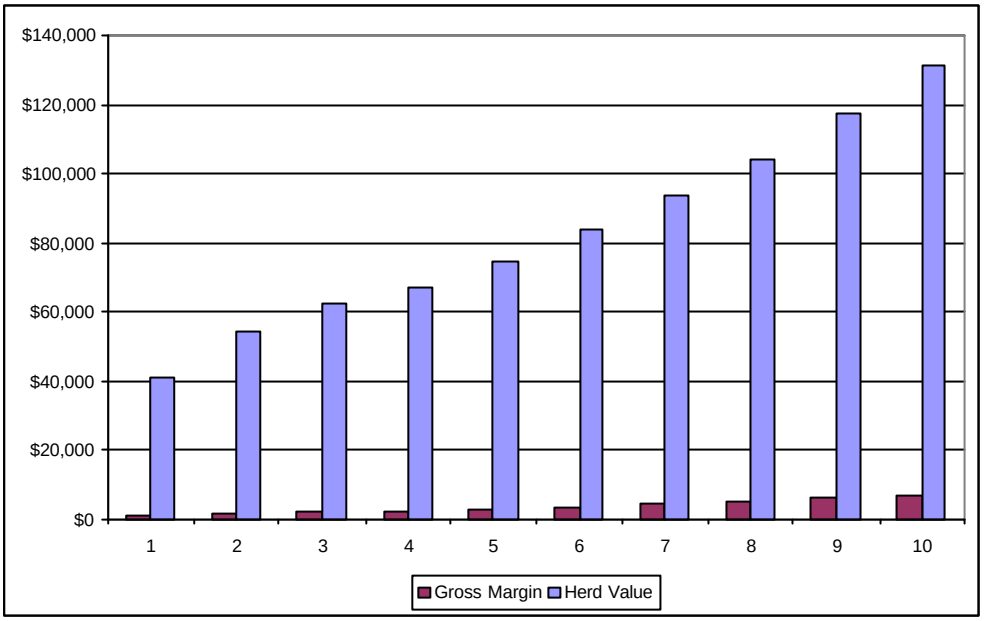
Table 7: Commercial Fibre Producer – Herd Build-up

Year	1	2	3	4	5	6	7	8	9	10
Opening herd	**73**	**95**	**108**	**115**	**127**	**143**	**159**	**176**	**197**	**220**
Breeding females	33	33	29	35	40	43	48	55	62	69
Female yearlings		0	11	11	9	12	14	15	16	19
Female weaners		11	11	9	12	14	15	16	19	21
Wethers	40	40	46	51	54	60	67	74	81	90
Male weaners		11	11	9	12	14	15	16	19	21
Total Progeny	**22**	**22**	**18**	**24**	**28**	**30**	**32**	**38**	**42**	**46**
Females	11	11	9	12	14	15	16	19	21	23
Males	11	11	9	12	14	15	16	19	21	23
Total Sales	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Females to stud	0	0	0	0	0	0	0	0	0	0
Females to commercial				0	0	0	0	0	0	0
Male wethers	0	0	0	0	0	0	0	0	0	0
Culling/mortality										
Females	0	4	5	6	6	7	7	8	9	11
Males	0	5	6	6	6	7	8	9	10	11
Closing herd	**95**	**108**	**115**	**127**	**143**	**159**	**176**	**197**	**220**	**244**
Breeding females	33	29	35	40	43	48	55	62	69	77
Female yearlings		11	11	9	12	14	15	16	19	21
Females weaners	11	11	9	12	14	15	16	19	21	23
Wethers	40	46	51	54	60	67	74	81	90	100
Male weaners	11	11	9	12	14	15	16	19	21	23

Source: ACIL analysis

Chart 3 reflects the build-up of the herd value over the first 10 years.

Chart 3: Commercial Fibre Producer - Annual Build-up in Herd Value



Source: ACIL analysis