HD ***AYI: SORGHUM - A MULTI PURPOSE CROP FOR SUGAR, BIO FUEL, GRAIN AND ANIMAL FEED - EXPECTED TO BE OF INCREASING IMPORTANCE IN AUSTRALIA - AYI IS A LISTED OPPORTUNITY**

BY Jenny Prabhu

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(Please note: This is a background report only on AY1 from published material, The **company** is to seek shareholder approval on March 31 for its change in direction, plus other regulatory matters. The focus of this report is on Sorghum)

A1 Investments & Resources Ltd, is a change of name for **China** Century Capital Ltd, which took over the **China** Century investment portfolio of both resource and industrial companies in 2011 and while continuing to advance the projects in its portfolio, it has - so far as we can see - been virtually dormant for the last three years.

Then on March 3 this year the **company** announced an agreement to **acquire** all the shares in Marvel Seeds, a Singapore based private **company**, and the distributor worldwide of Super Sorghum seeds (an improved hybrid variety) via a sales agreement with SOL Holdings Corp in Japan.

The **company** said, "The **board** of AY1 has been seeking new directions and a sustainable and growth focused **business** plan for some time. The **Board** determined that a natural resource focus was too limiting in the near and medium term and sought to examine and analyse various opportunities particularly in food and agriculture".

*On March 24 AI Investments announced it has entered into a heads of agreement to **acquire** the exclusive distribution rights for SuperSorghum seeds in Australia from Sol Holdings in Japan, and entered into a mutual termination agreement with Marvel Investments.

*AY1 also announced a capital raising and CN issue to investors in Singapore to fund the deal.

The **company** has now to work through various processes, including seeking shareholder approval for the deal with Sol Holdings and the capital raisings - shareholder meeting to be held on Monday 31.

AY1 is headed by Charlie Nakamura, a banker formerly with Tokai Bank in Japan from 1991 to 2002 (Tokai merged to become the current Bank of Tokyo-Misubishi) - leaving the bank to at first establish a mortgage finance **company** in Sydney and later starting Jinji Resources Pty Ltd which was acquired by **China** Century, now AY1.

The top 20 shareholders of AY1 hold 72% of the **company**.

The need for adaptation and change

*On March 17 the ABC reported a new study on the impacts of climate change shows warming will **lead** to heavier losses in global crop yields than previously believed.

The study compiled by researchers from Australia, Colombia, the United States and the United Kingdom looks at global crop yields under projected levels of climate change. Co-author Mark Howden from the CSIRO says it shows wheat, maize and rice crop yields decline by around 5 per cent for every degree of warming.

"Reductions in yields tended to increase as the temperature went up and up," he said.

Yields also go down more rapidly in tropical environments than they do in temperate environments, the study says.

Dr Howden says the result is worse than previous forecasts.

"Looking back a few years we thought maybe we could get away with a bit more warming before we went negative, but this is actually showing the spike will happen sooner than later," he said.

Dr Howden says the agriculture sector will need to adapt to avoid global food shortages.

"There's a lot of things you can do like management changes, changes in varieties and potentially changes in location as well," he said.

*On Monday the Intergovernmental Panel on Climate Change (IPCC) official document will be published, spelling out in detail the changes that lie ahead, if we fail to stop global warming increasing.

THE SORGHUM OPPORTUNITY

Sorghum is the fifth most abundant grain crop in the world, following wheat, oats, corn and barley and is already widely grown in tropical and arid regions around the world. It is grown in Queensland, with around 2 **million** tonnes produced annually, mostly used for cattle feed, with a little exported to Japan.

Sorghum is fast growing, high yielding, produces both sugars and bioethanol, is tolerant of both drought and humidity stresses - and can be grown on marginal soils.

*The grain, hard and red when dry, is usually used as flour. Like tofu, sorghum absorbs flavors well.

It is also a staple for rural populations of Asia including India where it is known as Jowar as well as Africa and Central America.

*It is also used around the world to brew beers.

*All sorghum varieties are gluten free, a valuable alternative to other cereals for the gluten intolerant.

*Molasses and sugar content from sorghum is equivalent to that obtained from sugarcane - and sorghum can be grown over a vastly greater region.

The "Super Sorghum" seed from Japan is said to grow taller and have higher sugar content than other varieties (it is not genetically modified).

SORGHUM IN AUSTRALIA

Currently grain sorghum is the main summer grain crop in most regions in Queensland. It plays a key role in providing feed grains to the beef, **dairy**, pig and poultry industries. It is a good rotation crop that tolerates heat and moisture stress, and performs better than maize on soils with marginal potassium levels.

Approximately 60% of the Australian crop is grown in Queensland and the remainder in northern New South Wales.

The area of sorghum planted for grain in Queensland is normally 600,000-700,000 ha. Average farm yields vary at around 2 t/ha and reflects the severity of constraints, as water stress during grain filling is the common production environment.

Sorghum produced in Australia is used almost exclusively for feed, especially cattle, pigs and poultry. None is used for human consumption while a significant market exists in the pet food industry. An export market of about 1 Mt exists, particularly to Japan, but the average amount exported is in the order of 300-500Kt.

Sorghum requires a warm, summer growing period of about 4-5 months, with planting times usually between September to January.

The crop is highly drought tolerant, but responds well to rainfall, especially during head forming and grain fill stages.

Sorghum usually yields better than maize on poor fertility soils.

New Australian research shows sorghum has huge potential as a single source for **energy**, food, animal feed, September 24 2013 :

A new Australian-based research study into sweet sorghum has shown the huge potential of the crop as a single source of **energy**, food and animal feed.

Sweet sorghum is receiving significant global interest because of its potential as a multi-product crop, however there has been minimal research under Australian growing conditions or using Australian processing facilities, until now.

Sweet sorghum is a fast growing plant that produces a stalk up to five metres tall with a high concentration of fermentable sugars at a level similar to that of sugarcane, and produces a large panicle of edible, nutritional grain similar to that of grain sorghum. Unlike many other crops used for renewable **energy** production, sweet sorghum can simultaneously produce food and feed co-products.

Conducted by Queensland University of Technology in collaboration with industry partner AgriFuels Ltd, the research looked at sweet sorghum's agronomy, its ability to be processed using existing processing infrastructure, its carbon footprint, using it to produce biofuels, and its use in food products for humans, fish and livestock.

The project's **lead** researcher, Associate Prof Ian O'Hara said that sweet sorghum has a wide potential cropping area, including tropical and sub-tropical Queensland, the Northern Territory, Western Australia and in temperate regions of New South Wales, Victoria and Western Australia.

"Our research showed that several varieties of sweet sorghum grew very quickly in field trials, reaching maturity in only 16-20 weeks with fermentable sugar concentrations similar to those of sugarcane under optimal conditions," Associate Prof O'Hara said.

"Our research indicates there are significant short term opportunities for the co-location of sweet sorghum and sugarcane production to increase feedstock availability for bio-ethanol production. In fact, we found that adding sweet sorghum juice to sugarcane juice resulted in higher ethanol yields than fermenting sugarcane juice alone."

Associate Prof O'Hara said the research team also produced a range of sweet sorghum food and feed products including sweet sorghum flour, syrup, sweet sorghum-based breakfast cereal, fish and animal feed pellets and human dietary fibre products.

"When we analysed the nutritional quality and economics of these products it was shown that there are significant opportunities for manufacturing food and feed products from sweet sorghum in Australia. These products include livestock feed from sweet sorghum grain, syrup or molasses feed supplements, stock feed from sweet sorghum bagasse, and the production of mixed animal and fish feed products incorporating all three residues," Associate Prof O'Hara said.

Biorefinery products result in strong net reduction in Global Warming Potential

Associate Prof O'Hara said that a carbon footprint analysis of six biorefinery process options for the conversion of sweet sorghum to fuel and animal feed products under Australian conditions was also carried out and the results were positive.

"We conducted a life cycle assessment and it determined that the aggregated effects of all sweet sorghum biorefinery products resulted in a strong net reduction in Global Warming Potential. This was true even for scenarios with the lowest sweet sorghum crop yields, so sweet sorghum biorefineries can assist in reducing carbon emissions," Associate Prof O'Hara said.

Associate Prof O'Hara said Australia is well placed to establish integrated biorefineries producing sweet sorghum-based products for domestic use and for export into the Asian market.

"Sweet sorghum is one crop that has significant potential to contribute to the development of Australia's bioeconomy. Further research and commercialisation activities will be required to help develop sweet sorghum potential for commercial cultivation and processing at a large scale in Australia," Associate Prof O'Hara said.

The research project was funded by RIRDC and industry partner AgriFuels Ltd.

The complete research report titled 'Sweet sorghum – opportunities for a new, renewable fuel and food industry in Australia' can be found on the RIRDC website: https://rirdc.infoservices.com.au/items/13-087

Sorghum canes as pasture

*Other reports point out that while under certain conditions sorghum produces cyanogenetic glucosides during the growing stage that forms toxic hydrocyanic acid, or prussic acid, this is avoided by feeding animals with dry well cured stalk residue (dried for at least 3 weeks).

Stock should not be pastured in growing crops which are higher in prussic acid but only in mature crops.

There is also high prussic acid content in frost hit crops that should be avoided until dried.

*The prussic acid content of sorghum is higher if the soil is high in nitrogen and deficient in phosphorous and potash.

*Our add: During research we came across two anti-aging products, Pevonia, Botanica Elastin Polypeptide with Sorghum, retailing at $50.95 and Pevonia Botanica Power Repair Age Correction Intensifier - Elastin & Sorghum that retails for $81.95.

AYI report dated March 24 :Test production report on SuperSorghum

"SuperSorghum represents an immediate opportunity to get back into production old or poorly operated and managed sugar cane farms or land that was too poor for sugar cane farms. Test farming at Home Hill in Northern Queensland is already underway. A hybrid version of SuperSorghum that produces high volumes of sucrose was planted as a direct substitute for sugar cane. SuperSorghum requires no change in capital equipment on the farm , using the same machines. The harvested material is then supplied to the existing sugar mill and the same processing takes place as for sugar cane.

SuperSorghum is however harvested after a 100 day growing cycle allowing up to two or three crops per year and provides the same amount of sugar per crop as sugar cane produces in one crop - but it takes 12 months for sugar cane to grow.

Sorghum as a feedstock also represents an immediate market, but its longer term potential as a biomass for ethanol production is enormous. Other hybrid varieties of SuperSorghum that develop less sugar but more alcohol represents a significant long term opportunity for the **business** in Australia".

A1 INVESTMENTS & RESOURCES LTD - A SNAPSHOT

A1 Investments & Resources Ltd had its beginnings when Minerals Corporation Ltd in June 2004 announced it has arranged with Growth Equities Corporation Ltd, a licensed funds management **company**, to manage a special purpose investment **company**, **China** Century **Group** Ltd (CCG) which will **acquire** MSC's shareholding in Sinotel, a telecom infrastructure **company**, to become a specialised **China** investment **company**. It listed on October 2 , 2007 closing at 28c on the first day with a portfolio of **China** and Australia investments.

On November 3 2011 it changed its name to A1 Investments & Resources Ltd. AYI continued to hold a portfolio of mixed resources projects, mainly in Australia.

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A1 also announced the placement of $1 **million** from sophisticated investors in Singapore at .8c, a 20% discount to VWAP for the past 15 trading days. The funds will be used to pay the licence fee, the **purchase** of SuperSorghum seed for distribution and for working capital.

A1 also announced the parties associated with the new investors have offered to enter a converting note in a sum of $2 **million** payable instalments of $500,000 between September and December 2014 to be converted on December 31, 2014 at a 20% discount to VWAP.

The funds will be used to **purchase** further seed and working capital.

Subject to regulatory approval by ASIC and ASX and shareholder approval.

AY1 also announced it has agreed with Marvel Investments to enter into a mutual termination agreement of the **sale** and **purchase** of Marvel Seeds for no liability.

A meeting of shareholders to consider the proposal is scheduled for March 31.

The **company** also needs regulatory approval by ASIC and the ASX.

A1 INVESTMENTS & RESOURCES LTD FINANCIALS

Code: AYI

Last Traded price 0.01c.

Shares Issued 478m.

Market Cap $478,000.

Proforma Adjustments:

1/ Convertible Notes converted $2.7m Shares added 302,517,200.

2/ Raised via the issue of $3m. Shares added 125m

3/ Note Holders interest payment $163,000.

4/ Paid $1m for license fee.

Directors:

Charlie Nakamura, **B**.IE Uni of Nihon, Japan, MBA Uni of Dubuque, executive director and CEO

Charlie Nakamura worked for the Tokai Bank in Japan, that merged to form the current Bank of Tokyo-Mitsubishi UFJ, from 1991 to 2002. In 1998 he transferred to Tokai Australia Finance Corporation and was a head of the corporate finance department for Japanese corporations in Australia.

In 2000 Charlie was the representative of Tokai bank in the project finance deal with BHP and Mitsubishi for the "Blackwater" coking **coal** project.

In 2002 Charlie left Tokai Australia Finance Corporation to found a mortgage finance **company** in Sydney. In 2007 Charlie started Jinji Resources Pty Ltd as managing director which was acquired by CYA.

Peter Kao, Bachelor of Telecom and Master of Biomedical Engineering, Uni of NSW, executive director, COO and **company** secretary. Peter has been a **business** and **operations** manager for IT and technology companies in Australia and Taiwan. He was appointed COO and **Company** Secretary of A1 Investments & Resources Ltd in November 2011.

Peter Ashcroft, LLB (Uni of Sydney), Solicitor of the Supreme Court of NSW and High Court of Australia. Peter Ashcroft is a commercial law specialist with over 35 years experience.

Dan Kao, **B**.Me and Master of Biomedical Engineering, UNI of NSW, non exec director.

Dan Kao was CEO and MD of Chna Century Capital Ltd from February 2009 to November 2011. He was a senior design engineer and team leader for over 8 years in the health care industry in **China** and Taiwan. He has been a nonexec director of AYI since November 2011.

Major shareholders:

Minatek Pty Ltd 11.92%

KOR Holdings Pty Ltd 9.49%

Mr Yoshiyasu Aki 8.86%

Mrs Shen-Mei Huang Wei 5.40%.

The top shareholders hold 72.87% of the **company**.

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