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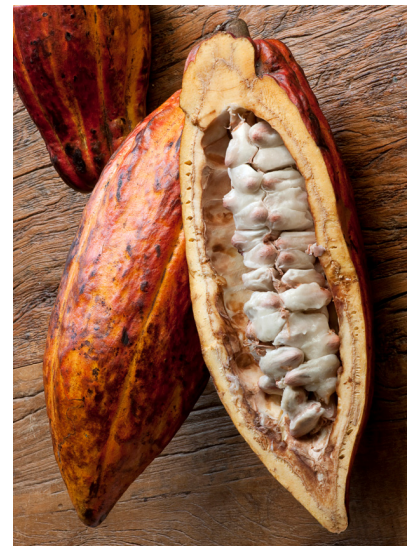
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Client Contact Details:

Department of Foreign Affairs and Trade
 R.G. Casey Building
 John McEwen Crescent
 Barton, ACT 0221
 Australia

Issued by:

URS Australia Pty Ltd
 Level 27, 91 King William Street
 Adelaide, SA 5000
 Australia

T: +61 8 8366 1000

F: +61 8 8366 1001

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ABBREVIATIONS

Abbreviation	Description
CEMA	Commodities Export Marketing Authority (Solomon Islands)
CIF	Cost, Insurance and Freight
CPB	Cocoa Pod Borer
FOB	Free On Board (the price quoted for merchandise placed on board a carrier at the point of shipment)
ICCO	International Cocoa Organization
PHAMA	Pacific Horticultural and Agricultural Market Access Program
RDPII	Solomon Islands Rural Development Program II
SBD	Solomon Islands dollar
POETCom	Pacific Organic and Ethical Trade Community
URS	URS Australia Pty Ltd
USD	United States dollar

EXECUTIVE SUMMARY

This Cocoa Market Study was undertaken as Pacific Horticultural and Agricultural Market Access Program (PHAMA) Activity SOLS22 to discuss strategies and identify actions that could be taken to improve the revenue from the export of cocoa from Solomon Islands.

Improving quality to achieve higher prices

Solomon Islands is a producer of a very modest, but rising, quantity of cocoa. The country will always be a small (perhaps niche) cocoa producer and thus should be offering a speciality product to excite and stimulate interest from international cocoa traders and international cocoa buyers.

All cocoa produced in Solomon Islands is of potentially good quality as it is harvested. Unfortunately, the current reputation of Solomon Islands is as a producer of poor quality cocoa, primarily as a result of smoke taint (as much as 30% of beans) caused by poor drying techniques. This reputation locks Solomon Islands cocoa out of higher quality and higher priced markets – e.g. major global chocolate companies and specialty chocolate makers – and into the lower quality, lower priced grinding markets of Malaysia, Singapore and Indonesia. The grinding market is able to remove the smoke taint but in the process loses cocoa fat content, which is a big driver of price. The grinding market therefore purchases Solomon Islands cocoa at a significant discount to the international benchmark price.

Solomon Islands cocoa has a comparative advantage when compared to some other cocoas grown in the region, in that there is an existing tradition for farmers to ferment the beans. The elimination of the smoke taint (and the other taints recorded) would be likely to stimulate interest amongst a much broader range of cocoa buyers, leading to higher prices.

Recommendations

1. **Commodities Export Marketing Authority (CEMA) data collection and analysis:** It is proposed that the CEMA laboratory (funded by PHAMA) collects data on cocoa fat content, as well as the amount and severity of the presence of smoke taints in export parcels. This would be part of its quality control process prior to export, with data put in the public domain to assist exporters in their negotiations with buyers.
2. **Cocoa drier trials:** It is strongly recommended that work is undertaken to investigate the costs, the thermal efficiency and other design features, and the operating norms of the standard cocoa dryer and mini-dryer presently in widespread use in Solomon Islands. It maybe that new design features can reduce the capital cost, or the amount of wood consumed, or the operating costs and the chances of smoke contamination. It is also suggested that some trials are undertaken using an assisted sun dryer design that is successfully used for drying cocoa elsewhere in the world.
3. **Quality inspections:** A quality examination each time cocoa changes hands should be encouraged throughout the length of the cocoa chain. Greater awareness of the need for improved cocoa quality will not be achieved quickly, but nevertheless a start should be made and a consistent message that “quality counts” should be directed to all in the cocoa value chain and done so by all available means. Targeted publicity to this effect is needed with a view to reducing purchases of smoke-tainted beans and the transport/storage of dried cocoa in poor conditions.

Addressing the lack of working capital for exporters

Solomon Islands cocoa exporters have substantial difficulties in accessing working capital to buy cocoa from farmers and then to undertake the export process. While the reluctance of banks to lend for this activity can be understood, there are many banks in the cocoa world that do finance the internal marketing chains of cocoa to export, albeit under tightly controlled conditions.

Currently, exporters predominantly rely for working capital on one cocoa trading house based in Australia, which pre-finances the buying of the great majority of the cocoa crop. In effect, thanks to these arrangements, about 80% of Solomon Islands cocoa exports are sold via this trading house. This is an unhealthy situation, as it reduces exporters' negotiating position.

Recommendation:

4. **Trade finance facilities:** Urgent discussions should be held (or in some cases continued) between the active and well-established cocoa exporters and the in-country commercial banks to establish trade finance facilities. Some potential financial support may also be accessible through the grant or supplementary equity facilities proposed in the second phase of the Solomon Islands Rural Development Program (RDPII) that is currently in design development and which is expected to come on-stream in early to mid-2015.

Raising market awareness and knowledge

There is a very poor level of understanding about the operations of the cocoa market and the international cocoa trade among the various supply chain actors (CEMA, exporters, banks). In addition, publically quoted internal cocoa buying prices in Solomon Islands do not change often – in contrast to Papua New Guinea, where they move up or down on a daily basis following movements in international cocoa market prices. It may be that lack of knowledge and experience of cocoa market operations is behind this, and that this drives the tendency for farmers and exporters to accept the first price offer from potential buyers, rather than negotiating hard to get an improvement in the price offered.

Recommendation:

5. **Training on the cocoa market:** A specific tailor-made set of training activities should be held in-country on the operations of the cocoa market and the international cocoa trade in order to improve the market understanding for all significant players in the industry. This should professionalise and enable much more meaningful conversations between management and staff of cocoa exporters and their international buyers and give the opportunity for CEMA to better understand the price make-up of the cocoa export contracts that are registered with them as the appointed regulatory agency. Improved understanding of the cocoa market by bankers that operate in Solomon Islands should also assist in facilitating the development of trade finance facilities.
6. **Contract negotiation skills:** Cocoa exporters should substantially change their approach to their export contract price negotiation. This should be facilitated by the above-mentioned training. However, on completion of the proposed training activities, it is likely that some cocoa exporters may need some support and further advice in export contract negotiation over subsequent months. In addition, the ability to negotiate will depend on having more selling options, determined by quality and availability of finance.

Marketing – Participation in 2015 Cocoa of Excellence Program

A small quantity of cocoa of good flavour quality is currently produced in Solomon Islands – as evidenced by its use by some niche chocolate producers in Australia.

Recommendation:

7. Samples of such cocoas should be identified by a collective effort (most likely coordinated by CEMA with support from PHAMA) and be submitted for manufacture into cocoa liquor and subsequent tasting (by 30 April 2015) for the 2015 International Cocoa Awards later in 2015. This has the prospect of bringing the availability of cocoa from Solomon Islands with good flavour quality to greater public recognition.
8. **Trade visits to overseas buyers:** Support for cocoa exporters to visit potential cocoa buying companies to establish direct marketing relationships should be considered. However, it is suggested that such visits will have limited effect until cocoa quality has been improved and exporters have a much clearer and deeper understanding of the operations of the international cocoa trade.

Promoting Cocoa Pod Borer (CPB) resistant varieties

The threat of the spread of CPB into Solomon Islands from Papua New Guinea should be taken very seriously.

Recommendation:

9. **Importation from Papua New Guinea:** Discussions should start on whether the CPB tolerant cocoa types recently identified by breeders in Papua New Guinea might be imported (via quarantine) into Solomon Islands. If this is possible and the planting material is adopted by growers to scale, then it may also mean that the percentage of Fine or Flavour cocoa planted in Solomon Islands increases over time, as the majority of cocoa trees in Papua New Guinea are of that type. Well prepared Fine or Flavour cocoas tend to be sold at higher differentials than well-prepared bulk cocoas.

Put certification on the Back-burner

Certified products tend to be sought by large chocolate makers. However, they are reluctant to buy cocoa from Solomon Islands due to the prevalence of smoke taint. In addition, seeking membership of cocoa certification schemes is expensive in terms of effort, cost and disruption for farmers and requires an effective organisation structure of cocoa growers to facilitate implementation of the new standards.

Recommendation:

10. **No action for now:** It is suggested that there are other matters of greater urgency that should be completed prior to any consideration of certification under any schemes such as organic, Fairtrade, UTZ or Rain Forest Alliance. This can be explored once quality has improved and specific buyers and their certification requirements have been identified.

1 INTRODUCTION

Cocoa is one of Solomon Islands' most important agricultural value chains, with annual exports of 4,500–6,500 metric tonnes (high of 6,500 in 2011) worth SBD 81–120 million (high of SBD120 million in 2011). It is also one of the largest value chains, with production (predominantly smallholder-based) involving approximately 20–25,000 households, and forms an important element in rural livelihoods.

Current exports are mainly (80% plus) to Asian grinding markets (mainly Malaysia, Indonesia) under bulk contracts, although there has been some development in recent years of small-scale exports direct to niche markets and chocolate manufacturers based in Australia and New Zealand.

The National Cocoa Development Policy and Strategy (2012–20) identifies improved marketing and quality as key focus areas. Feedback from the Cocoa Industry Working Group formed under the Pacific Horticultural and Agricultural Market Access Program (PHAMA) is that industry would value assistance to examine market opportunities in detail and guidance on any opportunities to improve export returns. The need for this work has been recognised and prioritised under their industry-specific workplan for cocoa.

Against this context, the Solomon Islands Market Access Working Group requested assistance from PHAMA to conduct a market analysis for Solomon Islands cocoa to better understand market opportunities for Solomon Islands cocoa exports, analyse the nature and potential value of those different opportunities, determine any opportunities to improve export returns from existing markets, and provide guidance to industry.

The objectives are to: (i) Provide guidance on market opportunities for Solomon Islands cocoa; (ii) Provide guidance to cocoa industry, the Commodities Export Marketing Authority (CEMA) and the Ministry of Agriculture and Livestock on relevant market requirements in regard to quality and other potential product specifications that may improve export returns; (iii) Provide guidance to cocoa industry on potential improvements in contract terms for existing markets; and (iv) Determine appropriate activities to assist Solomon Islands cocoa in meeting market needs and/or realising opportunities for improved export returns.

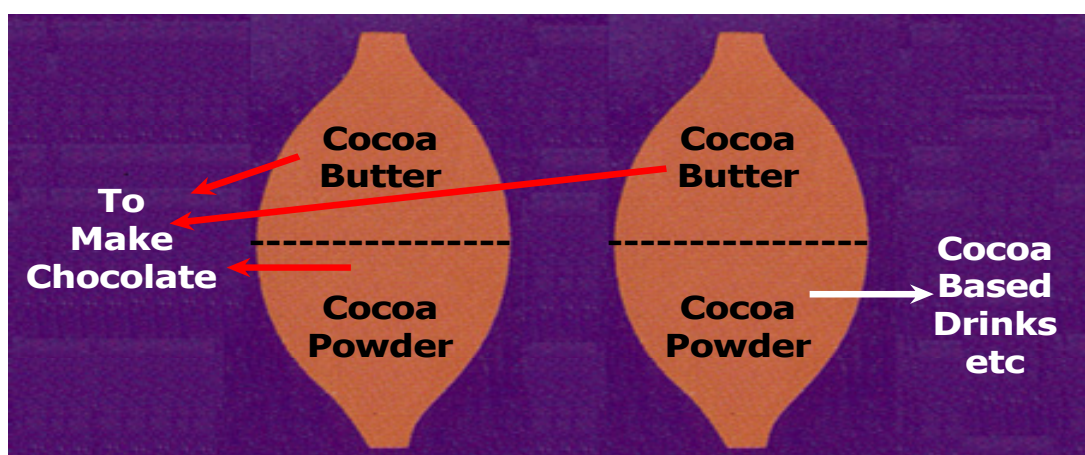
2 BACKGROUND INFORMATION ON THE INTERNATIONAL COCOA TRADE

2.1 From Cocoa Beans to Chocolate

Cocoa beans comprise some 50% cocoa butter and some 50% cocoa solids. In simple terms: in order to make quality chocolates, most chocolate manufacturers use the cocoa butter and the cocoa powder (cocoa solids) from one cocoa bean and the cocoa butter from a second cocoa bean (as shown in Figure 2-1). It might, therefore, be concluded from Figure 2-1 that cocoa powder is a product 'left over' from making chocolate; this is to some extent true. Global cocoa processors (also sometimes called cocoa grinders) make a huge range of powders of coarse and fine particle sizes, of a variety of colours (from black to light brown) and of varied solubility for use in cakes, cocoa drinks, biscuits etc. using their own advanced in-house technologies. They need to make profitable powder sales to make cocoa grinding an economically viable proposition. Cocoa processors without the facilities to make a variety of powders that are saleable at rewarding prices are in something of a financial straight jacket as they then need to break even from the sales of their cocoa butters alone. Such a situation does not necessarily make cocoa processors the best buyers of cocoa beans.

The cocoa liquor carries the cocoa flavour through to chocolate and thus the flavour of the cocoa beans used for cocoa liquor production is vital to the flavour of any chocolate products. If beans tainted with smoke are used by processors, then this smoke taint is likely to be carried through to the chocolate. Many cocoa processors have invested in facilities for removal of a range of off-flavours that can exist in the cocoa beans that they buy, but this would be undertaken at additional cost to the processor and would be accompanied by a reduction in the yield of cocoa butter of some 2–3%. This process is called de-odourisation. It explains why many cocoa beans of poorer flavour quality are purchased by cocoa processors and processed into cocoa butters; the price that they pay reflects the amount of cocoa butter in the cocoa beans that they buy and they pay for the butter value in the beans rather than for any chocolate flavour characters.

Figure 2-1 Cocoa to chocolate

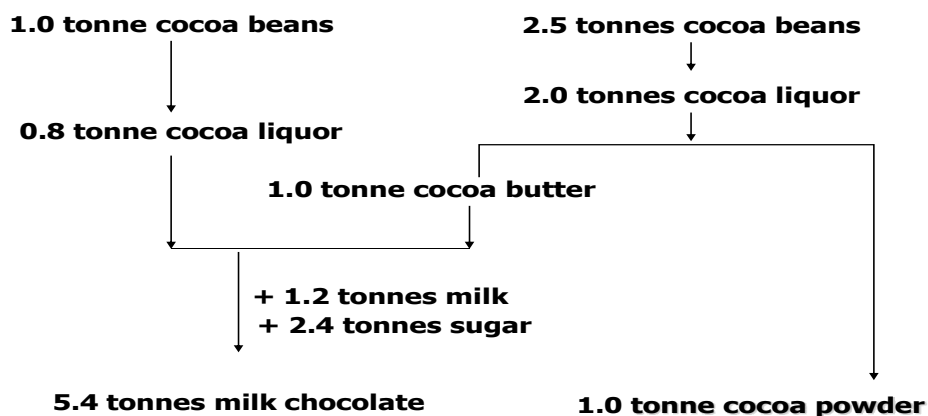


Source: Wood and Lass (1985)

For both process streams represented in Figure 2-1, the beans are first roasted, winnowed to remove their shells and then ground to a liquid between fine rollers to make cocoa liquor. For cocoa butter and powder production, the liquid is then pressed at high pressure to reduce cocoa butter content to some 10–12%. This is the maximum amount of cocoa butter that can

be extracted using physical pressure in a hydraulic press. The cocoa butter arising (as shown in Figure 2-1), is then mixed with liquor and ground further. Sugar, milk and other items (nuts, fruits, etc.) are then added, as required. This mixture is then tempered and moulded into bars and other products for retail sale. As discussed above, the cocoa powder arising is used for other food products and hopefully sold at a price that is attractive to the cocoa processor.

Figure 2-2 Diagrammatic representation of the manufacture of a typical milk chocolate



Source: *Cocoa 4th Edition (Wood and Lass)*

2.2 Cocoa Types in the International Cocoa Trade

There are essentially two genetically different types of cocoas: 95% of global production is the so-called bulk cocoa and some 5% is the so-called Fine or Flavour types that can, on occasions, attract a meaningful premium. Fine or Flavour cocoas tend to be purchased for their specific flavour characteristics by chocolate manufacturers – often those producing very high end, individual products. Their bean mix will usually contain a high percentage of beans of the Trinitario type and such cocoas can, on occasions, attract very high premiums over the relevant London market price. Some speciality chocolate makers also offer chocolate products with “unique origin” branding, which means that they are traceable back to a specific area or farm or plantation. It is worth noting that some 75% of the cocoa exported from Papua New Guinea is classified by the International Cocoa Organization (ICCO) as being a Fine or Flavour type (ICCO, 2008), probably because much of the cocoa planting material in use in Papua New Guinea is of Trinitario origins. It is suggested that some 10% of the cocoa trees in Solomon Islands may produce cocoa beans of the Fine or Flavour type, if well prepared. It is understood that annually a small tonnage of genuine Fine or Flavour cocoas are currently exported from Solomon Islands for use by speciality chocolate makers; reportedly, these exports achieve a premium price to that of exports of standard Solomon Islands cocoa. However, such trees in Solomon Islands are often planted amongst bulk cocoa types, making it somewhat difficult to keep the two types separate. At the present state of development of the cocoa industry in Solomon Islands and with the genetic origin of the cocoa being as it is, it seems highly unlikely that the industry would be able to achieve the coveted designation of being a Fine or Flavour origin (as Papua New Guinea has achieved for some years for a high percentage of their exports) in the foreseeable future.

Bulk cocoas with good flavour are used for cocoa liquor production (see Figure 2-1 and Figure 2-2) and go directly into chocolate manufacture, while bulk cocoas with any flavour defects (such as smoky, mouldy or musty taints or being poorly/inadequately fermented etc.)

become the feedstock for cocoa processors. Such beans are pressed to cocoa butter and cocoa powder. If the cocoa beans have a substantial level of defective flavours, then the cocoa processor would undertake additional processing (called de-odourisation) to remove all flavours (both good and bad). This would be done at extra cost and the process may reduce the cocoa butter content by some 2–3%. There is a ready market for such cocoa butters that have little or no chocolate flavour as they are added back into the mix for making chocolate, as shown in Figure 2-1 above.

2.3 Cocoa Pricing

It is the established practice in the international cocoa trade for the price of a cocoa sale to be arrived at after consideration by buyer and seller of the ruling “market price for cocoa” for a particular traded position on the London market (usually used in South East Asia) or the New York cocoa market (much less frequently used in South East Asia) to which is added or deducted a premium or a discount (called a differential) for that particular growth for that particular shipment period. For example, Ghana cocoa (often called the gold standard of cocoas) has in recent history been traded on a differential to the London market in a range of circa £150–250 per tonne (CIF price – includes Cost [of the beans], Insurance and Freight – North European ports) **above** the relevant London market position. Some less-sought-after cocoas trade at a discount (sometimes quite substantial) to the relevant London market price, while some specialist plantation grade Fine or Flavour cocoa beans can trade at a significantly higher premium differential to that usually achieved for Ghana beans. For any particular type of cocoa, the differential varies with the perceived supply and demand for that particular type of cocoa, but this variation is normally much more modest and less dramatic than the variation in levels of the “market price of cocoa.” However, at a time of real shortage and high demand for a particular type of cocoa, the price moves can be significant and rapid. The market prices of cocoa on both the London and New York markets vary (sometimes dramatically) in line with the perceived, and the real, supply and demand perspective for cocoa supply, as well as the expectations of buyers.

2.4 Cocoa Buying Decisions

A cocoa buyer makes a price decision on the level of differential he or she is prepared to pay, which is based on a variety of factors, but largely on his or her previous experiences of cocoa from that origin and previous experiences with that seller. These factors will govern the buyer’s idea of the differential element of his price offer. Any delivery of cocoa that the buyer receives that is of a quality that is poorer than expected will mean that this buyer will only buy any future consignment of cocoa from that origin and /or that exporter at a lower differential than the level paid previously. The converse is also true – a shipment of unexpectedly good quality will encourage the buyer to offer a higher price differential on his or her next purchase. Above all, a buyer wants to be sure that what he or she has contracted to buy is what gets delivered. This is particularly important when the contract has been made at a high differential and/or is for cocoa with specific flavour characteristics.

In making a decision on a differential price offer, a buyer will consider the physical characters of the beans, all of which affect the fat content of the nib (the cocoa bean minus its shell) and thus the economic value of any parcel of cocoa to a cocoa user. One of the more important characters considered by a buyer will be the degree of fermentation (usually assessed by the cut test) and another will be the presence or absence of any taints.

The characters considered before making a price offer will include those listed below. Some ideal values are proposed in italics:

- Bean size/number: *Ideally, 1 bean weighs 1 gram*
- Moisture content: *Ideally, range 6.0 to 7.5% relative humidity*
- Shell percentage: *Ideally, less than 12%*
- Consistency of bean size: *Requires normal distribution*
- Number of beans: flat/broken, germinated, insect damaged, mouldy, slatey: *Below 3% each*
- Number of brown beans to purple / under-fermented beans: *Ideally, brown:purple at 70:30 or 80:20*
- Percentage of debris – stones, sticks, pod husk, other rubbish: *Minimal*
- Cocoa butter content: *Varies with level of free fatty acids.*

Buyers would also consider the potential for the presence of any contaminants on or in the beans, including:

- Pesticide residues: *Ideally, absent*
- Ochratoxin level: *Ideally, zero*
- Presence of heavy metals, such as cadmium: *Ideally, zero*
- Level of free fatty acids: *Always less than 1.75%.*

Buyers would also consider a number of other economic characters in addition to cocoa butter content (or fat yield) in the nibs. These are likely to include:

- Consistency within a consignment and between consignments
- Absence of off-flavours – smoky, mouldy, musty, acid taints
- Presence of good chocolate flavour
- Whether cocoa is of a Fine or Flavour grade.

Finally, the buyer would give thought to a number of ‘soft’ considerations based on the track record that the buyer has had with that particular seller (the exporter or trader). These indicate whether the buyer should trust the seller to deliver to the contract terms but are almost impossible to measure. The considerations could include:

- Previous on-time deliveries, to contract, to quality
- Correct invoice pricing
- Provision on previous contracts of a complete set of shipping documents in a timely way
- If buyer previously requested a pre-shipment sample, did that sample reflect the flavour quality of the cocoa in the actual consignment. (Can the buyer say truthfully and with confidence that “What I Bought Is What I Got”?)
- Do the buyer and the seller have a long-term formal or informal business partnership or is there a prospect of such partnership?

Previous experience regarding these 'soft' considerations may well mean that a buyer has no wish to engage in any further contracts with a particular seller due to previous unsatisfactory contract performances. It has been suggested that some cocoa bean exporters in Solomon Islands have developed reputations for poor contract performance, such that buyers do not wish to undertake future contracts with them. This significantly limits the number of buyers to whom cocoa bean exporters may be able to sell, as well as their negotiating ability. They thus have become 'price takers'.

2.5 Cocoa Butter (or Fat) Value of Cocos for Commercial Buyers

Commercial cocoa buyers (both cocoa processors and chocolate manufacturers) are very interested in the amount of cocoa butter (fat) in a parcel of cocoa beans. Their buying decisions and thus prices offered and paid are based on publically available information, together with perhaps support from an historic database built up from their own experiences of previous shipments of cocoa from that origin. The amount of fat (or cocoa butter) in any cocoa sample is based on the moisture content and the shell content/bean size. The shell content can, to a small degree, be influenced by the system of fermentation and drying adopted both by growers and by middlemen, but more importantly by the amount of waste, broken beans, sticks, stones and other foreign matter in the parcel. Such material is considered as having little value to the commercial buyer and in some cases may actually add cost to the buyer for its disposal.

Some typical data is presented by Williamson (1985) below (no large data set was for cocoa beans from Solomon Islands):

	Ghana Main (%)	Cote d'Ivoire (%)
Total bean	100.00	100.00
Shell	11.3	11.7
Nib yield	86.7	88.3
Nib moisture	5.2	5.1
Dry nib yield	83.5	83.5
Fat percentage in dry nib	57.3	54.5
Fat yield	47.8	46.8
Fat as percentage of Ghana	100.00	97.9

Source: Williamson, AP in *Cocoa 4th Edition*, Wood, GAR & Lass, RA 1985, Blackwell Science, page 538

On the above basis, cocoa from Cote d'Ivoire should be trading at a discount to that of Ghana of some 3.1% on the basis of fat value. The discount is often not as great as this, due to other factors, but under normal market conditions there is usually a discount that varies from 0.75–1.25%. One recent sample of Solomon Islands cocoa had a fat yield percentage in the nib of 47.5% which gives a fat value as percentage of Ghana of 99.37%. As there is a high percentage of Amelonado trees in the genetic make-up of cocoa tree stock both in Ghana and in Solomon Islands, this result was perhaps unsurprising. However, having such a high fat content makes the beans from Solomon Islands attractive in relative terms to cocoa processors and chocolate manufacturers, if some of the other problems can be resolved effectively.

3 KNOWLEDGE IN SOLOMON ISLANDS ABOUT THE OPERATION OF THE INTERNATIONAL COCOA TRADE

3.1 Background to the Issue

Solomon Islands is a producer of a small, but rising, quantity of cocoa. The country will always be a small (perhaps niche) cocoa producer and thus should be offering a speciality product to engage and stimulate interest from international cocoa traders and international cocoa buyers. Solomon Islands currently has a reputation as a producer of poor quality cocoas and this continues to act as a major disincentive to new buyer interest.

There seems to be a shockingly poor level of understanding about the operations of the cocoa market, of cocoa pricing and of the international cocoa trade in general in Solomon Islands. This lack of knowledge may account, at least in part, for the difficulties expressed by some cocoa exporters in holding meaningful conversations with actual, or potential, buyers of the country's cocoa. It also probably means that the cocoa exporters in Solomon Islands are often 'price takers' due to their poor skills and knowledge in these areas. Cocoa exporters need to gain a much increased understanding of how to negotiate the price and other details of a cocoa export contract, of market views of Solomon Islands cocoa, and of the use of differential pricing, London market prices, FOB (Free On Board price: delivered to vessel – does not include cost of Insurance or Freight) and CIF contracts, correct documentation etc. To do this, they will need better public information on the quality and price levels of cocoa exports from Solomon Islands.

CEMA is the body with responsibility for export regulation; cocoa exporters advise them of the export price and date of shipment of contracts, and details are then recorded on a register. This is only part of the useful, and necessary, information on the pricing of cocoa contracts. CEMA also needs to take an active role and investigate with the exporter the price makeup and the price calculation made by the exporter with buyers. To do this effectively, CEMA management and staff should have a clear understanding of the operations of the cocoa market and the international cocoa trade and be able to more effectively, and fully, register contract details in their database. Additional data that should be recorded would be that of the price basis – of the relevant London market position used to calculate the contract price, of the price at the market close prior to the date of the contract agreement and of the differential that was agreed between buyer and seller against that London market position. This record would need to be in the public domain and would clearly establish the market price parameters for Solomon Islands cocoa on that day as a basis for future cocoa export contracts. Provision of this additional information may help moderate the sometimes wild variations in cocoa export prices that were reported to CEMA and recorded in the cocoa contract database in the first half of 2014.

Improved understanding of the operations of the international cocoa trade is expected to yield benefit to the country and lead to improved price negotiations between sellers and buyers. In light of this, it is very strongly suggested that a specific, tailor-made suite of training activities on the operations of the cocoa market, cocoa pricing, cocoa quality parameters and the international cocoa trade etc. should be arranged. Funding should be identified for a series of such training activities to be held in Honiara for a wide range of interested players, including the management and staff of cocoa exporters, CEMA and (perhaps) some commercial banks. These tailored training courses would require specific preparation and should be held concurrently as there would be common elements for each of the groups of participants, but

also a number of specific differences between the groups. For example, cocoa exporters would need to fully understand the implementation of cocoa quality criteria, the mind of the cocoa buyer and how to negotiate the best selling prices with buyers, while the management and staff of CEMA would only need to understand the basic principles of such topics.

The topics to potentially be covered (through hands-on interactions with participants) might include:

- Manufacturer quality requirements
 - Measurement of quality criteria
 - Origins of quality defects (smoke, mould, under-fermentation, etc.)
 - Decision-making by cocoa buyers
- Introduction to global cocoa industry and major players and authorities
 - Cocoa supply and demand trends
 - Fine or Flavour cocoas
 - Assessment of cocoa price prospects
 - Cocoa from Solomon Islands in global context
 - Buyers' views of Solomon Islands cocoa
 - Decision-making process of end user cocoa buyers
- Trade finance for cocoa exporters in Solomon Islands
 - Modalities of trade finance
- Preparation of quality cocoa (cocoa fermentation, drying, transport)
 - Data from Cocoa Atlas
 - CEMA data and CEMA quality control procedures
- Potential markets for cocoa from Solomon Islands
 - Gaining interest from global cocoa buyers in buying cocoa from Solomon Islands
 - Cocoa of Excellence program
- Future prospects
 - Next steps and potentially development of individual action plans with selected exporters.

Recommendation: It is very strongly recommended that funding for training activities of management and staff of interested cocoa exporters, CEMA and commercial banks on the operations of the cocoa market, cocoa quality, cocoa pricing and the international cocoa trade etc. (as outlined above) should be sought and that such training activity should be undertaken by an experienced consultant as soon as possible.

3.2 The Views of a Cocoa Buyer

Cocoa buyers must always minimise their risks. Buying small tonnages from a small cocoa origin with relatively poor quality reputation and somewhat challenging logistics will always be

a higher risk option than buying several thousand tonnes of cocoa from a large producing country with an excellent record of contract performance (such as Ghana).

It cannot be over-stressed that a buyer of cocoa will **always** use previous experiences of cocoa from that specific origin and with that specific exporter as a guide for discussions on the buyer's next purchase. The most recent purchase will hold the greatest influence. The buyer will also incorporate any market rumours (both good ones and bad ones) into his or her thinking. It is thus of fundamental importance to get at least some parts of the cocoa supply chain in Solomon Islands working smoothly to produce cocoa of the very best quality possible before any more visits to potential buyers are paid. To derive the maximum benefit, such visits would need to be carefully planned and involve potentially fruitful company visits to those companies that have a genuine interest in buying quality cocoa from Solomon Islands.

Recommendation: It is strongly suggested that no further marketing visits to potential buyers of Solomon Islands cocoa should be undertaken until the abovementioned training activity is completed. It is proposed that any participants in any such donor-funded visit should be obliged to have actively, and thoughtfully, participated in a positive manner in these proposed training activities.

3.3 Overseas 'On the Job' Training for Cocoa Exporters

When the training activity proposed above has been completed, support from current (and perhaps future) buyers of Solomon Islands cocoa should be sought with a view to the buyers providing short-term secondments for 'on the job' training for some managers and/or staff of selected cocoa exporters to gain a few weeks' practical experience of day-to-day operations of the cocoa market by being situated for a time at the trading desk in the offices of such buyers. This will require willing participation by some buyers and may require the secondees to sign a confidentiality agreement because much, or all, of the information they will see probably fits under the broad category of commercially confidential. It is anticipated that no charges would be made by the buyers for this experience, but funds for the travel and accommodation costs of the secondees would clearly be required. Much of the cocoa from Solomon Islands is currently purchased by a single trading house in Australia. Naturally, this company should be one of the first to be invited to participate, with a view to them helping to build the long-term capacity of cocoa exporters in Solomon Islands. These secondments should only be considered for long-standing, serious cocoa exporters who have actively, and thoughtfully, participated in the in-country training courses mentioned above. It is suggested that presently there is no pressing need for funds for such overseas training for the management and staff of CEMA; their role is more as a monitor of the terms and details of cocoa contracts that have been agreed by cocoa exporters.

Recommendation: In the slightly longer term, support secondments of some selected managers (and perhaps some staff) of promising, committed cocoa exporters in Solomon Islands to spend a period on the trading desks of willing cocoa buyers. Funds should be sought for travel and accommodation costs of these secondees.

4 CURRENT AND FUTURE MARKETS FOR COCOA FROM SOLOMON ISLANDS

4.1 Current Market for Cocoa from Solomon Islands

Publicly available data from the Cocoa Atlas – 2010 Edition (Anon, 2011) clearly demonstrates the poor reputation attributed to cocoa from Solomon Islands. This work was undertaken by the German Cocoa and Chocolate Industry Association in 2009/10, by taking randomly selected samples of cocoa beans from a large number of cocoa origins, analysing their physical and chemical qualities, and making samples for liquor tasting using a standard methodology by an international panel of experienced tasters. Seven samples of cocoa from Solomon Islands were included. The results of the tasting of these seven liquor samples were perhaps predictable: some could not be effectively tasted by the panel due to the overwhelming level of smoke taint in the samples; some others demonstrated very high levels of smoke taint that rendered it impossible to detect the desirable cocoa and chocolate flavours.

Discussions with end users who have experience of cocoa from Solomon Islands indicate that the beans usually have an appropriate moisture content, a good level of fermentation, a reasonable bean size, and a somewhat high shell content, but are unfortunately characterised by having a number of taints. Indications suggest that some 30 percent of bags of Solomon Islands cocoa may be tainted with smoky off-flavours, and a lesser number can also be tainted with mouldy and/or musty taints. These are all serious flavour defects and would render consignments with such taints at these levels unusable to nearly every chocolate company for the manufacture of cocoa liquor, as it is the liquor which gives the flavour to chocolates (see Figure 2-1). Beans contaminated with a smoke taint can be detected in chocolate when present at a level of only 2% – meaning that the presence of only two beans tainted with smoke in 100 beans can give this unpleasant smoky taste to the chocolate. It is presently not possible to separate out beans that have a smoke taint from those that do not have a smoke taint during cocoa processing operations.

These same end users also express concern that their in-house taste panels have detected that there are mouldy/musty and acidic notes in some cocoas from Solomon Islands. Beans with high levels of mouldy/musty taints tend to also have high levels of undesirable free fatty acids. This defect is caused by poor transport and storage conditions that are, in practice, frequently observed in the cocoa supply chain in Solomon Islands. Greater care by all the operators is needed to minimise this defect, and operators should follow best practice. This requires that bags of beans should be covered with tarpaulins when in transit by boat or truck, be stored on pallets off the ground, be stored in a dry place away from rain, and be covered carefully in any temporary storage facilities along the supply chain. Above all, beans must be dried effectively at the earliest possible stage after full fermentation and when fully dry be evacuated to the port for export as soon as possible. However, it seems unlikely that greater care will be forthcoming until all operators see a financial benefit from better prices based on quality.

The risk of buying cocoa with these taints substantially reduces the number of potential buyers of cocoa from Solomon Islands. It is therefore hardly surprising that nearly all Solomon Islands cocoa (meaning at least 85% of the presently exported tonnage) is used by the cocoa processing (grinding) industries of Malaysia, Singapore and increasingly Indonesia, where it will probably be de-odourised and sold on as cocoa butter. Such exports will not achieve their full price potential. Cocoa processors are rarely the best buyers of any country's cocoa; the

taints mean that they will usually have to undertake additional processing at additional cost; this additional processing will remove any off-flavours but also usually removes all the desirable chocolate flavours and can reduce the cocoa butter content by some 2–3%.

On a positive note, the cocoa beans from Solomon Islands are generally well fermented. This is somewhat of a rarity in the South-East Asia and Pacific region and is in marked contrast to the almost complete absence of fermentation that is seen in nearly all Indonesian cocoas – a country that produces some 500,000 tonnes of cocoa per annum. The tradition of fermentation of cocoa in Solomon Islands offers a real market opportunity for its cocoa growers and exporters, if the smoke taint (and other taints) can ever be eliminated. For success, this may require a sustained and coordinated effort over time.

4.2 Potential Markets for Cocoa from Solomon Islands

The flavour of chocolate is due to the flavour of the cocoa beans that are used to make the liquor fraction of chocolate (see Figure 2-2). In the region of South-East Asia and Australasia, there is substantial untapped demand from chocolate makers for well-fermented, well-dried, taint-free cocoas. Currently, to satisfy this market demand, cocoa beans of good flavour quality are being transported from West Africa to South-East Asia and Australasia at substantial additional cost in terms of freight, handling and other charges.

In light of this, it is especially unfortunate that cocoa from Solomon Islands is largely avoided by chocolate makers in the region due to the frequent presence of smoke (and other) taints in the beans. The pent-up demand from regional chocolate companies for taint-free, well-fermented cocoa beans exists and presents a genuine market outlet for cocoa beans of good flavour quality from Solomon Islands. The demand is there but to satisfy this demand, the undesirable taints in Solomon Islands cocoa must be eliminated and the country must build its reputation as a producer of cocoa of good flavour quality, rather than as a producer of cocoas with a smoke taint bought as a last resort by cocoa processors.

Despite the generally poor reputation of cocoa from Solomon Islands for quality, occasionally small parcels of cocoa are currently sold to niche high-end chocolate makers in Australasia and elsewhere. Some of these companies are building a brand on the provenance of the cocoa being Solomon Islands and produce exciting, interesting and tasty chocolates from Solomon Islands cocoa beans. However, the flavour quality and its consistency is a major constraint on the tonnage that can be sold into this market. If the flavour is assured, the demand will follow. If the tonnage of cocoa produced in Solomon Islands reaches the proposed policy objective of 10,000 tonnes in the next few years, the country will still be a niche cocoa producer and thus the cocoa will need to be attractive to niche buyers. Cocoa from Solomon Islands presently has little appeal to such buyers and thus the majority of the tonnage ends up with the cocoa processors in Singapore, Malaysia and increasingly Indonesia.

Major chocolate companies will be more cautious than the smaller, more experimental high-end brand owners, but would be likely to follow if a reasonable tonnage of fermented cocoa of consistent flavour quality was to become regularly available from Solomon Islands. To have a successful future as a cocoa producing nation, the cocoa industry in Solomon Islands **must** make some substantial changes in the internal supply chain and take the actions proposed in this report.

4.3 Price Potential for Solomon Islands Cocoa at Export

Information from cocoa buyers in Singapore provides a price indication that suggests that they would have expected to pay the London market price for July 2014 plus a differential premium of up to £20/30 per tonne for Solomon Islands cocoa on a CIF Singapore basis in late June/early July 2014. The London closing market price per tonne for the July 2014 position was £1,964 on 1 July 2014, £1,971 on 2 July, £1,966 on 3 July and £1,954 on 4 July, with the average for these four days being a few pence less than £1,964 per tonne – to which should be added the premium of £20/30 (say £25) over the London market price. The costs to move cocoa from an FOB basis from Honiara to CIF Singapore can be estimated with reasonable reliability at some £125 per tonne, including a crude estimate of finance charges for the transaction and interest. Accordingly, on 2 July 2014, an FOB Honiara price for Solomon Islands cocoa of Grade 1 quality might have been expected to be in the order of £1,864 per tonne calculated as the average London market price from 1–4 July 2014 (of £1,964) plus £25 premium for the differential less CIF costs of £125 per tonne. The CEMA contract database records that a cocoa exporter agreed an FOB export price of £1,530 per tonne on the morning of 2 July 2014. This seems to be a “loss” along the cocoa export supply chain to the end user of potential export revenue of some £334 per tonne (calculated as £1,864 minus 1,530 per tonne).

This price was typical of contracts recorded by CEMA around that time and since. Other examples can be presented that re-affirm this situation and draw one to the undeniable conclusion that, even with the currently poor international reputation on cocoa quality, exporters from Solomon Islands are generally not achieving the best export prices for their cocoas. This requires rectification through the training activities proposed elsewhere in this report and the recommended sharper and supportive investigations by CEMA. The training activities will substantially increase understanding of the operations of the international cocoa trade and enhance the negotiating skills of the cocoa exporters based in Solomon Islands as well as the monitoring capability of the management and staff of CEMA.

It is extremely difficult and potentially misleading to rework the basis of a selling or buying decision after the contract has been agreed, and such an examination is always prone to error. However, even accepting such difficulties, it is not so easy to explain variations in contract price of this magnitude on the basis of movements in the market levels or the differential or the exchange rate. It is also possible that this export parcel passed through the books of one, or more, cocoa traders – each of whom could have made a margin on the trade. The conclusion from this analysis must be that there is substantial opportunity for improvement in the differential pricing for Solomon Islands cocoas in relation to the ruling London market prices.

The above-described price improvements are in addition to improvements in prices to be expected through anticipated improvements in the quality of the offerings of Solomon Islands cocoa that could arise from better bean quality through reduction of the smoke and mould taints, improved reliability in the degree of fermentation, reduction of levels of free fatty acid and so on, which could further reduce the price differentials. Such price improvements need to pass back down the supply chain so as to result in increased prices at the farmer level.

Recommendation: It is necessary to create awareness amongst cocoa growers and along the length of the cocoa value chain in Solomon Islands that there is pent-up regional demand (in South-East Asia and Australasia) for well-fermented, well-dried,

taint-free cocoas. Sales into that market would offer a potential for improved cocoa export prices and enhance the pride in the cocoa industry of Solomon Islands. It is suggested that newspaper articles, radio programs etc. should be considered with a view to informing all operators along the supply chain of this pent-up demand and perhaps providing with some illustrative case studies.

Recommendation: As proposed already, it is very strongly recommended that funding should be sought for training activities for the management and staff of interested cocoa exporters, CEMA and commercial banks on the operations of the cocoa market, cocoa quality, cocoa pricing and the international cocoa trade etc., and that such training activity should be undertaken by an experienced consultant as soon as possible.

4.4 Differential Pricing Negotiations in Cocoa Export Contracts

On completion of the proposed training activities, it is hoped that cocoa exporters in Solomon Islands will be in a position to change the focus of their price discussions with their international buyers from being offered a price (that the exporter seems often to be almost obliged to accept) to a genuine negotiation on the basis of a cocoa price differential in relation to an established trading month on the London cocoa market as described above. This would be an important and major change to the cocoa landscape in Solomon Islands and should, in time, drive improved relative prices to cocoa growers in the country. The significance of this change should not be underestimated and some, or many, of the cocoa bean exporters will almost certainly meet resistance from their traditional buyers and may well find making such a change both challenging and difficult to achieve successfully without great determination and ongoing support from an experienced market operator.

Recommendation: In addition to funding for training activities for the management and staff of interested cocoa exporters and CEMA, provision should be made for ongoing support in price negotiations by interested cocoa exporters in Solomon Islands that embrace the concept of their cocoa export price negotiations being made on the basis of a cocoa price differential in relation to an established trading month on the London cocoa market. The level of support needed and the number of exporters who embark on this course of action are impossible to determine at this time, but such a likely future need should not be overlooked in the planning process for future PHAMA activities.

4.5 Cocoa of Excellence Programme

Participating in the Cocoa of Excellence Programme (www.cocoaofexcellence.org) would begin to put Solomon Islands cocoa onto the radar of the international cocoa trade. Participation in the Programme requires the submission of 4 kg each of well fermented and well dried cocoa beans from up to three different cocoas from Solomon Islands. The conditions for the submission of samples and participation in these awards are somewhat prescriptive and include the requirement for the creation of a National Organising Committee to oversee the selection and dispatch of these bean samples to the organisers for tasting. The closing date for receipt of the samples in Montpellier, France, is 30 April 2015. To achieve this, the engagement of CEMA (with support from PHAMA) is proposed to create a National Organising Committee and enable an open process to identify superior bean samples.

The stated aim of the Programme is to ‘achieve long-term farmers’/producers’ professionalisation and sustainability of the cocoa supply chain. This is through recognising, preserving and valuing cocoa diversity and through promoting and providing global recognition of high quality cocoa beans’. Good quality cocoa from Solomon Islands is available – albeit in very small amounts at the moment – and so there is no reason why samples of Solomon Islands cocoa should not be offered to the organisers for their consideration.

After making liquor samples and their tasting by an international jury, the results will be announced at the Salon du Chocolat in Paris in October 2015 and the best samples will be awarded an honorary distinction. Participation in this activity by submission of some samples would, of itself, stimulate interest in quality cocoa production in Solomon Islands and so should be encouraged.

Recommendation: Encourage the creation of a National Organising Committee on the Cocoa of Excellence Programme (www.cocoaofexcellence.org) to arrange the submission of samples with superior flavour quality to the 2015 Cocoa of Excellence Programme, with a view to raising awareness in the international cocoa trade that cocoa farmers in Solomon Islands can produce cocoa beans of good flavour quality for export.

5 EFFORTS TO REDUCE THE LEVEL OF TAINTS IN SOLOMON ISLANDS COCOA

5.1 The Problem

It is reported by buyers of cocoa from Solomon Islands that almost one-third of the bags in some shipments of cocoa can be contaminated with a smoke taint due to poor operating conditions and/or the design of the cocoa dryers that are in widespread use around the islands. There are also reports of mouldy/musty notes in results of taste panels on Solomon Islands cocoa, although at a lower level of frequency. These latter taints are caused by poor storage and handling procedures along the supply chain within Solomon Islands.

All of these taints are entirely avoidable with good cocoa dryer design, good cocoa dryer maintenance and due attention to protective conditions for the cocoa along the internal cocoa supply chain. The elimination of, or at least a substantial reduction in the incidence of, these taints is key to finding new buyers in South-East Asia and Australasia interested in fermented cocoa for liquor production for flavour in chocolates. Sales into this market could lead to **further** improvements in export prices of cocoa from Solomon Islands and thus to additionally improved prices to cocoa exporters. The expected presence of these taints greatly limits the number of buyers that could be even superficially interested in cocoa from Solomon Islands. Without any reduction in these taints, cocoa from Solomon Islands is likely to continue to be sold (at less than optimum prices) to the cocoa processors in Malaysia, Singapore and Indonesia to produce cocoa butter and cocoa cake/powder – often after de-odourisation.

A renewed focus on the elimination of, or a substantial reduction in, this high level of smoke taint should be a major focus of activities to improve the revenue received by cocoa growers in Solomon Islands. Steps proposed later in this chapter are designed to achieve this objective.

Recommendation: There is still a degree of denial in Solomon Islands around the current international reputation of Solomon Islands cocoa and the scourge of the smoke taint. As part of other media activities, it is suggested that regular mention be made of the external perception of the global cocoa industry concerning the defects of Solomon Islands cocoa beans.

5.2 Measurement of the Problem of Smoke Taint in Cocoa Beans from Solomon Islands

CEMA should introduce a system of assessment of the level of smoke taint in the cocoa shipments when it is completing its normal quality control procedures prior to export. There is no industry recognised methodology for assessment of levels of smoke taint. Elaborate and technologically advanced analytical equipment is available that might even be able to identify the species of trees that provided the wood used in the fire that was used to dry smoke-contaminated cocoa beans. This would hardly be helpful information, even if funds and the necessary skills were readily available to CEMA to purchase and operate such advanced equipment. A simple test (as described below) should be added to the quality control procedures in the new CEMA laboratory, with records being kept purely for informal statistical use by CEMA. It is not suggested that the certificates issued to the exporter by CEMA following their control of quality of export shipments should have this information added to them, but a record should be kept – perhaps by making a note on the CEMA copy of the grading certificate. It may be useful to keep a tally of the tonnage of cocoa that is free of smoke taint and the tonnage that is contaminated and thus the percentages. In due time, it

may be possible to introduce a system of advice to exporters should these tests reveal that they continually deliver cocoa with a smoke taint.

The presence of a smoke taint in a parcel of cocoa beans can be assessed by grinding a small sample of randomly selected cocoa beans (including their shell) from the bean samples that CEMA will use for the cut test. These should be ground in a domestic blender for 1–2 minutes and the resulting mixture then be sniffed and scored by a panel of (say 2–3) trained operators. Each operator would score the level of smoke taint, which it is suggested should be on a scale of 1 to 5, where 5 presents a high degree of smoke contamination and 1 is clear of any smoke taint. The score from each of the trained operators would then be averaged to give one score. The preparation of a reference sample for each level of smoke taint would be essential to ensure consistency between operators and through time. If these reference samples were kept in a sealed container, it is hoped that they would retain their level of smoke taint for a full cocoa season, after which replacement samples would need to be selected. Some testing and preparatory work would be required to get the right balance of this scale of smoke taints and it will be very important for only a small number of CEMA staff to carry out this work to ensure consistency in scoring as far as possible. The cost of introducing this additional test will be minimal and so no additional funding would be required. The objective is for CEMA to build a database to effectively track the incidence of smoke taints in cocoa exported from Solomon Islands over time. Hopefully the percentage of beans with smoke taint will decline over time.

Recommendation: CEMA should implement testing arrangements for assessment of smoke taints in the cocoa beans that are submitted for CEMA to grade; results should be recorded on the CEMA copy of the grading certificate and also recorded anonymously in a database.

5.3 Review Efficiency and Operation of Existing Standard and ‘Mini’ Cocoa Dryers

Both standard and ‘mini’ dryers are in common use in Solomon Islands, where the use of the sun for drying cocoa is relatively limited. The rainfall pattern is such that some artificial drying is likely to always be necessary at some times in the cocoa season, although suspicion remains that operators along the supply chain tend to use artificial dryers as a first resort – perhaps due to the speed of drying that the system offers. Wood is now in ever shorter supply in Solomon Islands and is at ever higher cost. It maybe that new features to reduce the capital cost, the amount of wood consumed, the operating costs and the chances of smoke contamination can be identified.

The standard “Kukum” cocoa dryer is in widespread use for drying cocoa and other agricultural produce in Solomon Islands. This design was probably originally based on use of available residual 45 gallon oil drums, which have an opening with an internal diameter of 22.5 inches and thus an area (A) of 397.40 sq inches (where $A = \pi r^2$ or $= 3.14 \times 126.56$). The design of this dryer and its maintenance issues are well described in the Cocoa Dryer Repair Leaflet (Anon, 2010). The consultant understands that the area of the opening of the firebox should be no more than 10 times the area of the opening of the circular chimney to best draw smoke from the burning wood in the firebox away from the cocoa on the drying floor. Thus the area of the chimney of the standard cocoa dryer should be 39.74 sq inches with a radius of 3.56 inches and a diameter of 7.12 inches to ensure the smoke is drawn up the chimney. Regrettably, it seems that the recommended ratio of 10:1 (diameter of the firebox to the diameter of circular chimney) has not always been followed. If this is indeed the case, then this increases the risk of smoke taint in the drying cocoa.

The 'Mini-fermentary and Mini-dryer' unit (see Plate 5-1) is a convenient small dryer for some 2.5 bags of fermenting cocoa per load. Its use in Solomon Islands was promoted by the Cocoa Livelihoods Improvement Project. A significant number have been constructed in the country and are now in use. However, following a brief visual inspection during the visit, the relative areas of the firebox and the chimney openings did not seem to adhere to the 10:1 ratio rule. It was also notably difficult for one man to open and close the roof of the mini-dryer in the event of rain. It may be helpful, on cost grounds, to study the maximisation of use of locally available materials in order to minimise cost and complexity of importation for any future installations.

With the proposed renewed focus on the reduction of smoke taint in Solomon Islands cocoa, it is important to try to ensure that all dryer designs minimise the risk of smoke taints to drying cocoa. It is possible that tainting could be reduced by some modest changes to the design of the two dryer types and so a review of these by an experienced engineer with experience of crop drying is suggested.

Recommendation: A review of the design and some actual installations of both the standard Kukum dryer and the so-called mini-dryer by a drying engineer with experience of agricultural crop drying is suggested, with a view to identify potential opportunities for improvements to both types of dryer by:

- ***Reducing the risk of smoke taint***
- ***Increasing thermal efficiency / reducing the rate (and thus cost) of wood consumption***
- ***Reducing the capital cost and other operating costs, including labour expenditure***
- ***Maximising the use of locally available materials***
- ***Improving the mechanism for opening the mini-dryer so that it can be swiftly opened and closed by one person of modest strength.***

Plate 5-1 Mini-dryer used in Solomon Islands for cocoa drying



Source: Leaflet on Mini-fermentary and Mini-dryer, undated, Cocoa Livelihoods Improvement Project, Honiara

5.4 Development of an Assisted Solar Dryer Suitable for Solomon Islands

If conditions permit, drying cocoa (down to 7.5 % relative humidity) in the sun alone produces cocoa beans of the best quality. There are some occasions when sun drying of cocoa on mats is both feasible and cost effective in Solomon Islands and so this method should be used whenever possible on cost grounds and for improved cocoa quality.

A system of assisted solar drying has been operating successfully in the West Indies, albeit under different climatic conditions to those that prevail in Solomon Islands. The design is simple and consists of a drying bed that is permanently covered (including both end walls and end doors) with strong (200 gauge) plastic sheeting. A basic schematic representation of this dryer is included in Appendix A. The key features of the design are:

- The drying 'tunnel' must have a gap of some 0.4 m along the whole length of the ridge of the drying tunnel and this gap must be on the leeward side of the structure (away from the prevailing wind) so that the moist air is sucked out by the passing wind – an example of the venturi effect
- There must be also be gaps of some 0.5 metres in the plastic covering on either side of the platform at ground level to allow the entry of air; the air is then drawn up through the drying cocoa, picking up moisture as it goes, and exits as moist air via the gap in the ridge, where it is sucked out through the venturi effect
- The cocoa drying platform inside the tunnel should be set at a convenient height to permit regular turning of the beans with a long handled rake

- The tunnel height must give enough space for an average worker to be able to stand to rake the drying beans with ease
- Drying tables should be far enough apart to allow easy access with a wheelbarrow to load the dryer with wet beans and occasional gaps in the border of the table should be made so that the dried beans can subsequently be easily moved from the tables into wheelbarrows
- The two drying tables should be made of suitable local woods.

There are no copyright issues relating to this design. However, it should be noted that such a dryer was reported to have been used on a trial basis in Papua New Guinea and the trial was not a success, possibly due to the level of ventilation and use of rigid plastics in the coverage. It is strongly suggested that a prototype (following the design successfully developed in the West Indies) should be built in Solomon Islands as soon as possible, using as many locally available materials as feasible (on cost and availability grounds). The length can be easily selected to suit local conditions, but the other dimensions should be maintained as indicated in the plan. It should be noted that there may still be times of the year when the weather conditions make the use of a wood-fired dryer the only viable method for drying cocoa, due to rain and heavy cloud cover in some areas of the country. Some modest funding and skilled resources will need to be identified to undertake this work. It may be helpful for the engineer with experience of crop drying to also be involved and critically review the dimensions, materials available, component strength and costs of the assisted sun dryer prototype while undertaking the review proposed earlier.

Recommendation: Resources should be identified to build a prototype of this assisted solar dryer (as presented in Appendix A) using as much local material as possible in a convenient location in/near Honiara to investigate the possibilities of widespread usage of this (or similar) design. This work could also (but not necessarily) be overseen (or later revised) by the experienced drying engineer who is to be identified to complete the study of the current wood fired driers.

5.5 The Magnitude of the Problem of Mouldy/Musty Taints in Export Parcels of Cocoa from Solomon Islands

The musty/mouldy taints are due to poor storage and handling procedures along the supply chain within Solomon Islands. Cocoa farmers, intermediaries and exporters need to be advised on industry best practices for cocoa transport and storage. This could be part of the training course for management and staff of exporters and for CEMA that was proposed earlier in this report. No cocoa should be moved in uncovered vehicles when there is the risk of rain. Extension staff and everybody working along the cocoa supply chain should be encouraged to store dried cocoa in good conditions, with a view to reduce or eliminate these mouldy and musty flavour notes in future.

Recommendation: Strongly promote the need to improve the transport and storage conditions for cocoa across Solomon Islands by all possible means. It is understood that PHAMA activity SOLS21 is currently reviewing extension materials on cocoa quality. The outcomes of any trials on dryer design should inform the content of any new extension materials to assist in producing effective messages for farmers, intermediaries and exporters along the internal cocoa value chain.

6 ACCESS TO WORKING CAPITAL BY COCOA EXPORTERS IN SOLOMON ISLANDS**6.1 Current Situation**

The majority of current cocoa export companies in Solomon Islands have seriously inadequate internal financial resources to fund their cocoa exporting activities at current cocoa prices. This is a major failing in the current system.

Marketing of cocoa in Solomon Islands is fully liberalised, yet the great majority of the cocoa exported from the country has for some years been pre-financed and then purchased by one buyer – a trade house in Australia. One observer suggested that a public monopoly (at one time held by CEMA) had effectively been changed to a private monopoly. Effectively, the role of financing 80–90 percent of the cocoa value chain in Solomon Islands has fallen to this trade house. They pre-finance (and seem to tightly control) the majority of the in-country cocoa exporters, who then in turn advance cash to their trusted intermediaries to buy wet and dry cocoa beans from the cocoa farmers. This is not a healthy, or indeed an appropriate, situation in a fully liberalised cocoa market. It probably also nearly always makes the in-country cocoa exporters price takers who, on occasions, may even be advised of the price at which they are to sell their cocoa for export.

Currently, there are no offers of trade finance available to cocoa exporters in Solomon Islands from commercial banks (or other sources) and so the offer of the provision of credit as pre-finance by this trade house against future deliveries of cocoa is taken up by many cocoa exporters – albeit with reluctance by a number of them. It is important to note, however, that without the pre-financing facilities offered by this trade house, the cocoa producers in Solomon Islands in 2014 would have even less opportunity to sell their cocoa into the international cocoa trade.

From examination of the records held by CEMA for some of the recently agreed cocoa export contracts, it seems as if some contracts between national cocoa exporters and this trade house are being agreed at what, superficially at least, appear to be discounted, or heavily discounted, FOB Honiara prices in relation to those that are to be expected from the London cocoa market price on the day preceding the agreement of that contract, even when making a necessary allowance for the costs of pre-financing, administrative costs and interest charges that are paid by this trade house.

6.2 Future Needs

In a perfect world, sales of such a high percentage of any country's cocoa production through one outlet should not continue indefinitely. Cocoa exporters urgently need other options to enable them to finance their cocoa buying activities. The absence of any lines of trade credit from commercial banks in Solomon Islands leaves many exporters with little option but to seek pre-finance from this single trade house. Urgent discussions should be held (or in some cases continued) with the in-country commercial banks to establish the individual conditions that need to be satisfied to allow trade finance facilities to become available to the more active, long-standing cocoa exporters in Solomon Islands. While the reluctance of banks to lend can be understood, there are many banks elsewhere in the cocoa world that do finance the internal marketing chains of cocoa to export, albeit sometimes under tightly controlled conditions. A cocoa export contract is considered to be good collateral for finance elsewhere

in the cocoa world, where shipping documents pass via the lending bank to pay down the debt of the cocoa exporter.

Any serious discussions with any bank will require the presentation of a carefully prepared and durable business plan to support the credit application. A number of the cocoa exporters are expected to benefit from assistance in the preparation of such business plans. It is recommended that PHAMA support the preparation of such applications and the necessary business plan that should probably be associated with it. Support to businesses to prepare such plans could potentially be provided in collaboration with the Pacific Business Investment Facility. A strong, well organised group of cocoa exporters stands a better chance of being able to negotiate price (and differential) improvements from their international buyers and thereby bring benefit to their cocoa farmers.

There may also be some potential financial support accessible through the grant or supplementary equity facilities that PHAMA understands are proposed in the second phase of the Solomon Islands Rural Development Program (RDPII) that is currently in design development and which is expected to come on-stream in early to mid-2015.

Recommendation: PHAMA should obtain clear information from all candidate commercial banks in Solomon Islands on their willingness to provide trade credit and the conditions under which it might be offered to well-established cocoa exporters for future cocoa buying activity.

Recommendation: PHAMA should then seek necessary expertise and any required funding to develop durable business plans (potentially in collaboration with the Pacific Business Investment Facility) to attach to applications for trade credit facilities made to the in-country commercial banks by one, or many, of the established cocoa exporters in Solomon Islands.

Recommendation: Cocoa exporters should be encouraged to take full advantage of any suitable credit lines that become available in due course under the evolving RDPII.

7 OTHER MATTERS

7.1 Cocoa Pod Borer

Cocoa Pod Borer (CPB) is a difficult-to-control cocoa pest that has caused, and continues to cause, serious losses of crop in parts of Malaysia, Indonesia and most recently Papua New Guinea. The pest is now present on the island of Bougainville in Papua New Guinea – which is less than 5–10 kilometres from the westernmost land mass of Solomon Islands. Reportedly, there is considerable local boat traffic between these the two countries. While consideration of agronomic issues such as this is beyond the terms of reference of this study, preventative actions to minimise the potential devastation of CPB would seem to be in order. It is understood that researchers in Papua New Guinea have identified cocoa planting material that appears to be tolerant to CPB attacks. Through a cooperative agreement between the two governments, it may be that such planting material could be made available to Solomon Islands authorities and introduced after a suitable period of quarantine. If this was to happen, such material is very likely to have a genetically high percentage of Trinitario material (this being an important component of Fine or Flavour cocoas). If such tolerant material from Papua New Guinea was to be planted in Solomon Islands in any quantity, then the current level of some 10% of Fine or Flavour material in Solomon Islands could change over time and, consequently, Solomon Islands cocoa producers might well have an increasingly high percentage of Fine or Flavour cocoa types in their cocoa stock. Over a substantial number of years, this could give the cocoa exporters of Solomon Islands an opportunity to become producers of Fine or Flavour cocoa – at least for part of the country's cocoa production.

If successfully introduced, in due time it might be worth segregating and selling some Fine or Flavour cocoas from Solomon Islands. Clearly, all buyers of such cocoas would need to be assured of the absence of smoke taints to the cocoa beans.

Recommendation: The authorities in Solomon Islands (perhaps with support from PHAMA) should actively investigate the opportunity for importation (via quarantine) of cocoa material from Papua New Guinea that is reportedly tolerant to CPB attack. Consideration should be given to including this as an item in any bilateral agreements on agriculture or biosecurity cooperation with Papua New Guinea.

7.2 Cocoa Certification Schemes

Certification under organic, Fairtrade, UTZ, Rain Forest Alliance or other systems is expensive and much of the cost to establish the system and then to maintain it falls to the cocoa growers or the cocoa producing community. It is therefore absolutely essential to have prior confirmation in writing from one or more buyers that, following certification, they would be prepared to pay a meaningful premium to the relevant London market price for an agreed tonnage on an ongoing basis for a significant number of years. It is probable that much of the cocoa grown in Solomon Islands could be classified as naturally organic and therefore be permitted by an official organic certifier to have a shorter transition time than the usual five years, although this has not been tested. There may also be an opportunity to utilise the Participatory Guarantee Scheme certification program being promoted by the Pacific Organic and Ethical Trade Community (POETCom) (based with the Secretariat of the Pacific Community), based on a Pacific Organic Standard, which may offer a lower cost alternative. However, recognition of this form of certification by cocoa buyers would require validation. Nevertheless, there are many other improvements that could be implemented (such as those

recommended in the report) to improve the revenue to the cocoa growers of Solomon Islands more easily than investing to potentially, and perhaps only eventually, be accepted by one of the above certification schemes. Certified products tend to be sought after by large, higher end chocolate makers, who will hardly want to buy cocoa from Solomon Islands when there is such a substantial risk of the beans having a smoke, or other, taint. It is possible that niche buyers may wish such types of certification; however, again there would need to be a clear demonstrable and sustainable price justification for producers to warrant investment in establishing and maintaining such certification at this time.

Recommendation: It is strongly suggested that Solomon Islands cocoa industry does not work towards any of the schemes for cocoa certification at this time. Efforts should instead go towards the previously recommended activities: ensuring better understanding of cocoa market operations by training; ensuring availability of working capital for exporters; and improving cocoa drying, transport and storage to reduce levels of taints, while continuing to actively work to increase the productivity of cocoa farms through existing mechanisms.

7.3 Cocoa Quality Messages

Once a buyer has purchased cocoa of poor quality, his only outlet for such produce is to blend it off with cocoa of better quality, thus reducing the overall quality of a much larger tonnage. While no detailed study of the topic was undertaken during this mission, it is expected that very few quality examinations are made by cocoa buyers at the time of their first purchase of cocoa, because almost every cocoa buyer in Solomon Islands is only interested in the quantity that can be bought and not in the quality of the produce. It is strongly suggested that, as the other activities recommended here are completed, the serious cocoa exporters be actively encouraged to pass the quality message and the need for quality control at the time of first purchase back up the cocoa supply chain to their intermediaries and thus to growers. The achievement of greater consciousness about quality along the whole of the cocoa chain will not be achieved quickly, but nevertheless a start should be made and a consistent message that “quality counts” should be directed to everybody in the cocoa value chain and done so by all available means. Every effort should be made to increase the number and efficiency of cocoa quality controls by the buyer on each occasion that cocoa changes hands along the value chain. Targeted publicity to this effect is needed with a view to reducing the quantity of cocoa purchased with smoke taint.

Of course, such a process would move faster if exporters were rewarded for delivery of quality cocoa free of smoke taint. As described in detail earlier, a cocoa exporter is only as good as their historic performance (usually on the basis of their last shipment). No international buyer will pay a premium price (based on expected quality) until the exporter has proved their capability and delivered one or more shipments of better than expected quality to show that payment of any premium or reduced differential is justified. In time, if better quality is delivered regularly and consistently, then a lower differential can be demanded by the exporter and will be paid by a genuine international buyer. It is anticipated that over time the actual change and the perception of the change by buyers will happen naturally, as the professionalisation of those along the cocoa value chain in Solomon Islands advances. However, the integrated set of recommendations suggested here need to be implemented with all possible speed.

It is expected that additional information on how CEMA, as the relevant regulatory authority, can best assist industry in quality assurance will be provided in the findings of the current

examinations under PHAMA activity SOLS20, and that additional extension materials on quality messages will be developed under PHAMA activity SOLS21.

Some observers report that fermented and dried cocoa is being transported on lorries and in vessels without the cover of a tarpaulin, leading to rain-damaged cocoa. Such conduct can turn good cocoa into poor cocoa and should be avoided at all cost. Cocoa should always be transported in covered vehicles and stored in dry sheds on pallets.

Recommendation: During the proposed training events, through extension officers and by targeted publicity in newspapers and on the radio, the production and purchase of quality cocoa should be encouraged and quality checks made, especially at the moment of first purchase of cocoa beans, with a view to reducing purchases of beans with smoke taint. Further information on potential role of CEMA in this work is expected to be provided under PHAMA activity SOLS20 and extension materials developed under PHAMA activity SOLS21.

Recommendation: Cocoa should always be transported in covered vehicles and stored in dry sheds on pallets.

7.4 Farmgate Cocoa Prices

Cocoa farmers only generate a very modest income from cocoa and so it is perhaps hardly surprising that most cocoa in Solomon Islands is 'harvested' and not actively 'cultivated'. Cocoa production in Solomon Islands was 4,500 tonnes in 2012, down from a peak in 2011 of 6,500 tonnes. Figures suggest that there are between 20,000 and 25,000 cocoa producers.

Assuming the mid-point of 22,500, this means the average grower produced only 200 kg of dry beans (or 571 kg of wet beans at the normal conversion rate of wet to dry of 35%) in 2011 and 266 kg of dry beans in 2011 (or 791 kg of wet beans on the same basis). A recent study (Solomon Islands Cocoa Value Chain Analysis, February 2014, Vadnjal, D & Pelomo, M) suggests that with the buying prices of cocoa exporters being circa SBD16.00 per kilogram of dry beans (around the level it stood at in June 2014), the purchase price from a farmer at or near his farm is estimated to be SBD3.0 per kg of wet beans (or USD0.41 at the mid-market exchange rate on 4 July 2014). Unfortunately, this study does not seem to have included any allowance for finance charges, and the conversion rate of wet to dry beans differs from the normal conversion rate (as above). Therefore, the annual revenue from cocoa for an average farmer in 2011 might have been as low as SBD1,713 (or USD235 at the mid-market rate on 4 July 2014), and in 2012 might have been SBD2,373 (or USD326 at the mid-market rate on 4 July 2014). But these figures are based on a purchase price of today that is much higher than in 2011 and 2012.

This is not an encouraging situation and perhaps goes some way to explain the reported lack of management attention applied to the cultivation of cocoa by smallholders in Solomon Islands. If a cocoa farmer in Solomon Islands has a spouse and three dependent children, cocoa is the farmer's only source of income and cocoa revenue (without deducting any of his farming costs) is as above, then the farmer's revenue from cocoa could be a mere USD0.13 per person per day in 2011 and USD0.18 per person per day in 2012. Such a farmer is thus living in 'extreme poverty' according to the United Nations and World Bank (Understanding Poverty, <http://worldbank.org>). In no way can such a situation be considered sustainable.

7.5 Stability of Published Internal Cocoa Prices in Solomon Islands

It is inexplicable and somewhat bizarre that the publically quoted internal cocoa prices in the country are so stable and do not move upwards or downwards on a daily basis following the movements of London cocoa market prices. In neighbouring Papua New Guinea, the publically quoted prices may, and do, move on a daily basis, ensuring a competitive cocoa buying regime. No obvious reason could be found for this failing in Solomon Islands, although it would seem likely a result of the almost monopoly-like situation where effectively 80% of the cocoa ends up ultimately being purchased by one overseas buyer. It is hoped that on completion of the training courses on the operations of the international cocoa trade which are recommended in this report, participants will have a much clearer understanding of the cocoa market, and this will enable exporters and other operators in the cocoa supply chain to be more competitive on pricing at all stages along the chain.

CONCLUSIONS

- Solomon Islands cocoa has a reputation for a high level of smoke contamination in the cocoa beans (up to 30% has been suggested). This is confirmed by publically available data (Cocoa Atlas – 2010 Edition).
- Therefore, in the great majority of cases, using cocoa from Solomon Islands for making chocolate is presently too high a risk for the major global chocolate companies and for most speciality chocolate makers. Not surprisingly, almost all cocoa exported from Solomon Islands is used in the cocoa processing industry in Malaysia, Singapore and increasingly Indonesia, as confirmed by the export data. Cocoa processors have the opportunity to subject the beans to further processing at additional cost to remove these taints and thereby suffer a loss of fat value of some 2–3%. They are able to compensate for these costs by buying cocoa beans from Solomon Islands at a lower price. By this means, they produce a saleable product known as de-odourised cocoa butter.
- Analysis of CEMA data suggests that this discount can be substantial when compared to what might be considered an expected market price for cocoa from Solomon Islands. This transfers to low price offers to the cocoa farmers in the country.
- Cocos are assessed by buyers after considering a long list of characteristics collated through their historic experiences with cocoas from that specific origin. High on that list, in the case of cocoa from Solomon Islands, would be their experiences of high levels of smoke and other taints. As these buyers have an expectation of the presence of smoke taints, their first offer price probably takes into account their expectations of additional processing costs and added process losses.
- There is a genuine shortage of fermented cocoas in South-East Asia and Australasia. This market is currently being satisfied by importing beans from West Africa – at additional cost in transport charges etc. This situation of a regional shortage of fermented cocoas offers a genuine market opportunity to the cocoa exporters of Solomon Islands.
- Solomon Islands cocoa has a comparative advantage over many other cocoas grown in the region in that there is an existing tradition of fermenting the beans; the country really does have an opportunity to sell direct into chocolate manufacturers and to do so at lower differentials than have been traditionally achieved. Some success in doing this is observed on a very small scale by some exporters.
- The percentage of fat in the nib of cocoa beans is a very important economic measure to the cocoa grinder. Such data are obtained through a laboratory procedure that duplicates the start of a cocoa bean processing operation. Unfortunately such information is usually kept confidential inside the processing companies. It is to be hoped that the new CEMA laboratory being supported by PHAMA under activity SOLS06 will be able to build a database of reliable data on the fat content and other quality parameters of Solomon Islands cocoas. These data will be in the public domain and will be very helpful in providing facts for future price negotiations undertaken by the cocoa exporters with their buyers.
- A number of activities are recommended in the body of this report. These are a collective of actions that should all be completed to give the cocoa farmers of Solomon Islands better price opportunities and greater encouragement to change their mindset and cultivate their cocoa farms rather than just harvest the pods that are not already lost to pests and diseases. In summary, these actions cover the following broad topics:
 - Training on cocoa market operations

- Informed examination by CEMA of details in cocoa export contracts
- Review of cocoa drying technologies presently in use to reduce smoke taint and improve thermal efficiency
- Investigation into assisted sun-drying facilities for future use
- Work to facilitate trade credit for operations of established cocoa exporters
- Efforts to improve the care of cocoa along the internal supply chain.
- The proposed recommendations complement work already underway through PHAMA, including:
 - Improved laboratory facilities in CEMA (PHAMA activity SOLS06)
 - Liaison with cocoa authorities in Papua New Guinea for improved planting materials (and other cooperation) via support to bilateral negotiation processes
 - Development of cocoa quality extension materials and examination of quality assurance systems for CEMA (PHAMA activities SOLS21 and SOLS20).
- The completion of all the current PHAMA actions and those recommended in this report should substantially change the cocoa landscape in Solomon Islands for the better. In time, full implementation could result in reduced differentials to the London market price, better prices to cocoa farmers and, ultimately, improved interest in the cocoa farms in the country.
- It is reported that global demand for cocoa will continue to outstrip global cocoa supply over the years to 2020 and so it may be that cocoa prices on the London market will move at, or around, the current levels for some years; combined with the above activities, this should motivate the cocoa producers in Solomon Islands to care for their cocoa crop more attentively.
- The threat of the damaging species of CPB spreading from Papua New Guinea to Solomon Islands is one that should be taken seriously. Urgent discussions should be held between the governments to study the opportunity for importation (via quarantine) of cocoa material from Papua New Guinea that is reportedly tolerant to CPB attack.

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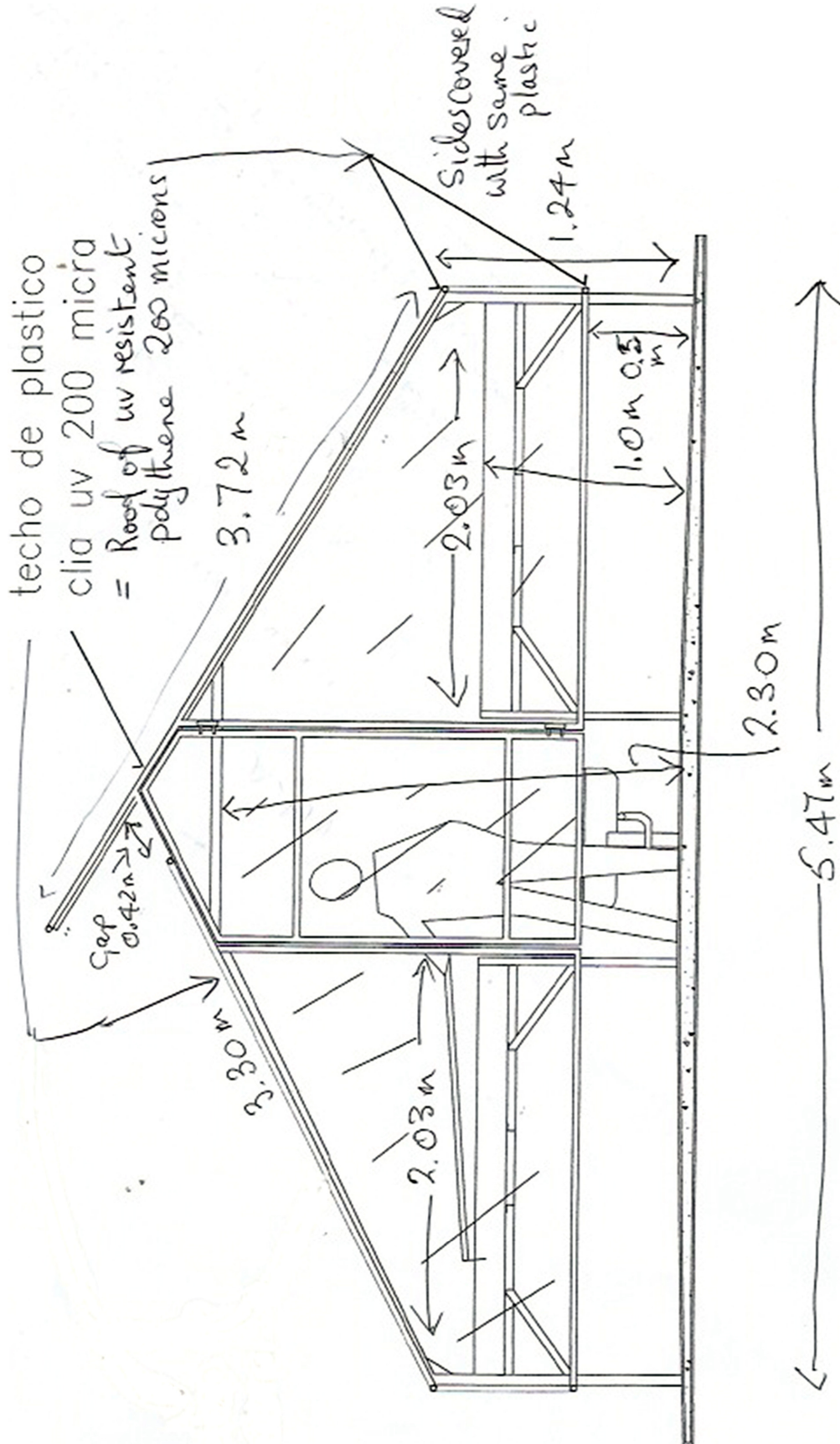
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URS Australia Pty Ltd
Level 27, 91 King William St
Adelaide, SA 5000
Australia

T: +61 8 8366 1000
F: +61 8 8366 1001