



Summary Report

Uganda Herbs, Spices and Essential and Fixed Cosmetic Oils

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Summary of the Findings

There are good opportunities for cultivated crops suitable for the high value market sector of herbs, spices and essential and fixed cosmetic oils. Wild harvest products with commercial value also exist in this sector. It is necessary though, to first carefully consider market size and price, opportunity costs and net returns. For wild harvest materials realistic and reliable methods to maintain sustainable harvesting standards should be investigated. It is also vital to assess if the exporters can achieve and maintain the quality and quantity required by the importing countries and meet those specific to the particular buyer. Further information is now required of new and existing EPOPA partner companies who are interested in taking this route and who can provide a detailed assessment in context with their exact operations and conditions.

Essential Oils - Flavourings and fragrances.

- It appears that distillation equipment does not yet exist in the target areas. However one or two EPOPA partner companies do possess equipment elsewhere in Uganda (Buiga and ESCO).
- There are organised small-scale producer groups in the target areas, which may produce through out-grower schemes or as commercial producer groups with central handling facilities.
- Satnet and similar NGO's could be useful partners in the development of out-grower schemes where commercial opportunities exist, i.e. wild harvest ocimum and tagette.
- The existing production of essential oil at Buiga requires technical support and further investment to improve viability of the operation.

Herbs and Spices.

- Products that grow well in the target regions such as ginger, cardamom and black pepper have sizable traditional export markets, and are suitable for out-growers as well as more intensive commercial farm production.
- As there are well organised community based women groups in the target regions, and some have the support of Satnet and other local NGOs, it is possible to consider rural processing / value addition of basic products.

Herbal supplements/nutraceuticals.

- There are several suitable crops for organic export enterprises, if organic certification and, in the case of wild harvest, sustainability standards can be met. Non-indigenous crops could be included, such as borage, Echinacea, Umbellifer sps.
- *Prunus africanus* is an indigenous product with good export opportunities, although it exists in diminishing quantities in the wild and it is listed as endangered. Only material from cultivated plantations should be exported.
- Loofah, indigenous and abundant, is ideal for small-scale production when combined with other commercial crops.
- African Potato has achieved western market acceptance. Independent producers are already trailing it in Fort Portal and Bundibugyo. Although there is little commercial knowledge about this crop it is a straightforward crop to grow and process, and could therefore be an ideal out-growers crop.

Fixed (Pressed) Oils - Cosmetic and body-care.

- Borage holds strong potential if GLA thresholds can be achieved.
- Evening Primrose grows wild and could be readily commercialised (using correct seed), but the recent entry of China into the organic EPR oil market has suppressed prices.
- Moringa could be ideal for small-grower production and already a significant production exists in parts of the targeted region. There is a realistic export opportunity for companies to develop out-grower schemes and cold pressing facilities for this product.
- Red palm kernel oil is harvested in the same certified organic Bundibugyo area, but due to the low quantities available and the lower compensative advantage it may not be worth considering for cold pressed oil extraction.
- *Centella asiatica* grows abundantly in the region and can be found on existing certified lands.
- Echinacea is a robust crop suited to the region's growing conditions. It is relatively easy to grow and processing (re hygiene and quality) is low-risk so it is a suitable crop for smallholder production.

Summary of the Evaluation

An extensive evaluation was made of the indigenous plant products in the target areas and those traditionally used, prior to the mission and during the mission. An overall assessment of the cultivated crop that could be feasibly produced at a viable commercial level has also been made. Opportunities for this product sector are relatively high due to the significant range and generally excellent growing conditions. Products in this sector that complement the existing operations of the current EPOPA partners, particularly those already covered by organic certification, are the most feasible for development. Crops that are marketed as consumable food products have higher quality and hygiene requirements. This factor must be carefully considered when involving small-scale production.

Top priority products:

- In the low altitude areas Moringa is already widely grown in the target region by certified producers of the EPOPA partner RECO as a complementary crop to vanilla production.
- Pawpaw seed oil could be extracted from the existing papain operation owned by ESCO, if the quantity/quality of the seed is confirmed as both feasible and viable after the latex is taken.
- Wild harvest species, such as ocimum suave and tagette, are prevalent in the selected areas and identified in the western market as indigenous essential oils. Organic supply is requested by buyers such as Adrian and Aveda. These wild harvest materials could be easily mobilised through out-grower schemes.
- Coriander, anise and fennel are simple to cultivate, harvest and process organically. It is a versatile crop as the seed can be sold as culinary and essential oil. Production trials will first be required.
- Clary sage and Tarragon are likely to grow well in the medium to high altitude areas and are in particular demand in the market right now, due to the present deficit in world supply. Trials will be first required.
- Where adequate equipment does not exist, the companies will need to invest in commercial equipment.
- As diversification or complimentary crops to main commercial operations ginger, turmeric and black pepper could be considered. Loofah is in demand in the western market by buyers such as the Bodyshop as whole, semi-processed, or finished products (approx \$US0.80/loofah, white whole).

Lower priority products:

- Black pepper, cardamom and ginger have interrelated growing environments and can therefore be grown by the same farmers. However, as main enterprises they may not have sufficient competitive advantages

to achieve an attractive price as commercial or out-grower crop. Other EPOPA project areas, such as Tanga and Zanzibar in Tanzania may be more appropriate places to promote these crops.

- The international price and demand for Evening Primrose oil is dropping due to the competition from Eastern Europe & China, for conventional and organic supply.
- Production and extraction of higher value products with high demand, such as pectin, mandarin and bergamot, could be relatively easy due to the growing conditions in some parts of this region and relatively low cost processing. However, if there are no existing plantations in operation it will require high investments in planting material and start up costs. Significant returns can only be achieved after the first three years.
- Products such as valerian, turmeric, lemon grass and citronella are relatively easily grown crops for large-scale commercial farm level or small-scale producers. It will be necessary though to first assess the success in production and the competitive advantage of producing these crops in Uganda before promoting them.
- Lemongrass and citronella are still viable options if equipment is already in place on the farm for other essential oil crops, particularly if certified organic.
- *Centella asiatica*: competitive advantage is unlikely.
- *Echinacea angustifolia* / *purpurea*: price has dropped significantly over the past 5 years but it still can provide a lucrative return for small-scale farmers and out-growers.

Summary of the conclusions

This study makes the first step towards the commercial development of herbs, spices, essential oils, cold pressed oils and nutraceuticals within the EPOPA program. There are a few wild harvest opportunities, such as *Prunus africanus* (which should be commercialized as plantation and not wild harvest), *ocimum*, loofah and possibly tagette. The next step is to identify interested and suitable producers, and then make careful evaluations of appropriate crop selection for the interested companies. An initial feasibility study & business plan should then be made, with trials and sample analysis.

- Essential oil crops are good organic prospects for small grower production as the hygiene and quality aspect are very minimal at the production end.
- It is vital that the correct methods are used in processing and the genotypes required by the market are acquired. Thus it is important that the companies conduct proper trials and first receive analysis results before embarking on commercial scale production.
- It is worth trialing new crops where potential market openings and competitive advantage exist, i.e. *Adrian*, a large and renowned flavouring

and fragrance company in France, has requested samples of clary sage and tarragon, which is now in demand due to the world shortage. Also coriander is currently in high demand.

- The first opportunities that can be realised with little investment are the existing cultivated and indigenous materials already covered by organic certification and managed by companies included in the EPOPA program. These include Moringa and pawpaw (the latter can be assured after small investigation, as indicated). The main investment will be suitable commercial cold pressing equipment i.e a Komet press.
- Wild harvest species, such as ocimum suave and tagette, are prevalent and identified in the western market. Buyers such as Adrian and Aveda request organic supply. Investment into steam distillation should only be made after a full study and business plan can provide proof of feasibility and viability.
- There are a few organised community based producer groups in the target regions, and some have the support of Satnet and other local NGOs. It is possible to consider rural processing and value adding of simple non-consumable products. Products such as Loofah could be an ideal opportunity as it grows abundantly within the region and buyers can be found for whole, semi-processed, or finished products, providing the quality standards are met.
- African Potato should be tested by the market buyers for its chemical components from trials in low, medium and high altitude conditions before commercial production is considered.
- Ginger, cardamom and black pepper would be less appropriate for EPOPA Uganda at this stage, unless these crops already exist in commercial quantities and could complement existing commercial operations.
- If companies have existing essential oil operations or already have distillation equipment, the development of commercial coriander, anise and fennel would be suitable. Clary sage and tarragon would also be appropriate, due to the present market demand. For new essential oil operations, the company would need to consider a range of organic certified oils to ensure viability of the whole operation. Organic markets exist for small high priced shipments to large-scale orders (where less importance is attached to the organic status, reflected by a lower premium). The seed of the umbellifer crops can be sold as culinary and essential oil. Processing of pectigrain mandarin and bergamot oils is only feasible if plantations already exist for commercial fruit production. Lemongrass & citronella oil production is also viable if already existing in commercial quantities for herbal teas or as companion crops for coffee production etc. (i.e. Malawi).
- Abundantly available but less attractive in the marketplace is Evening Primrose, *Centella asiatica*. For valerian, turmeric, lemon grass and

citronella, it will be necessary to first assess the competitive advantage before promoting these relatively easily grown crop for large-scale commercial farm level or small-scale producers.

Summary of the recommendations

Obtaining and sending samples of the already viable quantities of certified exportable crops, Moringa and possibility pawpaw seed oil, to the market are the first priorities to focus on. Small-scale extraction using a screw press, as a cold press process, can provide good replicate samples. Trial distillations of ocimum and tagette can be made using a domestic apparatus, which will be adequate at this stage. Send all samples to two or three potential buyers for analysis to achieve a price guide and quality judgments. The next step is realignment of the business plans according to market feed back. Small representative production trials of the recommended commercial crops should be started straight away. Organic vanilla should continue to expand; this is not covered in this report

Products and Producers:

- Detailed discussion with existing EPOPA partners where viable commercial production may exist of the mentioned products. RECO, Outspan , ESCO and Buiga would be first options.
- Evaluate the feasibility of these new complimentary enterprises operating through the existing out-grower schemes in the case of ESCO and RECO, and in developing wild harvest operations through out-grower schemes by linking Buiga Estate with Satnet.
- Assess existing equipment (RECO and ESCO), make recommendations for appropriate equipment or re-designs (as for Buiga Estate's essential oil operation) where necessary.
- Make representative sample extractions of the cold pressed Moringa and pawpaw seed oil, using appropriate equipment (potentially via the equipment invested in by AgroEco Uganda). Send to potential buyers like the Bodyshop, Statfold, Aveda and OHTC.
- Work with Buiga to make trial distillations of ocimum and tagette and send samples to potential buyers like Avenda, Adrian, OHTC.
- Assess the realistic possibility of the well structured producer associations, located in the target areas, gaining organic certification and undertaking production of commercial viable crops.
- Review the possibility of Satnet providing management support to out-grower schemes to oversee the development and maintenance of internal control systems, and providing training on the technologies required for the production and processing of the specific crops. An MoU may be required between the companies and Satnet to secure the basis for this mode of practice.
- Gain assurance that EPOPA companies, such as Buiga, can adequately manage out-growers schemes.

- Compile detailed feasibility studies and business plans with Buiga Estates, RECO, Ouspan, ESCO and other suitable EPOPA companies.
- Obtain sources of new clean planting material of bourbon geraniums for Buiga Estate to reinvest in correct, clean stock.

Technical input:

- Advisory input to guide correct production and processing will be required once crops and producers have been selected.
- An organic manual should be written as a general guide for organic certified production of products in this category.
- Production of handbooks for individual crops.
- Specific technical advice could be organised for Buiga Estate, i.e. Fredrick Demarne, world expert on geranium essential oil production and processing.

Production Trials:

- To fully assess the viability of the other potential export products in these defined product categories adequate trials should be conducted. This is particularly important for the products that are either lesser known in the European/US marketplace, or where it is necessary to establish a price and level of demand. Proposed trial crops: borage, Prunus africanus, Medical rhubarb, wild yam, Elecampane, Digitalis, black cohosh, Datura, Jatropha, orris & green tea, and essential oils: coriander, tarragon, clary sage, ocimum and tagette.
- Once the production is sufficient to process a sample to the size required for effective analysis, it is imperative that it is sent to the potential buyer. (NOTE: A sample can also be sent to a research institution but this cannot replace the need for market analysis).