

SPECIAL PRODUCTS AND AREAS

***** Abridged Version*****

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TABLE OF CONTENTS

Executive Summary

1. Background	1
2. Markets Opportunities for Georgian Medicinal Plants	1
3. Current Situation:	4
3.1 Export markets	4
3.2 Domestic market	5
4 Priority Species	6
4.1 Export market	6
Essential oils.....	6
Berries	6
Medicinal plants	6
Flavoured teas and herbal teas (tisanes)	6
4.2 Domestic market	7
5. Next Steps	7
5.1 Short term goals (1-2 years)	7
Wild harvesting	7
Development of essential oil production in Georgia:.....	7
Medicinal plants	8
Flavoured teas and herbal teas (tisanes).....	8
Berries.....	8
5.2 Medium to long-term goals (2-4 years)	8
Cultivation methods	8
Marketing support for certified organic products	8
Harvesting wild species	8
Appendices	9
Appendix 1 Medical Plants in Trade for Georgia	9
Appendix 2 Interviewed Companies/Organizations/Individuals	12
Appendix 3 Locally Grown Natural Dyestuffs.	16
Appendix 4 Special Products Characteristic of the Regions of Georgia.	17
Appendix 5 List of Georgian Producers, Processors and Traders of Medical Plants	18

Executive Summary

There is ample scope for Georgian entrepreneurs to expand their collection and production of wild and cultivated medicinals and botanicals for regional and international markets. The US and EU markets for these special products are each in the area of four billion dollars a year. The EU, alone, imports 250 to 300 thousand tons of product per year. Although there have been recent declines in both the EU and US markets, there is room for selected and carefully marketed Georgian products in those markets. Access to those markets will require a level of product documentation and handling that is currently beyond the reach of Georgian entrepreneurs. Exceptions may exist in the area of tea extracts and other specialty food products.

In the near term, those markets whose processing and marketing requirements are within the grasp of Georgian entrepreneurs are primarily in the FSU, Middle East, south Caucasus and eastern Europe. Section 4 of this report recommends four categories of products for further market research and development.

This report identifies the following issues that must be addressed if the potential to generate off-road income from special products is to be fulfilled.

- managed cultivation and processing must replace wild collection where possible
- improvement of post-harvest systems is required if Georgian products are to break into higher value markets and replace products currently imported to Georgia
- demand driven industry quality standards and certification must be codified by the Government of Georgia and implemented by Georgian entrepreneurs
- delivery of full traceability of raw material from origin is required for wild harvested material
- organic certification and implementation of GACP (Good Agricultural Collection Practice) are required for cultivated material
- GAP (Good Agricultural Practice) and GMP (Good Manufacturing Practice) are required for extracts and other products subject to secondary processing

This report concludes that the optimal solution to developing and keeping the wild special product business will necessitate specialized training to individuals involved in this business. This must include the training of producers in the sustainable cultivation of medicinals, including instruction on how to collect seed for replanting. Potential partners in environmentally responsible collection methods are identified.

Appendix I is a list of medicinal plants in trade in Georgia.

1. Background

The retail value of the botanicals/herb market in the United States, is estimated to be US \$4.1 billion. The estimated size of the European herb market is US \$ 3.5-4.0 billion. Although Western Europe itself has over 60,000 hectares planted with medicinal herbs, more than 75 per cent of industry supplies come from outside the region, with imports running at 250,000 to 300,000 tones per year. China, with exports of over 120,000 tons, and India, with some 32,000 tons of exports, dominate supply to the international market.

The US herb market has declined significantly in the last few years. This has affected the European market for herbal products, especially phytomedicinal products, although not in the same way. The European market did not experience the large peak in sales that accompanied the US move of herbal supplements from health and food stores into the mass market in 1997-98, and hence did not suffer the declines in that market which occurred in the US in 1999-2001. However, companies in Europe are among the major suppliers of North American manufacturers. Thus, a significant part of the European herb business has also declined. The same is true of Asian suppliers who deal with either European or North American manufacturers. In addition to the decline in sales to American companies, Asian herb sales suffered due to the overall problems in the Asian economy in recent years. Another complicating factor for the European phytomedicine market involves the loss of public health funding for certain European phytomedicines. Many phytomedicines were once covered by national health plans, but some of these were dropped from coverage due to government budget cuts. European herbal products tend to be either phytomedicines or herbal infusions, both of which have declined in sales.

This year, the herb market has shown signs of slow recovery in North America, the EU and Asia. This recovery is slower than it might be due to a backlog of existing inventories that must be sold before new orders can be placed. Also, as sales are still unpredictable and prices volatile, companies are not able to make reliable projections of intended purchases, relying instead on a "just in time" purchasing policy.

The current situation is that in the US, the market for supplements made from standardized extracts has declined, but sales of powdered herbs in capsules and herbal infusions (herbal teas), remain strong. Sales of herbs as 'functional food' ingredients are growing, but this growth is slow partly because approval is difficult. Nutrient-enriched beverages such as 'Red Bull' have also impacted herb sales, as they are marketed for some of the same conditions as herbal supplements.

2. Markets Opportunities for Georgian Medicinal Plants

In general, there are few problems in sourcing medicinal plants, although there is some concern about the long-term supply of some wild harvested botanicals currently exported from China. The European and US markets are both highly competitive, characterized by strict regulatory and quality control standards, volatile market conditions and an over-abundance of suppliers. Many products are currently over-supplied; thus growth in the US, especially, has declined in recent years. High quality raw materials appear to have

the best potential, and in some cases there may be demand for extracts and concentrates. On the other hand, all of these categories are subject to strict regulations and high competition from other supplier countries. Further, potential buyers of Georgian products are likely to raise concerns over pesticide and or heavy metal contamination. For Georgian companies wishing to sell either bulk herbs or semi-processed herbal products to the EU or US markets, the key factors that will influence their successful penetration are:

- transparent supply chain - ability to track chain of custody from point of origin to export site
- supply of organic or pesticide free products
- supply of raw materials to European/US GAP (Good Agricultural Practice)
- supply of products to European/US GMP (Good Manufacturing Practice)
- educated and scientifically minded management
- access to Quality Control and Quality Assurance Laboratories
- supplying a range rather than single products
- consistency of supply year on year
- price stability

Unlike bulk foodstuffs, where price is always a major factor determining where importers source their raw materials, price is seldom the paramount consideration in the herbal sector. Many of the factors listed above are of equal importance. Although one Georgian natural products packaging company is close to achieving GMP certification, there are no other companies in this position and it will be some time before GMP and GAP become properly established in Georgia.

Although there are prospects for a number of carefully selected Georgian products in the EU and US markets, the more immediate opportunities are in the domestic and regional markets, especially business with Eastern Europe, Russia, China, Korea, Japan and the Middle East. These markets have fewer restrictions and competitors, and offer greater immediate growth opportunities than the US and European markets. Also, the FSU countries currently have no requirement for GMP. These markets have their own problems though. China, for example, is one of the major raw materials suppliers to the global natural products industry. It is extremely difficult to compete with China or India on the basis of price alone. For example, Chinese labor rates are so low that US companies cannot afford to mill their own herbs as cheaply as they can buy already powdered ingredients from China.

Certified organic products may be the main opportunity for Georgian suppliers for two reasons:

- China is not a reliable source of certified organic raw materials or extracts; and,
- Georgian producers probably cannot compete with China and India on conventional products.

Some would argue that the organic products market is still small and specialized in the US and Europe, and that the Asian market for organics is even less well developed. However, there is still unmet demand for organic products and overall demand is likely to continue to increase. Many manufacturers are interested in certified organic material, but

it is uncertain if they will pay a premium price for it. However, in terms of competing with other major suppliers, high quality certified organic products appear to represent the best opportunity for Georgian producers. For these reasons, producers would be best advised to carefully target specific high value, low volume commodities by offering well packaged, high quality products that ideally would be certified organic and therefore traceable to the point of origin.

Some of the more promising areas of market opportunity include:

- **Certified organic medicinal raw materials and possibly high quality extracts for the US and EU markets:** Many FSU countries harvest botanicals principally from the wild but few have so far capitalized on the demand for certified organic wild harvested products. For example, small but promising markets appear to exist for organic hawthorn (*Crataegus laevigata*) berries, leaves and flowers, and there are significant opportunities for organic licorice (*Glycyrrhiza glabra* and *G. inflata*) products including extracts, whole or powdered material and specialty cuts for teabags etc. Extract prices vary widely and, in part, reflect the concentrations of desirable components in the extract. As a result, the price must be determined for each specific extract by negotiation with the buyer. This means that thorough market research must be done before embarking on the production of extracts to ensure that that production is likely to be sufficiently profitable.
- **Organic raw foods for the US and Europe:** Concentrates and wild mushrooms have a steady demand especially in Europe.
- **Dietary supplements, food products (prepared and raw) such as pine nuts and selected medicinal raw materials for the Russia and Asian markets:** Regulations are less strict in these markets and demand is increasing. Bilberry (*Vaccinium myrtillus*) extract supplements for example are increasing in popularity in the US and rose in ranking from the 12th most popular supplement to the 7th between 2000 and 2001.
- **Essential oils:** The international essential oil market is very competitive except in special niche areas such as certified organic oils, chemotypes (chemical variants) and oils for the aromatherapy market. There are a number of niche areas in the essential oils industry where competition is less extreme, thus presenting an opportunity for re-entry by Georgian producers.
 - The aromatherapy market (which also places a high premium on certified organic oils). The best opportunities for new entrants to the essential oils market are in small volumes of high quality aromatherapy grade oils, the demand for which is rapidly expanding in the EU and particularly the US markets. Production for the aromatherapy market is likely to be attractive to producers who can distil small volumes of high quality, well-packaged oils. The equipment required for small-scale production is relatively cheap to buy and operate, and the cost inefficiencies of small-scale production are usually offset by the higher prices that are likely to be paid by the buyers in this segment of the essential oils market.
 - Essential oils for flavored teas and tisanes (herbal teas). Georgian tea producers already produce an Earl Grey tea made with bergamot oil from the citrus industry. They could perhaps expand the range to include other essential oil flavorings, tea mixtures, *e.g.*, green tea with rosehip and so on, or a range of herbal teas such as rhododendron or dewberry (*Rubus caesius*).

In general, the essential oils market is characterized by conservative attitudes, variable production volumes and prices, and a heavy dependence on dealer-brokers based in the major markets. New essential oil producers should carefully evaluate where they can have an impact in an already highly competitive market. The main problem that new entrants face is the establishment of buyer confidence. This depends not only upon demonstrated ability to produce high quality oils that meet market specifications, but also on the ability to guarantee production in suitable volumes and delivery of the required amounts on time to buyers.

- **Selected medicinal plants for the regional and international markets:** Due to the current oversupply of the US and EU markets, it is doubtful that new raw material suppliers should consider entering an already crowded market place. The only real opportunities are for high quality, sustainably produced, low priced raw medicinals. Roots are most likely to be of interest especially licorice, valerian and ginseng. For example the demand for valerian is strong. In 1998, valerian was the second most important herb sold in Europe (hawthorn was 9th). There is also a critical shortage of *Arnica* at the moment; the price for conventionally grown *Arnica* has risen nearly 50 per cent in one year.

At the regional level, WWF-Caucasus has carried out a detailed assessment of the medicinal plant market opportunities for Azerbaijan, Armenia and Georgia. The list of priority species that they have selected is likely to be of interest to these and other regional markets, particularly Russia and the Ukraine.

3. Current Situation

3.1 Export markets

During the Soviet era, the main export market for Georgian medicinal plants were the FSU countries, mainly Russia and the Ukraine. With the collapse of FSU's centrally managed economic system, there was a rapid reduction of medicinal plant production and processing in Georgia, followed by closure/decommissioning of most processing facilities after 1990.

Since 1990, the manufacturing infrastructure developed during the Soviet era has been almost totally destroyed. This includes the physical infrastructure (technology/equipment, cultivation, processing and storage facilities) as well as elements of the skills and knowledge base. Despite the loss of Georgia's previous markets and the closure of most of the larger producers, a small but growing number of new companies have re-entered the business. Those new companies that took over the old processing and manufacturing facilities after 1990, still rely on outdated and highly inefficient Soviet processing equipment (driers, distillation units, *etc.*). The costs of maintenance and running this equipment are significant constraints for these companies; very few have managed to purchase new processing equipment. As a result, the quality of many products is often poor.

The few Georgian firms that are exporting, mostly sell their products to the traditional markets in the FSU, especially Russia, Ukraine, and Belarus. Interviews were held with processing companies, apotheks, market traders, wholesalers, NGOs and government

ministries in order to examine the opportunities and constraints that exist in the sector. The development of the export sector is constrained by a wide range of factors, most important of which is the cost of registering products in each of the export countries. The registration fees vary according to country and approval time. For example, product registration takes three to six months in Russia and costs up to \$3,500 per product. If the period is reduced to one-and-a-half months (the minimum time period) the fee may increase to \$12,000 per product. The registration fee in the Ukraine and Belarus is \$1,500 per product. Sometimes the importer will pay registration fees, thus removing the obstacle to Georgian exporter.

Other factors that constrain the development of the export sector in Georgia include:

- limited capacity for expanding production volumes;
- primary processing rather than secondary processing;
- little production of added value products;
- no companies certified to operate to GMP standards and only one company likely to obtain certification in the next two years;
- poor packaging, in general, due to lack of equipment;
- lack of market contacts; and,
- the absence of advertising to promote customer awareness of Georgian products

Supply problems were reported for some species that are being exported. This reflects the sporadic nature of the export orders rather than limited resource availability. It is difficult to plan in advance and organize large enough collection teams. Further research is clearly needed on distribution and availability as well as sustainable harvesting levels and strategies.

3.2 Domestic market

More than 120 locally produced medicinals (see Appendix 1) are sold in the domestic market, where demand is reported to be steady or growing slowly. The slow growth is due a number of factors, including poor customer awareness due to lack of advertising, limited manufacturing capacity, and strong competition with western pharmaceutical drugs. Linked to this, the main operating constraint for almost all companies interviewed appears to be the lack of capital to pay collectors, register products and purchase processing equipment.

Distribution of medicinal, plant-based products is mostly very local, although three wholesale companies in Tbilisi distribute products nationwide through chains of apotheks. Some of the species – most notably Roman chamomile (*Chamaemelum nobile*) and valerian (*Valeriana officinalis*) – are imported even though they could easily be cultivated in Georgia. One producer commented that, although Roman chamomile is cheaper to import from Bulgaria or Russia, locally grown material is of higher quality and produces a higher yield of essential oil and valopatriates in extracts. The locally grown material is, therefore, actually cheaper to produce than the imported material despite the higher labor and other costs associated with production in Georgia. Although more difficult to cultivate, bearberry (*Arctostaphylos uva-ursi* (L.) Sprengle) is a high value species that might also be cultivated to replace imports from Russia.

There appear to be relatively few conservation problems for those species in high demand although one parasitic plant, *Helleborus caucasicus*, is in short supply and high demand. Given its unusual biology (dependence upon a host plant), the cultivation of this species to meet the increasing demand should be given a high priority.

4. Priority Species

4.1 Export market

A total of four different priority product categories are recommended for further market research and possible development. The species identified in each of these categories are:

Essential Oils:	Medicinal plants:
• Rose Oil (<i>Rosa x damascena</i>)	• Hawthorn (<i>Crataegus</i>)
• Bay Laurel Oil (<i>Laurus nobilis</i>)	• Licorice (<i>Glycyrrhiza</i>)
• Geranium Oil (<i>Pelargonium graveolens</i>)	• Arnica (<i>Arnica montana</i>)
Berries:	Herbal Teas:
• Bilberry (<i>Vaccinium myrtillus</i>)	• Dewberry leaf (<i>Rubus caesius</i>)
• Lingonberry (<i>Vaccinium vitis-idaea</i>)	• Ginseng (<i>Panax</i>)

Essential oils: A number of different essential oils were historically produced in Georgia (*Artemisia*, basil, bay (laurel), dill, *Eucalyptus*, fennel, jasmine, lavender and rose). Targeted market research on the essential oils market should be carried out to assess which oils are in the greatest demand, which of these can be grown in Georgia and which would be most profitable to produce. This initial assessment should be followed up with some experimentation using pilot distillation units in order to assess the chemical composition of the oils produced and their suitability for the target market. A critical factor in the development of these essential oils will be the credibility of the entrepreneurs involved and their ability to forge enduring relationships with buyers, as experience with the owners of limited quantities of Soviet legacy rose oil has demonstrated.

Berries: The EU and US markets for wild bilberry and lingonberry products are small and cultivated material will soon replace most wild harvested material. Also cranberry (the domestic cultivar of lingonberry) production is centered in the US. The Italian company that has a monopoly on the supply of processed bilberry is not currently looking for new sources of supply. The best opportunity for these products is in regional markets where the focus should be on juices, concentrates and standardized extracts.

Medicinal plants: As mentioned above, the market is currently oversupplied. With the exception of a few products (mostly roots and *Arnica*) for which the EU and US markets are currently experiencing supply/quality problems, the best opportunities lie in the regional markets where producers should be able to capitalize on Georgia's historical reputation as one of the major sources of wild harvested medicinal plants for the FSU.

Flavored teas and herbal teas (tisanes): The continued existence of a tea industry in Georgia provides a good opportunity for added-value production using existing equipment to manufacture herbal teas and flavoured black or green teas. Demand for

these products is growing but volumes are likely to be small; thus it will be important to build good relationships with potential buyers. Most locally owned tea companies in Georgia will need assistance with developing market links.

4.2 Domestic market

A total of four priority species have been identified for the domestic market. The first three species are currently imported (or are only being cultivated in Georgia on a very small scale), but could be cultivated in Georgia.

- Valerian (*Valeriana officinalis* L.)
- Chamomile (*Matricaria recutita* (L.) Rauschert)
- Bearberry (*Arctostaphylos uva-ursi* (L.) Sprengle)
- Hellebore (*Helleborus caucasicus*) (see comments in section 3.2)

5. Next Steps

5.1 Short Term Goals (1- 2 years)

Wild harvesting

- SAVE should consider adopting a policy of only providing market development support to businesses/individuals who can demonstrate that they are using sustainably harvested sources raw material, or who are willing and have the capacity to receive training in this area.
- Develop and run training workshops on sustainable harvesting, resource management, post harvest handling and quality management for harvesters and enterprises involved in medicinal plant collection from the wild.

Development of essential oil production in Georgia

The process of initiating new production involves a number of steps including the following:

- Interview essential oil companies, brokers, traders and other buyers to determine which oils are most in demand.
- Assessed this list and select only those essential oil species that can be grown in Georgia for further consideration.
- Produce a list of potential aromatherapy buyers and likely prices for each of the selected oils.
- Assess the production requirements (cultivation methods and inputs, equipment, training, *etc.*) and estimate the level of profitability for each oil, based on the likely market prices.
- Select a list of high priority oils based on demand and likely profitability.
- Initiate pilot-scale production and test marketing of the final product.
- Eliminate oils that prove too costly or difficult to produce, or for which production quality is not suitable.
- Develop a technology transfer/training program covering pilot-scale production methods.

- Produce a market development manual that includes international specifications for the selected oils.

Medicinal plants

- Gather information on product specifications used by different buyers for each of the selected priority products. Government and international standards may be more or less strict than those required by the buyers.

Flavoured teas and herbal teas (tisanes)

- Identify tea manufacturers with specific flavor needs to produce an up to date assessment of trends, opportunities, prices, *etc.*, in this sector.

Berries

- Identify major regional buyers for Billberry and Lingonberry (*e.g.*, Wimm Bill Dann in Russia), and then determine what specifications these buyers require.

5.2 Medium to long-term goals (2- 4 years)

Cultivation methods

- Assess the opportunities for SAVE to collaborate with WWF, Elkana, CUNA Georgica and CARE in the development of cultivation methods.
- Assist with the development of training programs to transfer cultivation and post-harvest handling technology to potential growers.

Marketing support for certified organic products

- WWF and Elkana are working on developing National standards for wild harvested and cultivated organic products. Their short-term aim is to harmonize these standards with international organic standards and then seek government approval within the next year. In the next two to three years they hope to be able to obtain IFOAM certification. It will take at least two years before the first Georgian producers can be certified under the government approved national standards and longer for IFOAM certification of organic production in Georgia. Support for the production of certified organic products should be a high priority for SAVE as this is where the best international market opportunities lie.

Harvesting wild species

- In collaboration with Elkana and CUNA Georgica, produce a policy report for the government on the management of wild harvested medicinal plant resources.
- Assess the opportunities for licensing harvesters in order to ensure sustainable supplies of wild harvested raw materials.

Appendices

Appendix 1: Medical Plants in Trade for Georgia

Latin Name	Common Name	Part of Plant	Wild/Cult
<i>Achillea millefolium</i> L.	Yarrow	Inflorescence	Wild
<i>Acorus calamus</i> L.	Sweet Flag	Root	Wild
<i>Aerva lanata</i> Juss.		Herb	Cult
<i>Agrimonia eupatoria</i> L.	Agrimony	Root	Wild
<i>Agropyron</i> sp.		Root	
<i>Alnus</i> sp.	Alder	Young catkins	Wild
<i>Aloe arborescens</i>	Aloe	Leaf	Cult
<i>Althaea officinalis</i> L.	Marsh Mallow		Wild
<i>Anethum graveolens</i> L.	Dill	Herb/Seeds	
<i>Arctium lappa</i> L.	Burdock	Root	Wild
<i>Arctostaphylos uva-ursi</i> (L.) Sprengle	Bearberry	Leaf?	Wild/Imported
<i>Artemisia absinthium</i> L.	Absinthe	Herb	Wild
<i>Artemisia vulgaris</i> L.	Mugwort	Herb	Wild
<i>Atropa belladonna</i>	Belladonna		Wild
<i>Berberis</i> sp.		Root	Wild
<i>Bergenia</i> sp.			Wild
<i>Betula alba</i>	White Birch	Leaf & Leaf Buds	Wild/Imported
<i>Bidens tripartitus</i> L.		Herb	Wild
<i>Calendula officinalis</i> L.	Calendula	Flower	Cult
<i>Capsella bursa pastoris</i> Medikus	Shepherd's purse	Herb	Wild
<i>Carum carvi</i> L.	Caraway	Seed	
<i>Cassia acutifolia</i>	Senna	Leaf	Imported
<i>Centaurea cyanus</i> L.	Cornflower	Flower	Wild
<i>Centaurea depressa</i>		Flower	Wild
<i>Centaureum umbellatum</i>		Herb	Wild
<i>Chamaemelum nobile</i> (L.) All.	Roman Chamomile	Herb	Cult/Imported
<i>Chelidonium majus</i> L.	Greater Celandine	Herb	Wild
<i>Cichorium endivia</i> L.	Endive		
<i>Cichorium intybus</i> L.	Chicory	Herb/Root	Wild
<i>Convallaria majalis</i> L.	Lily of the Valley	Leaf/flower	Wild
<i>Corylus</i> sp.	Hazel	Leaf	Wild
<i>Crataegus pentagyna</i> Waldst. & Kit.	Hawthorn	Fruit	Wild
<i>Crataegus sanguinea</i>	Hawthorn	Fruit/Flower	Wild
<i>Cyclamen</i> sp.		Bulb	Wild
<i>Cydonia oblonga</i> Miller	Quince	Leaf	Cult
<i>Datura</i> sp.			Wild
<i>Daucus carota</i> L.	Carrot		
<i>Echinacea</i> sp.	Cone flower		

<i>Equisetum arvense</i> L.	Horsetail	Herb	Wild
<i>Eryngium</i> sp.			
<i>Eucalyptus viminalis</i>	Gum	Leaf	Wild/Cult
<i>Foeniculum vulgare</i> Miller	Fennel	Seed	
<i>Fragaria vesca</i> L.	Strawberry		
<i>Galega orientalis</i> Lam.		Herb	Wild
<i>Gentiana</i>	Gentian	Bulb	Cult/wild
<i>Glaucium corniculatum</i>			Wild
<i>Glycyrrhiza glabra</i> L.	Liquorice	Root	Wild
<i>Glycyrrhiza uralensis</i>	Liquorice		Imported
<i>Gnaphalium</i> sp.	Cudweed		Imported
<i>Helenium inufolium</i>			Wild
<i>Heleborus caucasicus</i>		Herb	Wild
<i>Helichrysum avenarii</i>	Everlasting	Inflorescence	Wild
<i>Helichrysum plinthotalix</i>	Everlasting	Inflorescence	Wild
<i>Hippocastanum rhamnoides</i>		Fruit	Wild
<i>Hippophae (rhamnoides</i> L.)		Fruit/Oil	Wild
<i>Humulus lupulus</i> L.	Hop	Inflorescence	
<i>Hyoscyamus niger</i> L.	Henbane	Leaf	Wild
<i>Hypericum perforatum</i> L.	St. Johns Wort	Herb	Wild
<i>Inula helenium</i> L.	Elecampane	Root	
<i>Juniper</i> sp.	Juniper	Fruit?	Wild
<i>Laminaria</i> sp.	(a Seaweed)	Fronde	Wild
<i>Lamium album</i> L.	White Deadnettle	Herb	Wild
<i>Leonurus quinquelobatus</i>	Motherwort	Herb/Inflor.	Wild
<i>Levisticum</i> sp.	Lovage	Fruit/Root	
<i>Linaria</i> sp.	Toadflax		Wild
<i>Linum usitatissimum</i> L.	Flax	Seed	Cult
<i>Malva</i> sp.	Mallow	Herb	Wild
<i>Matricaria recutita</i> (L.) Rauschert	Chamomile	Flower	Wild
<i>Melilotus officinalis</i> (L.) Medikus	Melilot	Herb/Stem	Wild
<i>Melissa officinalis</i> L.	Lemon balm	Herb	Cult
<i>Mentha x piperita</i> L.	Peppermint	Herb	Cult
<i>Ononis</i> sp.	Restharrow	Root	Wild
<i>Onopordum</i> sp.			Wild
<i>Origanum vulgare</i> L.	Oregano	Herb	Wild
<i>Orthosiphon stamineus</i>		Herb	Cult
<i>Paliurus spina-christi</i> Miller	Christ's Thorn	Fruit	Wild
<i>Pimpinella anisum</i> L.	Anise		
<i>Pinus</i> sp.	Pine		Wild
<i>Plantago major</i> L.	Plantain	Leaves	Wild
<i>Polygonum aviculare</i> L.	Knotweed	Herb	Wild
<i>Polygonum hydropiper</i>	Water pepper	Herb	Wild
<i>Polygonum persicaria</i>	Bistort	Herb	Wild
<i>Potentilla reptans</i> L.	Cinquefoil	Herb	Wild
<i>Prunus</i> sp. (=Amygdalus) *Note: walnut = <i>Juglans</i>	Walnut	Leaf	Cult
<i>Quercus iberica</i>	Oak	Bark	Wild

<i>Quercus rubus</i>	Oak	Bark	Wild
<i>Rhamnus cathartica</i> L.	Buckthorn	Fruit	
<i>Rhamnus emeretica</i>		Bark	Wild
<i>Rhamnus frangula</i> L. (=Frangula)	Alder buckthorn	Bark	Wild
<i>Rhododendron caucasicum</i>	Rhododendron	Leaf	Wild
<i>Rhododendron tomentosum</i> Harmaja (=Ledum palustre)	Rhododendron	Leaves	Wild
<i>Ribes nigrum</i> L.	Blackcurrant	Leaf	Wild
<i>Rosa canina</i> L.	Rose Hip	Fruit, seed oil, flower, root.	Wild
<i>Rosemarinus officinalis</i> L.	Rosemary	Herb	
<i>Rubia tinctorum</i> L.	Madder	Root	Wild
<i>Rubus caesius</i> L.	Dewberry	Leaf	Wild
<i>Rubus idaeus</i> L.	Raspberry	Flower	Wild
<i>Salix</i> sp.	Willow	Bark	Wild
<i>Salvia officinalis</i> L.	Sage	Herb	Wild/Cult
<i>Sambucus nigra</i>	Elderberry	Flowers	Wild
<i>Sanguisorba</i>	Burnet	Root	Wild
<i>Solanum nigrum</i> L.	Black nightshade		Wild
<i>Sorbus aucuparia</i> L.	Rowan	Fruits	Wild
<i>Stachys</i> sp. (=Betonica)	Betony	Herb	Wild
<i>Symphytum</i> sp.	Comfrey	Leaves	Wild
<i>Tanacetum</i> sp.		Flowers	
<i>Taraxacum officinale</i> Weber ex Wigg.	Dandelion	Root	Wild
<i>Thymus serpyllum</i>	Thyme	Herb	
<i>Tilia cordata</i> Miller	Lime	Flower	Wild/Cult
<i>Trifolium</i> sp.		Herb	Wild
<i>Tussilago farfara</i> L.	Coltsfoot	Leaf	Wild
<i>Urtica dioica</i> L.	Stinging Nettle	Herb	Wild
<i>Vaccinium myrtillus</i> L.	Bilberry	Leaf/Fruit	Wild
<i>Vaccinium vitis-idaea</i> L.	Cowberry	Fruit	Imported
<i>Valeriana officinalis</i> L.	Valerian	Root	Cult/Imported
<i>Verbascum densiflorum</i>	Mullein	Inflorescence	Wild
<i>Viburnum opulus</i> L.	Guelder Rose	Fruit	Wild
<i>Viola tricolor</i> L.	Heart's-ease	Herb	Wild
<i>Viscum album</i> L.	Mistletoe	Leaf	Wild
<i>Zea mays</i> L.	Maize	Styles	Imported

Appendix 2: Interviewed Companies/Organizations/Individuals

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Appendix 3: Locally Grown Natural Dyestuffs.

Historically there has never been any significant production of natural dyes in Georgia since the end of 19th century. Such plants have never been cultivated and exported. Only specialist users harvested dye plants in the wild. Presently, the number of such people is significantly reduced.

The use of chemical dyes has replaced the use of natural dyes based on: quality, rich/multicolored palette, brighter colors, ready-to-use, inexpensive, and widely available. However, natural dyes (despite the fact that colors are pale and palette are not as rich) are more valuable in terms of natural origin and quality.

In order to collect current information concerning the use of natural dyes, the SPT visited the managers of several art shops in the city and secured information concerning the number of individual masters bringing in the hand made carpets, rugs, silk and woolen scarves that are applying only natural dyes.

The following locally grown plants are used as natural dyes in Georgia.

1. Gigilo,- *Centaurea cyanus*-Bachelorbuttons/cornflower. Contains blue dye that can dye wool and fibrous texture.
2. Veluri - *Papaver rhoeas* - Field poppy/corn poppy. Flower pedals. While mixed with Gigilo - *Centaurea cyanus* - Bachelor's buttons/Cornflower. One can receive pleasant violet color. (this is different species of poppy, that the one that is used for narcotics)
3. Tukhti - *Althaea officinalis* - Marsh mallow. The root of this plant is used in Medicine. The flower contains a pigment that can dye the wool. Thus this plant is used for different: dyeing and medicinal purposes.
4. Suro - *Hedera helix* – Ivy. Young slips can be used to dye green and brown colors.
5. Endro - *Rubia tinctorum* – Madder. Roots are used as red dye.
6. Qristesikhla - *Chelidonium majus* - Greater Celandine. The part above the earth is used in medicine; Roots are used as yellow dye.
7. Broceuli - *Punica granatum* – Pomegranate. Seeds contain gray dye.
8. Trimli - *Cotinus coggygria* (*Rhus continues*) *Medicago hemicycla* *Grossh.* - Smoke tree or Smoke bush. The stem contains yellow dye.
9. Cackhvi – *Tilia cordata* – Lime. Peels contain light brown dye.
10. Tavshava - *Origanum vulgare* – Oregano. This contains a dark brown/black dye.
11. Viristerfa – *Tussilago farfara* - Colts foot. This grass contains light brown dye.
12. Chinchari – *Urtica dioica* – Nettles. This plant contains brown dye.
13. Nargizi - *Narcissus* – Narcissus. Contains yellow dye.
14. Chai – *Thea* – Tea. Contains light brown and yellow dyes.
15. Krazana – *Hypericum perforatum* - Common St. John's Wort. This grass contains light brown dye.
16. Iasamani – *Syringa vulgaris* – Lilac. Leafs contain light brown dye.

These species are used as dye plants throughout the Caucasus region.

Appendix 4: Special Products Characteristic of the Regions of Georgia.

Autonomous republic of Ajara – rapanas, Stevia, medicinals, bamboo;

- 1) **Guria Region** (Ozurgeti, Chokhatauri, Lanchkhuti): medicinals, wild chestnuts;
- 2) **Imereti Region** (Kutaisi, Tkibuli, Tskaltubo, Chiatura, Vani, Bagdati, Zestaphoni, Terjola, Samtredia, Sachkhere, Kharagauli, Khoni): herbs, medicinals, mushrooms;
- 3) **Kakheti Region** (Telavi, Akhmeta, Gurjaani, Dedoplistskaro, Lagodehi, Sagarejo, Signagi, Kvareli) medicinals;
- 4) **Kvemo Kartli Region** (Rustavi, Bolnisi, Gardabani, Dmanisi, Tetri Tskaro, Marneuli, Tsalka)
- 5) **Mtskheta - Tianeti Region** (Mtskheta, Kazbegi, Akhagori, Dusheti, Tianeti): medicinals, wild mushrooms;
- 6) **Racha - Lechkhumi and Kvemo Svaneti Region** (Oni, Ambrolauri, Lentekhi, Tsageri): medicinals, wild mushrooms, wild berries, coniferous seed;
- 7) **Samegrelo - Zemo Svaneti Region** (Poti, Zugdidi, Abasha, Martvili, Mestia, Senaki, Chkhorotsku, Tsalenjikha, Khobi): stevia, rapanas;
- 8) **Samtskhe - Javakheti Region** (Adigeni, Aspindze, Akhalkalaki, Akhaltsikhe, Bordjomi, Ninotsminda): wild berries, mushrooms;
- 9) **Shida Kartli Region** (Tskhinvali, Gori, Kaspi, Kareli, Khashuri, Java): wild asparagus, mushrooms.

Appendix 5: List of Georgian Producers, Processors and Traders of Medical Plants

A total of 22 interviews were held with a range of different participants in the medicinal plants sector.

Government Institutions	1
NGO's/Projects	6
Wholesalers	1
Processing/Packaging Companies	8
Apotheks	4
Individual TM Practitioners	1
Market Traders	1
Total	22

Date	Person	Place	Organisation
11/5/02	Mr. Lekveishvili Merabi	Tbilisi	Aloefarmi Ltd.
11/6/02	Mr. Soso Torladze	Tbilisi	Naturpharm Ltd.
11/7/02	Prof. Bakuridze	Tbilisi	Medical University
11/7/02	Dr. Frank Harbers	Tbilisi	Consultant to WWF
11/8/02	Nana Jordadze	Tbilisi	Elkana
11/9/02	Mr. Tariel Bibiluri	Tbilisi	Herbalist
11/11/02	Mr. Tamaz Tsotniashvili	Tbilisi	Martet Trader
11/12/02	Mr. Levan Jugeli	Tbilisi	Turmanidze Ltd.
11/12/02	Ms. Nino Chedia	Tbilisi	Jia Apothek
11/13/02	Mr. David Gazashvili	Tbilisi	CARE international
11/14/02	Mrs. Ia Buadze	Tbilisi	Lechiva Geo Ltd.
11/14/02	Mr. George Zibzibadze	Tbilisi	GPC
11/15/02	Dr. Giorgi Sanadiradze	Tbilisi	WWF Caucasus
11/15/02	Mr. Udo Hirsch	Tbilisi	CUNA Georgica
11/15/02	Mr. Tenzig Maisuradze	Tbilisi	Flora Apothek
11/16/02	Mrs. Nino Nakaidze	Kobuleti	Medicinal Plants Ltd.
11/17/02	Mr. Uri Tsotsoria	Zugdidi	Bay Laurel oil factory
11/17/02	Mr. Vladimir Makharadze	Batumi	Hekate Ltd.
11/18/02	Mr. Shermadin Mikeladze	Kutaisi	Blackberry Tea Ltd.
11/18/02	Mr. Zaal Lomsianidze	Kutaisi	Natural Medicine
11/22/02	Mr. George Mukhashauria	Tbilisi	Green Tea Company

List of other relevant companies in Georgia

Company name	Location	Address
Basri farmi Ltd.	Batumi	# 65 Ninoshvili Str.
Hipokrate Individual Entrepreneur-Ketevan Uznadze	Gardabani	D. Agmashenebeli Str
Shlgo Ltd.	Khashuri	Khashuri raion, Village

		Gomi
Imedi Ltd.	Dmanisi	#16 St. Nino Str.
Tbilqimfarmi JSC	Tbilisi	#34 Tsuladze Str.
Tbilisi Pharmaceutical plant Ltd.	Tbilisi	#4 Qairo Str.
Kardu Ltd.	Tbilisi	#4 Qairo Str.
Eubiotikebi Ltd.	Tbilisi	#3 Gotua Str.
Fitofarmi Ltd.	Tbilisi	#22 G. Akhlediani Str.
Institute pharmacy chemistry	Tbilisi	#36 Sarajishvili Str.
Ju-na Ltd.	Tbilisi	#3 Gotua Str.
Turmanidze Ltd.	Tbilisi	#7 Gudauta Str.
Ikato Ltd.	Tbilisi	Gardabani
Shroshani Ltd.	Tbilisi	#2 A. Chavchavadze Str.
Georgian Pharmaceutical Group	Tbilisi	
GFL Ltd.	Tbilisi	D. Agmashenebeli Allay, 10-th km.
Polifarm - branch of Medservis Ltd.	Tbilisi	#2 Bevreti Str.
Naturfarmi Ltd.	Tbilisi	Varketili 303 Building, 3 M/R
Davati	Tbilisi	#10 Khandzeli Str.
Tbilisi organ therapies preparation plant JSC	Tbilisi	#25 Moscow Av.
Tbilisi organic and organ preparation plant JSC	Tbilisi	#25 Moscow Av.
Armakoni Ltd.	Tbilisi	#2a Mrevlishvili Str.
Eskulapi Ltd.	Tbilisi	#29 Vaja-Pshavela Av.
Sani Ltd.	Tbilisi	#8 R. Lagidze Str.
Borji Ltd.	Tbilisi	#21a Kavtaradze Str.
Mamuli Ltd.	Tbilisi	#2a revlishvili Str.
Biofarmi JSC	Tbilisi	#3 Gotua Str.
Iberi Ltd.	Tbilisi	# 10 Chiaureli Str.
Neofarmi Ltd.	Tbilisi	D. Agmashenebeli Allay,12-th km
Iberi Ltd.	Tbilisi	#19 Phanaskerteli Str.
Enjoy and Joy Ltd.	Tbilisi	#25 (1) Qavtaradze Str.
Sano Ltd.	Tbilisi	#1 Paata Saakadze Str.
Hrliosi Ltd.	Tbilisi	#99 Godziashvili Str.
Salkhino Ltd.	Martvili	Village Salkhino
Khalkhuri Medicina Ltd.	Kutaisi	#15 Tamar mephe Str.
Margveti Ltd.	Kutaisi	#2 Grishashvili Str.
Geopoli Ltd.	Tbilisi	#73 Chargali Str.
Farkoni Ltd.	Kutaisi	#31 Chavchavadze Str.