National Quota Fixation for Jatamansi (*Nardostachys jatamansi* DC) Ensuring Sustainable Management and Conservation in Nepal

Submitted to

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through

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Abbreviations

AAH : Annual Allowable Harvest

CITES : Convention on International Trade in Endangered Species of Wild Fauna and Flora

DFMP : District Forest Management Plan

DFO : District /Division Forest Office

DFO : District Forest Officer, Divisional Forest Officer

DoF : Department of Forests (then)

DoFSC: Department of Forests and Soil Conservation

DNPWC: Department of National Parks and Wildlife Conservation

DPR : Department of Plant Resources

EIA : Environmental Impact Assessment

IEE : Initial Environmental Examination

MAP : Medicinal and Aromatic Plants

MFSC : Ministry of Forests and Soil Conservation (then)

MoFE : Ministry of Forests and Environment

NWFP : Non-wood Forest Product

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Abstract

Nepal is prime resource country for the Jatamansi (*Nardostachys jatamansi*). It is widely distributed in higher altitude of Nepal. The species are found in 26 districts of High Mountains and Himalaya Region of Nepal. The stringent management, conservation and utilization approach and activities have been taken by the Government of Nepal to ensure its sustainability as the species has already been under the IUCN Red list of 'critically endangered category' and CITES Appendix II list. The rural people of the high mountains, deprived of all modern facilities and infrastructure, depends on the collections and trade of Jatamansi as it has very high commercial value. The Department of Forests and Soil Conservation, as the management authority of CITES for wild flora, studied the all perspectives of the Jatamansi trade from resource availability to harvesting and processing as well as trade based on resource inventory, review of District Forest Management Plans of 26 districts, expert consultation and appraisal of published and unpublished documents. The department estimated a total of 935 Metric Ton (MT) annual Quota of dry Jatamansi rhizome and their derivatives for 2019 which was also agreed by scientific authority and other major stakeholders in Nepal. The department ensures the complete adherence with the CITES provisions and national laws for the sustainable utilization of the Jatamansi resources and its habitat.

Key words:

Jatamansi, Management, Sustainability, Initial Environmental Examination, Environmental Impact Assessment.

1.0 Background

Nepal is known for the high value Non-wood Forest Products (NWFPs) including Medicinal and Aromatic Plants (MAPs). The country has provided high priority for the sustainable development and conservation of the NWFP sector as it has been the means of rural livelihoods and national economy.

The livelihood of the rural people, specially living in Mountainous regions–remote and rough terrain with least Human Development Index (HDI: 0.440, NPC, 2014) of Nepal depend on the collection and trade of high value NWFPs including Jatamansi (*N. jatamansi*) and others. The local people are very much concerned on the sustainable harvesting of the NWFPs as they are aware with the fact that the resource degradation directly related with their livelihoods. Any kind of the decision, hampering the collection and trade of the NWFPs such as Jatamansi, directly jeopardizes their livelihoods. The CITES Standing Committee has urged Nepal to communicate with them and Chair of the Plants Committee with a justification that ensures the sustainability while implementing the harvesting and quota fixation. Objectives of the report on:

i) To communicate with the CITES Standing Committee and its Plant Committee on national quota of Jatamansi harvesting fixed in participation of major stakeholders based on scientific evidences.
ii) To communicate the measures taken by the country to ensure the sustainable harvesting.
iii) To facilitate the legal trade of the Jatamansi and its derivatives in order to enhance rural livelihoods and contribute in national economy.

2.0 Methodology

2.1 Field Visits and Onsite Consultation

The Department of Forests and Soil Conservation (previously known as Department of Forests) is the largest department under the Ministry of Forest and Environment with a largest number of human resources. A total of 7,259 people used to work at various positions under this department. The department regularly organize field visits to obtain the firsthand information related to the different issues of Jatamansi conservation and its utilization. This also provides the opportunity to acquire relevant information from local people. A number of visits to the mountainous districts, where Jatamansi is found in abundant quantity, have been organized by the senior officials of the department and interacted with government staffs, local people, traders and beneficiaries.

2.2 Expert Consultation

Few senior experts who have long experience in the issues of Jatamansi conservation and utilization were consulted. The experts from the Asia Network for Sustainable Agriculture and Bioresources, a PhD scholar doing research on NWFPs including Jatamansi and retired Government Officials (experts) were consulted. Other three CITES authorities in Nepal such as Department of Plant Resources (i.e. scientific authority for wild flora), Department of National Parks and Wildlife Conservation (i.e. management authority for wild fauna), Natural History Museum of Tribhuvan University (i.e. scientific authority for wild fauna), have frequently met on the issues of Jatamansi conservation and harness potential benefits. Semi/Unstructured interview have also conducted with the expert of the species. National meeting of all major stakeholders was convened in Kathmandu to discuss the sustainable management and trade quota of the Jatamansi before submission of the report. The detail of participation, agenda and decisions are given in Annex 1.

2.3 Forest Inventory

The Department of Forests and Soil Conservation has endorsed the Guidelines for the resource assessment of Non-wood Forest Products in 2012 (DoF, 2012). The guideline describes in detail about the sampling intensity, plot sizes and shape, lay out of the plots, data collection, analysis and interpretation on the inventory of the NWFPs including Jatamansi.

As it is mandatory to all districts in Nepal, a total of 26 mountainous District Forest Offices have been requested to conduct compulsorily the NWFP inventory including Jatamansi following the inventory guidelines while preparing their 'Five-year District Forest Management Plans (DFMP)'.

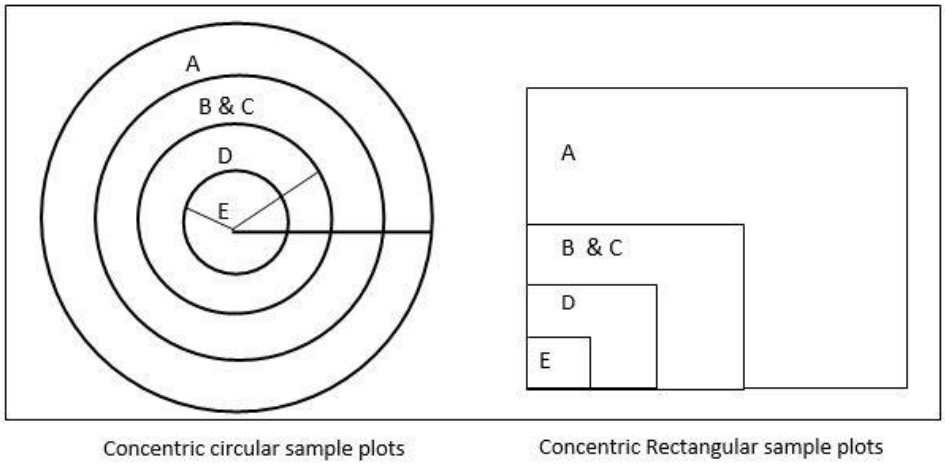

Figure 1: Concentric circular/rectangular sample plots executed during the NWFP inventory including Jatamansi

This DFMP has done intensive inventory of timber as well as major NWFPs including Jatamansi following both the 'Community Forestry Inventory Guidelines 2004' and 'NWFPs Inventory Guidelines, 2012'. Both guidelines suggest to execute the inventory following the concentric nested sample plots. The shape and size of the plots have been depicted in Figure 1 and Table 1. The systematic sampling has been conducted with the sampling intensity of 0.01% as suggested by the Guidelines (DoF 2004, DoF, 2012).

According to the NWFP Inventory Guidelines 2012, strip sampling could be done for the herbs and small- size NWFP species. Systematic sampling was done by laying down parallel strips and sample plots established along the strips at the fixed interval as shown in Figure 2. Sample plots of the size of 4 m^2 to 25 m^2 laid down at equal intervals, with the sampling intensity of 0.01% in all 26 districts at the forests/pasture areas of its distribution ranges (Table 1).

Table 1: Dimension of sample plots laid out for different purposes and categories of Forests and NWFPs inventory

SN	Size Category	Area $(m)^2$	Radius for circle (m)	Rectangular size (m^2)	Remarks
A	Trees (>30 cm dbh)	500	12.61	25 m × 20 m	
B	Poles (20cm –29.9 cm dbh)	100	5.64	10 m × 10 m	
C	Saplings (10 cm – 19.9 cm dbh)	100	5.64	10 m × 10 m	
D	Seedling (more than 1 m in ht)	25	2.82	5 m × 5 m	
E	NWFPs	10–100	1.78 to 5.64	2.5 m × 4 m to 10 m × 10 m	Based on types and species.
F	Jatamansi *(N. jatamansi)*	4-25	1.13 to 2.82	2 m × 2 m to 5 m × 5 m	

Note: dbh denotes the diameter at breast-height or 1.3 m height.

Destructive sampling conducted for the biomass estimation of the species. The rhizomes of the sample plots were dug out and fresh weight taken. Both the airdry and oven dry weight were recorded. The conversion factor of fresh weight to air dry and oven dry weight were developed and used to estimate the total growing stock. The inventory was conducted during the August and September months by respective districts during DFMP preparation.

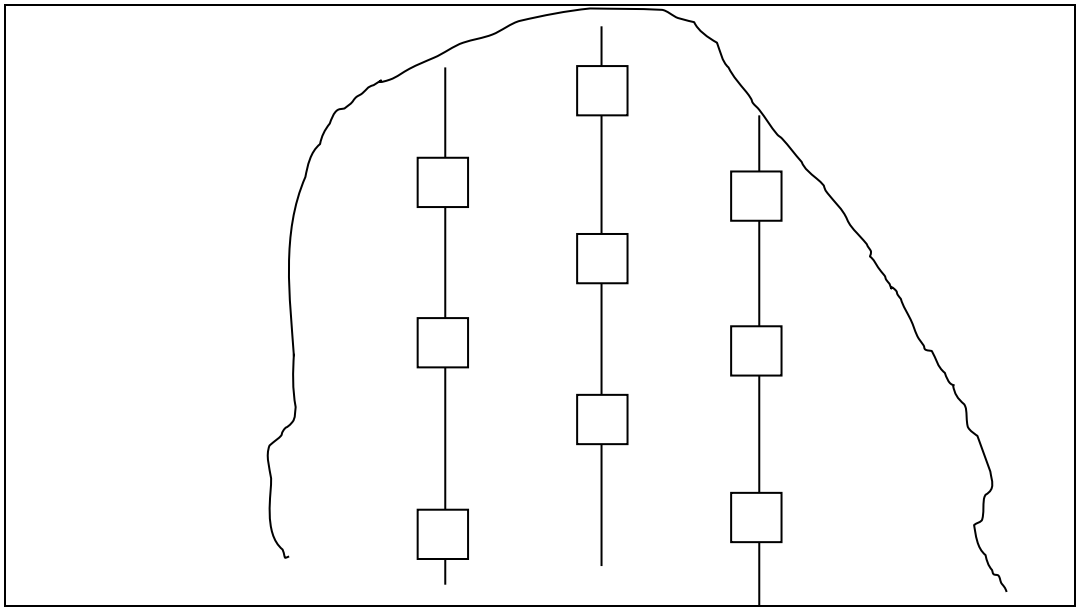

Figure 2: Schematic diagram of systematic samples distributed along the strips in the field (sample size 2m x 2m)

2.4 Trade Analysis

We analysed the trade data of the species for last 10 years. The Department of Forests and Soil Conservation used to issue the CITES permit as the Management Authority for flora in Nepal. The Department has well-maintained the data on Jatamansi trade. These data have been used to analyse the trend of the trade.

2.5 Review of Secondary information

We reviewed and analysed the five-years District Forest Management Plan of all 26 districts where Jatamansi has recorded so far. This five-year Forest Management Plan is the legally binding working scheme prepared by the respective District Forest Office and endorsed by the Department. In addition to this, we also rigorously reviewed the Sustainable Harvesting Plan of Jatamansi of Humla district (2018 to 2023) and its Environmental Impact Assessment Report approved by the Ministry of Forests and Environment. Several other published and unpublished documents/reports have also been reviewed and necessary information extracted.

3.0 Findings/Results

3.1 Species Description

Scientific name: *Nardostachys jatamansi* (D.Don) DC.

Synonyms: *Nardostachys jatamansi* Wall. ex DC (Catalogue of Life, 2018)

Family: Caprifoliaceae

Nepali name: Jatamansi, Bhulte

English name: Spikenard

Trade name: Jatamansi, Balchhad, Bhulte

Figure 3: *Nardostachys jatamansi*

Jatamansi is perennial, aromatic, herbaceous plant of 10-60 cm. height. Rhizome is the modified stem which is short, dark grey, woody, thickened, and is covered with reddish brown, tufted, fibrous remains of the petioles of dead leaves. Leaves are rosette, lanceolate, entire. Inflorescences are borne on terminal capitulum. Flowers are light purple, campanulate. Jatamansi flowers from August to September. Upon hydro-distillation, essential oil is obtained from rhizome at a yield of around 0.794% - 1.54% (DPR, 2018) and 1.0-2.0% (DPR, 2007). The oil is of greenish colour and bears an unpleasant odour which is similar to muskpod (Pradhan & Paudel, 2014).

3.1.1 Distribution

Jatamansi is native to high mountains. It is widely distributed in high altitudes region of Nepal, India, Pakistan, Bhutan, Myanmar and Southeast China at the elevation range of 2200- 4800 masl (DPR, 2016). According to Press et al. (2000), it is generally found in 3200-5000 masl in Nepal **(Figure** 4**).** The distribution of Jatamansi has been recorded from 26 Mountainous districts of Nepal spread from the East to West. The distribution is higher and wider across the Western parts of Nepal compared to eastern part.

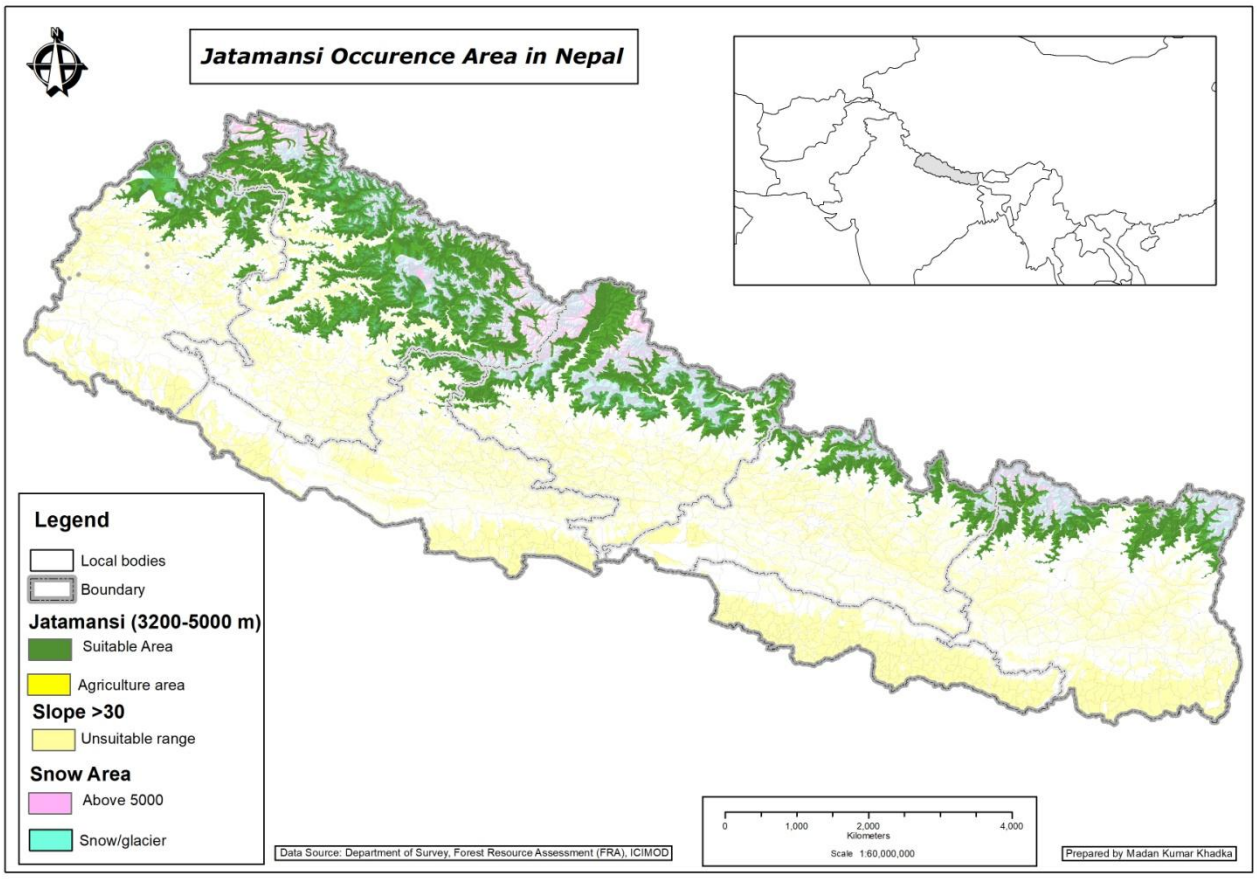

Figure 4: Distribution of *N. jatamansi* across the highlands of Nepal

It prefers the slope of 25-45 degree in alpine and subalpine zones of Nepal (Pradhan & Paudel, 2014). Amatya et.al. (1995) reported the greater distributions of the species in four districts namely Dolpa, Humla, Jumla and Kalikot) of Karnali Province. In some extent, the species is also distributed in the northern part of Gorkha, Rasuwa, and the southern part of Ganesh Himal (Nuwakot) and Mustang districts (Amatya et.al., 1995). Jatamansi (*N. jatamansi*) is thinly distributed at elevations above 3300-3400 m. However, the population density in areas where it does occur is higher above 3400 m. Its population gradually decreasing towards the east (see Figure 4).

3.1.2 Phenology and Utilization

3.1.2.1 Time of Collection

The flowering of Jatamansi begins in the early month of September, and the flowers will seed at the end of September. By the month of October, all seeds ripen, which could be germinated after the winter season. Therefore, Jatamansi rhizome can be collected in the month of October, usually after

Dashain festival of Nepal. If green plants are visible, then the rhizome can be collected even in the month of November, but after November the plants dry, and cannot be noticed later on due to snow cover. So, the October is the best month for the collection of Jatamansi rhizome.

3.1.2.2 Drying Period

Fresh rhizomes are cleaned within two to three days in the field. During these days, those will also become dry to certain limit, where the weight will be reduced by 30%. There can be further 50% reduction in weight due to further drying.

3.1.2.3 Use and Utilization

This species has been used in Ayurvedic and Unani medicines since centuries. The rhizome of the plant is the main commercial parts, which can be used as the substitute of valerian and the extracts have been in use in over 26 Ayurvedic preparations (Airi *et. al.*, 2000). It is used in Ayurvedic medicines as a bitter tonic, stimulant, carminative, sedative, antispasmodic, and to treat hysteria, convulsions, and epilepsy. It is also used in the preparation of high-quality perfumery and dyes. Besides domestic use of rhizomes as medicines, the Marc, Oil, Oleo-resin, hydrolates (hydrosols) are the major derivatives of commercial use from Jatamansi.

3.2 Conservation Status

The *Nardostachys jatamansi* is listed in CITES Appendix II in 1997 (TRAFFIC International, 1999) and it is critically endangered category of IUCN Red list (Ved *et. al.*, 2015). It is banned in export outside the country except the processed product on permission of Department of Forests.

Medicinal plant harvest and trade from forests in Nepal is regulated by the Forest Act,1993 and the Forest Regulations, 1995. Similarly, the Environment Protection Act, 1996 and Regulation 1997 regulate the extraction of Jatamansi as it provisioned the Initial Environmental Examination (IEE) and Environment Impact Assessment (EIA) based on the quantity of extractions. Annual extraction up to the 50 metric tons of roots/rhizomes from each district requires IEE and over 50 tons requires EIA study. The recently promulgated Control of International Trade of Endangered Wild Fauna and Flora Act, 2017 has become the primary legal measures to control the trade of CITES appendix species in Nepal (https://bit.ly/2AszE1U).

Export of *N. jatamansi* was banned in 1995 as specified in the Forest Regulation. Its amendment in 2001 allowed export of processed plant material, provided the processing had taken place in Nepal

and was authorised by the Department of Forests and Soil Conservations in the scientific recommendation of the Department of Plant Resources.

3.3 Rural Livelihood and Dependency on Jatamansi

Medicinal and aromatic plants have played key roles in the lives of rural peoples living in the High Mountains and Himalaya by providing forest products for food, medicine and household incomes. Jatamansi is a high-altitude plant, mainly occurs in remote mountainous districts of the nation, which is still not well connected through the road. Poor infrastructures, less employment opportunities and low agriculture productivity make the living standard of people of these regions very low. The major occupation of the people there is farming, livestock and collection of nontimber forest products including the rhizomes. The rhizomes of *N. jatamansi* has been collected since time immemorial by the high-altitude denizens who are mostly deprived, underprivileged and marginalized communities. They mostly reside in hostile environment where the cultivation land is very limited and the opportunities of income diversification are very low. They rely on the collection of wild medicinal plants for subsistence livelihood. The ban in the collection, processing and trade of Jatamansi largely jeopardize and narrow down the livelihood opportunities of rural people.

4.0 Quantification of Jatamansi Resources

Department of Forest and Soil Conservation (DoFSC)[1] approves District Forest Management Plan (DFMP) prepared by each District Forest Offices for the period of five years. The extensive resource inventory needs to be compulsorily done while preparing the District Forest Management Plan (DFMP). The forest resource inventory includes the detail inventory and changes in the growing stock of timber as well as Non-Wood Forest Products (NWFPs) including Medicinal and Aromatic Plants (MAPs). There used to be very rigorous review and field validation at different levels─ from grassroot to the central level before its final approval by the Department of Forests and Soil Conservation. The forest offices are not allowed to collect and utilize any forest resource at the absence of the approved District Forest Management Plan. It is also illegal to cross the prescribed threshold quantities of any products by the DFMP.

[1] Recent organization restructure has converted Department of Forests into Department of Forests and Soil Conservation and District Forest Offices as Division Forest Office in Nepal, having the similar jurisdiction and areas of work as in the past.

Based on the principle of sustainable management, the DFMPs prescribe the annual allowable harvest (AAH) of individual plant species including *N. jatamansi.* The Department of Forests and Soil Conservation have already approved 74 District forest management plans prepared by respective District Forest Offices. A total of 26 mountainous districts have reported the availability and harvestable quantities of the *N. jatamansi* as the source districts for Nepal, which comes under the jurisdictions of Department of Forests and Soil Conservation. Buffer Zone areas of Shey-Phoksundo National Park and Apinampa Conservation Areas under the jurisdiction of Department of National Parks and Wildlife Conservation (DNPWC) have also reported as the source of *N. jatamansi*. The approved Annual Allowable Harvest (AAH) quantities of *N. jatamansi* from various districts and Protected Areas and Buffer Zone areas are given in Table 2.

The annual allowable harvestable quantity of *N. jatamansi* is prescribed up to 55% of the total growing stock based on local biophysical conditions. The AAH is kept lower than its annual increment in order to ensure the sustainability of the valuable resources. The annual harvestable quantities (as shown in table 1) have been derived from the information provided in the approved district forest management plans of 26 districts and mandatory Environmental Assessment (EA) report to execute the District Forest Management Plans of respective districts.

According to the prevailing Environmental Acts (Environmental Protection Act, 1996 and Environmental Protection Regulation, 1997), it is compulsory to conduct the Initial Environmental Examination (IEE) for the collection up to 50,000 kg roots in a year from within single district (GoN, 1996, GoN, 1997). The same law provisions compulsory to execute Environmental Impact Assessment (EIA) to collect the quantities over 50,000 kg/year/district. For the collection of *N. jatamansi*, the environmental studies (either IEE or EIA) have been done and got approval from Department and Ministry respectively through rigorous review and convinced upon effective mitigative measures ensuring sustainable conservation. The EIA report for the harvesting of Jatamansi in Humla district has recently been approved by the Ministry of Forests and Environment on 24 October 2018, and being effectively implemented immediate after its endorsement. The Jatamansi harvesting plan and EIA study of Humla district suggested the full potential of Jatamansi harvest sustainably which is manyfold higher than other similar districts as seen in the Table 2 and Figure 5. The estimated AAH of Jatamansi will be harvested mostly from community forests, government managed forests and buffer zones of the protected areas in Nepal.

Detailed EIA study is being carried in few other districts as well (e.g. as Jumla, Dolpa, Kalikot, Bajura, Manang etc.). All these DFMPs and IEE/EIA reports prescribed the sustainable harvesting of Jatamansi from community and government managed forests as shown in table 2 and figure 5. Some mountainous districts namely Jumla, Dolpa, Bajhang, Bajura, Kalikot, Manang has the higher distribution and availability of *N. jatamansi*, however in the absence of EIA study, the lower quantity has proposed for extraction than its real potentiality. The EIA study is being done, and the harvestable quantities in these districts may increase after the report approval by the Ministry.

Table 2: District wise annual sustainable harvestable quantity of *N. jatamansi* from Nepal

S.N	Name of District	AAH (Metric tons)	Remarks
A. Department of Forests and Soil Conservation			
A1. Western Nepal			
1	Jumla	50.0	IEE report approved
2	Humla	425.0	EIA Report approved
3	Mugu	48.6	IEE report approved
4	Bajhang	47.0	IEE report approved
5	Bajura	42.6	IEE report approved
6	Dolpa	39.9	IEE report approved
7	Kalikot	29.2	IEE report approved
8	Rukum East*	22.0	IEE report approved
9	Rukum West*	8.0	IEE report approved
10	Rolpa	20.5	IEE report approved
11	Jajarkot	13.2	IEE report approved
12	Dailekh	50.0	IEE report approved
13	Doti	5.0	IEE report approved
14	Pyuthan	3.0	IEE report approved
A2. Central Nepal			
15	Manang	18.2	IEE report approved
16	Baglung	1.7	IEE report approved
17	Myagdi	1.1	IEE report approved
18	Lamjung	20.2	IEE report approved
19	Gorkha	4.9	IEE report approved
20	Dhading	2.0	IEE report approved
21	Nuwakot	1.0	IEE report approved
22	Rasuwa	0.7	IEE report approved
23	Sindhupalchok	2.3	IEE report approved
24	Ramechhap	1.5	IEE report approved
A3. Eastern Nepal			

25	Taplejung	25.0	IEE report approved
26	Solukhumbu	1.2	IEE report approved
Sub total		**883.6**	
B. Department of National Parks and Wild Conservation			
1	Shey Phoksundo National Parks, Dolpa	50.0	Buffer zone Community Forest
2	Api Nampa Conservation Area, Darchula	1.7	IEE report approved
Sub total		**51.7**	
Grand total		**935.3**	

Note: **AAH**: Annual Allowable Harvest, IEE: Initial Environmental Examination and EIA: Environmental Impact Assessment. *Former district Rukum has been restructured and divided into two districts as Rukum East and Rukum West. *Source: DoF, 2018 and DNPWC, 2016*

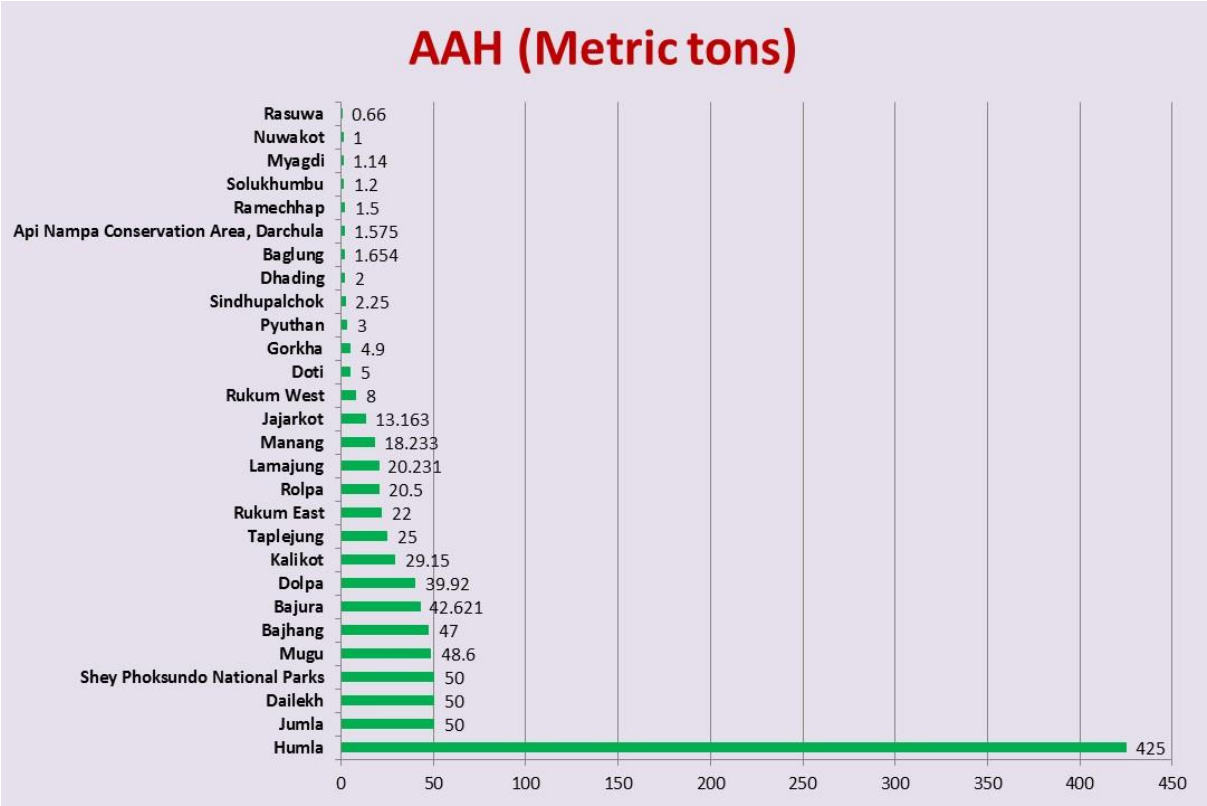

Figure 5: Annual Allowable Harvestable quantity of *N. jatamansi* from various districts and protected areas of Nepal

The table 3 and figure 2 clearly demonstrate that the country can harvest sustainably a total of **935.3 Metric tons** per annum of wild *N. jatamansi*. As the EIA study of Jatamansi harvesting plans of other districts is being carried out, the potential harvest may increase in future.

4.1 Quota Fixation

Nepal purposes the annual Quota of 935 Metric tons of dry rhizome or their derivatives. This purposed data was discussed in the National Consultation Meeting of major stakeholders held at Kathmandu on 28/11/2018 and unanimously agreed upon (please see the Annex 1: meeting minute). The scientific authority of flora for Nepal namely Department of Plan Resources (DPR) has also participated in the meeting and thereof provided their recommendation on the harvest of this estimated quota to be sustainable (please see Annex 2).

5.0 Trade Statistics

The Forest Act, 1993 and Forest Regulation, 1995 prohibit the export of *N. jatamansi* without processing (GoN, 1993; GoN, 1995). Trade status of *N. jatamansi* in Nepal includes quantity of Jatamansi Products i.e. Oil and Marc (derivatives) of *N. jatamansi*. The hydrolates (hydrosols) and Oleo-resin from Jatamansi has been asked by the traders to get export permits but have not issued any certificates so far. There is the future potentiality for the export of the hydrolates (hydrosols) and Oleo-resin in order to utilize all derivatives and maximize profits. The detail information of annual trade of Marc and essential oil is described in following sub-heading.

5.1 Export Quantities of *N. jatamansi* Marc

Altogether 1,603,322 kg of *N. jatamansi* Marc was exported during 2008 to 2018 from Nepal. The highest record of export was found 1,062,299 kg to India and followed by Pakistan with 531,813 kg. and Bangladesh with 9,210 kg. the highest quantity of Jatamansi Marc was exported in 2016 (330,259 kg) and least in 2011 (41,557 kg). No trade occurred in 2018 as the Department did not issue any CITES permit for export due to few ambiguities in recently promulgated CITES Act, 2017. Total export quantities of the Marc and its destination have been given in table 3.

Table 3: Export quantity of *N. jatamansi M*arc (kg) in different countries

Countries	Year											Total
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
India	40,453	7,350	9,856	19,250	39,901	10,3928	211,622	193,347	226,159	210,433	0	1,062,299
Pakistan	24,048	67,048	35,170	22,307	68,719	24,507	64,400	44,610	97,740	83,264	0	531,813
Bangladesh	0	0	0	0	0	0	2,850	0	6,360	0	0	9,210
Total	**64,501**	**74,398**	**45,026**	**41,557**	**108,620**	**128,435**	**278,872**	**237,957**	**330,259**	**293,697**	**0**	**1,603,322**

Source: DoF, CITES Export Permits records 2008-2018

5.2 Export Quantities of *N. jatamansi* Oil

Altogether 23,120.25 kg of *N. jatamansi* oil was exported during 2008 to 2018 from Nepal. The highest record of export was found 18,500 kg to India and remaining amount to USA, Belgium, UK, Switzerland, France, USA, Pakistan, Germany, UAE and South Korea respectively.

There was the constant growth in the Jatamansi Oil exports with some exception during 2008 and 2017. The highest quantity of oil exported was 5,973 kg in 2016. The least export was meagre 51 kg in 2009. The annual sustainable harvestable amount, as detailed in the district forest management plans, is 935,500 kg whereas the average annual export is 160,332.2 kg of Marc only. This figure also illustrates that harvesting and or exporting of *N. jatamansi* from Nepal is within the range of sustainability. In general, scientific test, Department of Plant Resource (Scientific Authority of CITES for Plants in Nepal) recommended up to 2% oil content during extraction of raw *N. jatamansi* in the factory (remaining Marc and other derivatives).

Department of Forests and Soil Conservation used to send samples (Marc, Oil) for the verification to the Department of Plant Resources (DPR). Natural Product Research Laboratory of the DPR analyse the samples. Then DPR provides certification service for processed extracts to the Department of Forests and Soil Conservation. As the Management Authority, the Department of Forests and Soil Conservation issues the CITES permit for the international trade of essential oil and marc. The total quantities of exported Jatamansi Oil and their destination countries during 2008 to 2018 are illustrated in Table 4. No oil export occurred in 2018.

Table 4: Export quantity of *N. jatamansi* Oil (kg) in different countries

Country	Year											Total
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
India	51	51	524	866	833	2,404	3,117	2,651	4,057	3946	**0**	**18,500**
Pakistan	0	0	135	0	30	0	0	0	0	0	**0**	**165**
USA	0	0	0	0	5	25	135	10	1,486	818	**0**	**2,479**
France	10	0	5	28	71	0	84	95	0	50	**0**	**343**
Belgium	159.5	0	0	53.55	99.7	0	20	216.5	404	0	**0**	**953**
United Kingdom	0	0	49	49			10	168	25	0	**0**	**301**
Switzerland	0	0	0	0	0	180	100		0	0	**0**	**280**
Germany	0	0	0	0	0	0	40	20	0	10	**0**	**70**
UAE	0	0	0	0	0	0	50		0	0	**0**	**50**
South Korea	0	0	0	0	0	0	0	3	1	0	**0**	**4**
Total	**220.5**	**51**	**713**	**996.55**	**1,038.7**	**2,609**	**3,556**	**3163.5**	**5,973**	**4824**	**0**	**23,145.25**

Source: DoFSC, CITES Export Permits records 2008-2018

5.3 Legal Provisions

Since May 2017, no CITES certificates have been issued because of the restricted provision of export of CITES species of fauna for trading purposes. The Sub Section 'g' of Section '6' of the Act states that " In case a letter of assurance is received from the authorized agency of the country to which such wild fauna or flora or a specimen thereof is intended to export to the effect that it will not be used for commercial purpose." So, the export of CITES fauna and flora for the commercial trade is restricted. Besides Forest Act 1993 and Regulation 1995 controls the export of the raw materials without processing.

6.0 Resource Sustainability

6.1 Threats to the Species

Sustainable harvesting is considered as one of the major issues for the sustainable development and conservation of Jatamansi (*N. jatamansi)* in remote areas of Nepal. Some of the difficulties such as rampant poverty, lack of alternative means of livelihood, difficult topography to carry out proper and systematic inventory, low investment in conservation of MAPs including *N. jatamansi* are frontline threats realized by different stakeholders. Deforestation, forest fire, excessive grazing and over exploitation in some parts are some of the pertinent threats to the species. The strong market

forces from adjoining India and China may pose further threats demanding the stringent monitoring and control mechanisms from the Government of Nepal and other stakeholders.

Reliable and scientific information as well as modern knowledge and skills on the propagation, cultivation and sustainable harvesting of many NWFPs including *N. jatamansi* are the most essence (Banjade *et.al*, 2008).

6.2 Sustainability Assurance

The Government of Nepal has taken the sustainable use of any forest resources as the prime strategy. All major forest policy documents such as Forest Policy of Nepal 2015, The Forest Development Strategy 2016-2025, NWFP Development Strategy 2004 has the priority in Sustainable utilization of NWFPs including Jatamansi (*N. jatamansi*).

6.2.1 Legal Measures

Every year, more than 100 species of medicinal plants are being collected from different parts of Nepal and exported to different countries. The wild collection is mostly carried out from government managed forests and community managed forests. There is a strict legal regulatory provision of wild collection and it is backed by strong monitoring from the community forestry user groups, respective Division Forest Offices and Departments. Following legal instruments are available to ensure sustainable collection, processing and trade of Jatamansi in Nepal.

- Forest Act 1993 and Forest Regulation 1995

Nepal has a very strong Forestry Acts and Regulation which is the major legal instruments to ensure sustainable harvest of all forestry resources. It regulates the illegal harvesting of any NWFPs including Jatamansi. Similarly, the National Park and Wildlife Conservation Act 1973 ensures the similar provision of regulating NWFPs harvesting inside Protected Area network that covers 23.3% of the Country. The monetary punishment and imprisonment for any violation of the law have been provisioned in the law that discourages any illegal activities in harvesting and trade of Jatamansi and other NWFPs.

As the legal provisions mentioned in Forest Act, 1993 and Forest Regulation, 1995 (Amendments) Non-Wood Forest Products (NWFPs) including Medicinal and Aromatic Plants (MAPs) harvesting guideline has to be prepared by respective DFOs before issuing permit for collection. Resource inventory register and list of authorized/registered collector's form/institutions have to be updated before issuing collection permit (see Annex 7). The record on the Annex IV ensures that the

targeted NWFPs must be collected only from the specific, pre-identified site and the specific time period (during October –November for *N. jatamansi*). It is also a strong document to verify the collection area and the control area. The officials of Department of Forests and Soil Conservation/ Division Forest Office[2] -DFO (Chief warden in case of Protected Area and Buffer zone) regularly visit the collection site and monitor whether the collection is being as per the issued permit or not. Immediate sanctions are implied according to Forest Regulation/ NPWC Regulation against the existing rules. Annex 4 reflects the collection and transportation to storage house/depot. It is also a checklist to control for exceed amount collection or illegal collection or storage.

- **Environment Protection Act, 1996 and Environment Protection Regulation, 1997**

These two laws related to environment protection has direct implication on regulating the quantities of harvest. The Act necessitates the environmental assessment (i.e. IEE and EIA) for harvesting Jatamansi, fixing the threshold quantities for IEE and EIA. Provisions of EIA and IEE on existing Environmental Protection Act, 1996 and Environmental Protection Regulation, 1997 (Annex 1 and Annex 2 of Acts) have specific protection measures to be applied which are mandatory to minimize the threats to the species. None of the Divisional Forest Office and other institutions can issue the permit for Jatamansi collection and sale without approval of IEE/EIA reports by relevant authorities.

- **Control of International Trade of Endangered Wild Fauna and Flora Act, 2017**

In order to implement the Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973 to which Nepal is a party, an Act is enacted which is cited as "Control of International Trade of Endangered Wild Fauna and Flora Act, 2017."This Act comes into enforcement throughout Nepal and shall apply also to persons committing an act that is deemed to be an offence under this Act living anywhere outside Nepal. The Act has been the major instruments for regulating trade of CITES Appendices species including Jatamansi which is in its Appendix II.

- **Various Guidelines and Working Procedures**

Government has implemented various guidelines such as Community Forestry Development Guidelines 2002, NWFP inventory Guidelines 2012, Forest Products Collection and Sale

[2] In recent institutional restructuring, Former District Forest Office has been changed to Division Forest Office with similar ToR

Guidelines 2015 are in place to regulate the overharvesting and illegal trade of Jatamansi as well as other timber and nontimber forest products.

6.2.2 Complete Adherence to District Forest Management Plan

All of the Divisional Forest Offices need to prepare the Five-year District Forest Management Plan and get approval from the Department before executing any harvesting operations inside forests. Forest inventory is carried out every five years to prepare five-year management plan of DFOs and Protected/Conservation areas. Hence status and trend of individual species including *N. jatamansi* is updated. This DFMP also needs to have IEE study. The methods of Jatamansi collections, the quantity quota of the maximum harvest from specific forests areas and district, the mitigative measures for promoting regeneration and natural renewal have been clearly elucidated in the plan. All the provisions of the DFMP are regularly followed that ensure the sustainable management of the species.

In addition to these sustainable harvesting mechanisms, all the districts are obliged to strictly follow the provision of sustainable harvest of all the herbs and /NWFPs mentioned in their respective **Five-Year District Forest Management Plan**. This is the additional evidence of implementation of sustainable harvesting technique and enforcement of rotation obligation in the ground. Local Rangers, Assistant Forest Officers and DFOs are responsible to implement the five-year operational plan. The regular monitoring of the collection and trade has been done by the higher authorities.

The annual harvested quantity of *N. jatamansi* is lower compared to the recommended sustainable collection amount estimated in the approved management plans. Hence present management practice assumed sustainability principles and has no threat to the species in near future.

6.2.3 Rotational Harvesting

Although the plant germinates from seed, it is recommended that at least 20% of the rhizomes to leave during harvesting to protect this valuable plant species from natural calamities, e.g. forest-fire, drought etc. The plant becomes matured in 3 years, so all the Jatamansi occurring areas can be harvested once in three years.

The Management plan prescribe the rotational harvesting of the Jatamansi. It takes three years for the species to be complete matured for harvesting. Therefore, the harvesting areas used to be

divided into at least three compartments/blocks so that the harvesting of the rhizomes can be done in one block each year. Two third of rhizomes used to be harvested and one parts need to be left for future propagation. Premature harvesting will be totally banned.

6.2.3 Regular Supervision and Monitoring

Regular supervision and monitoring for selected works such as collection, trade and status of MAPs and /NWFPs including *N. jatamansi* has been conducted regularly by local government, state government and central government. Along the regular task of State Forestry Directorate, a Monitoring and Evaluation Officer (Under Secretary) has been assigned for regular monitoring and controls the illegal activities. The DoFSC as well as the Central Ministry of Forest and Environment also conduct regular monitoring work in selected sites and species specially focused on high value MAPs.

- **Monitoring in Trade and Transport**

Trade and or transportation of MAPs including *N. jatamansi* is another important task which has to ensure that the collected amount does not exceed the permit amount. It also verifies and checks the illegal trade. Annex 6 is the sample of final release order issued by DFO/Chief Warden of Conservation /Protected areas which checks and controls the illegal transportation from depot to the processing factory.

- **Documentation and timely reporting**

Documentation and timely reporting to the concerned higher officials is another vital task carried out regularly from field level offices. The annex 7 and 8 of the monthly collection report and annual monitoring and evaluation report formats are related to the documentation and reporting which tallies the monthly and annual collection and trade status. It is also one of the strong monitoring mechanisms developed by the DoF/DNPWC to ensure the sustainability of NWFPs/MAPs in the wild including *N. jatamansi*. If there any evidence of issuing collection permit other than the month of September to October, there is a legal provision that Department of Forests and Soil Conservation and/ or State Forestry Directorate issue sanction against the permit issuing officer. In case of government managed forests, resource inventory, collection area identification, collection, transportation and storage works are being done within direct supervision of local forestry staffs including Rangers/Officers of respective local office. Participatory monitoring is being done by both forestry staff and local community forest users jointly. If the harvesting and other mandatory tasks are being done against the rules and regulations, the collector

or the institution involved in the collection (the community forest user groups and the forestry staff) shall be punished according to the provisions of Forest Act 1993 and Forest Regulation 1995. The government and local communities both are very much concerned and strict upon control of premature collection of *N. jatamansi*.

6.2.4 Peoples Participation and Power Devolution

Nepal is the pioneer and successful example of community participation in conservation and management of forest and forestry resources in Nepal. Community based forest management modality adopted by DoF and DNPWC has been very effective to conserve, utilize and manage natural resources in a sustainable basis including *N. jatamansi*. The Government of Nepal devolves all power and responsibilities to the community forest user groups to conserve, utilize and manage their community forests. This devolution of the authority brings positive results in conserving common resources like Jatamansi in highlands of Nepal. Peoples participation from planning to implementation and monitoring and evaluation has been very effective in sustainable conservation of the species. It has tremendously reduced the forest encroachment, incidence of forest fires, thefts, illegal harvesting and trade of the Jatamansi rhizomes.

Moreover, the rhizomes of N. jatamansi are being collected since time immemorial by the high-altitude residents who are mostly deprived, underprivileged and marginalized communities. They mostly reside in hostile environment where the cultivated land is very limited and the opportunities of income diversification are quite low. They rely on the collection of wild medicinal plants for subsistence livelihood. Thus, considering that the wild collection is being carried out for centuries and till date have minimal impact on its wild population.

With all these strict government rules and regulations in place, we can assure that the proper harvesting technique is implemented and rotational harvesting system is adopted during wild collection of *N. jatamansi*.

7.0 Recommendations

The present practice of Jatamansi (*N. jatamansi*) harvesting and trade is very much sustainable in Nepal. There are very strict legal provisions against the premature collection, over harvesting and illegal trade of the species. Along with these legal measures, there are very tight monitoring and supervision mechanisms in place which lowers the any risks and threats that degenerate the

resource pool of Jatamansi in Nepal. Therefore, we strongly recommend the regulated trade of the Jatamansi (N. jatamansi) and its derivatives as provisioned in CITES.

We also recommend the annual quota of 935 MT (dry rhizomes) of the species to be fixed for Nepal. As the management authority we urge the CITES Secretariat and Standing Committee on acceptance of the Quota fixed by the country and facilitate the formal trade of the species.

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9.0 Annexes

Annex 1: Presence and Minutes of Stakeholders Meeting (28/11/2018)

Annex 1.1: The participants from various organizations participated in the National Stakeholders Meeting

Sustainable Development and Conservation of Jatamansi (*Nardostachys grandiflora*) in relation to national and International trade

Attendees:

S.N.	Name	Designation	Institution	Phone #	Email	Signature
1	Dr. Ram Prasad Lamsal	D.G. DoFSC	DoFSC	9851019316	rplamsal1@yahoo.com	[illegible]
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6	Samir Dhungel	NEHPA	"	9851006207		[illegible]
7	Ravi Kumar Pandey	NEHPA	"	9841421053		[illegible]
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12	Puspa Raj Barfaula	US	DOFSC	9843387762	Prbarfaula@yahoo.com	[illegible]
13	Dambar Bd. Bhandari	ACO	"	9848178994	dbbhandari@yahoo[illegible]	[illegible]
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15	Rajendra Newpane	US	DoFSC	9841342248	nrajendra38@gmail	[illegible]

DG: Director General, DDG: Deputy Director General, DPR – Department of Plant Resources

DNPWC: Department of National parks and wildlife conservation, US – Under secretary

NEHHPA: Nepal Herbs and Herbal products Association, DOFSC – Department of Forests and Soil Conservation

16	Kalpana Sharma (Dhakal)	Scientific Officer	DPR	9849805424	kalpanasharmadhakal@gmail.com	[signature]
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18	Prakash Aryal	Assistant Officer	DoFSC	9841-377767	[illegible]@gmail.com	[signature]
19	Shanta Ram Band	A.Fo	DoFSC	9851183778	mrband[illegible]@gmail.com	[signature]
20	Sanjeev Raj Dhakal	AFO	DOFSC	9851124099	sanjeevdhakal[illegible]@gmail.com	[signature]
21	Nabin Raj Joshi	Forestry & CC Expert	ANSAB	9868774350	nabinjoshi@ansab.org	[signature]
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23	Sanjay Kr. Jain	Industrialist	Bahubali Herbal NEPALGUNJ	9858021081	jaingroupnpj@gmail.com	[signature]
24	Tank PD - Sanj[illegible]	Secretary	JABAN	9858021166	tank[illegible]@[illegible]	[signature]
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27	Prof. Dr. Dhana Dayal	Chief	Natural History Museum	98550[illegible]	[illegible]@gmail.com	[signature]
28	Pariksit Khanal	Director	NRIPC	9800030565	info@nrimp.com	[signature]
29	Prasun Satyal	M.D	AACPL	9841085568	info@aromaticsnp	[signature]
30	Shyam Sundar Shrestha	SWMO	DFSC	9851003139	shyamsundarshrestha@yahoo.com	[signature]
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33	Gopal Bhattarai	[illegible]	[illegible]	9851074501	[illegible]@yahoo.com	[signature]

34	Hari Bhadra Acharya	Ecologist	DNPWC	9840058232	hbacharya07@gmail.com	
33	Dr Rajendra KC	DDG	DoFSC	9851149420	rkc.gen@gmail.com	
36	Navin Giri	CITES Section Chief	DoFSC	9845269900	navingiri919@yahoo.com	
37	Uttam Chapagain	AFO	DoFSC	9851092547	chapagain.forestry@gmail.com	
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MoFE/PFD - Ministry of Forests and Environment / Participatory Forest Division
AFO :- Assistant Forest officer, AFU - Agriculture Forestry University
M.D - Managing Director, JABAN - Jadibuti Association of Nepal.
NFA - Nepal Foresters Association, HEAN - Herbal Entrepreneurs Association of Nepal,
SWMO - Soil and watershed management officer AACPL :- Annapurna Aroma Company Pvt. Ltd.

Annex 1.2 The Agenda and Meeting Minutes of National Consultation Meeting

Under the Chair of Dr. Ram Prasad Lamsal, Director General of Forests and Soil Conservation (Management Authority Flora) and the gracious presence of following participants, National Multi-Stakeholder Consultation Meeting on Sustainable Development and Conservation of *Nardostachys jatamansi* (Syn. *N grandiflora*) in relation to National and International Trade is held.

Date: 26th November 2018

Babar Mahal, Kathmandu

Agenda of the meetings

1. National quota fixation for sustainable harvest
2. Sustainable conservation of *Nardostachys grandiflora*
3. Monitoring Mechanism
4. Regular Meeting of stakeholders

Decisions of the meeting:

1. National quota fixation for sustainable harvest

Based on the report presented by Department of Forests and Soil Conservation, it is agreed that a total of 935 Metric tons (Annual Allowable Harvest) of dried rhizomes of *Nardostachys jatamansi* (Synonym *N. grandiflora*) can be harvested sustainably in 2019 from the wild source. The meeting decides to request CITES Secretariat to agree on the National quota (i.e., 935 MT) fixed by the country.

2. Sustainable conservation of *N.jatamansi*

All stakeholders unanimously agreed and committed on sustainable conservation of *N.jatamansi* (*N. grandiflora* and ensure complete adherence the principles of sustainable harvesting and management of the species.

3. Monitoring Mechanism

Meeting decides to request all stakeholders to widely monitor the harvesting of *N. jatamansi* to ensure sustainable conservation of the species.

4. Regular Meeting of stakeholders

The Committee will regularly convene meeting and discuss on the progress on sustainable harvest of *N. jatamansi* and take any appropriate actions if needed.

Annex 2: Letter from Scientific Authority on the endorsement of National Quota of Jatamansi **(Letter in Nepali language, and unofficial translation is under the letter herewith)**

नेपाल सरकार
वन तथा वातावरण मन्त्रालय
वनस्पति विभाग
(.....जैविक विविधता तथा साईटिस.. शाखा)

४२६१४६६
४२६१४६७
४२४१११६०
४२४१११६१

फ्याक्स नं.: ४२४१११४१

इमेल:- info@dpr.gov.np
वनस्पतिमार्ग, बाबाबली
काठमाडौं

पत्र संख्या:- २०७५/०७६
चलानी नम्बर:- 326

मिति: २०७५/०८/१२

श्री वन तथा भू-संरक्षण विभाग
बबरमहल, काठमाडौं।

विषय : विवरण उपलब्ध सम्बन्धमा।

प्रस्तुत विषयमा तहाँ विभागको प.सं.२०७५/०७६ च.नं.१४३ मिति २०७५/०८/११ को पत्रका सम्बन्धमा CITES Secretariat लाई जटामसीको प्रतिवेदन बुझाउने प्रयोजनार्थ जटामसीको वैज्ञानिक नाम तथा पारिवारिक नाम (Taxonomic description), तेल प्रतिशत, जरा (Rhizome) सन् २०१९ को लागि ९३५ मे.टन उत्पादन परिमाण स्वीकार्य सम्बन्धी विवरण उल्लेख गरी यस विभागले तयार गरेको प्रतिवेदन यसै पत्रसंग संलग्न गरी पठाएको व्यहोरा आदेशानुसार अनुरोध गर्दछु ।

सवरी राजवहाक
वरिष्ठ वैज्ञानिक अधिकृत
(१२८९७५)

"नतिजामुखी प्रशासनः समृद्धि र सुशासन"

Unofficial translation of letter:

The Department of Forests and Soil Conservation
Babar Mahal, Kathmandu

Subject: Information on Jatamansi

In response to your letter reference no. 143 -2075/076 dated on 2075/08/11, the taxonomic description of Jatamansi, oil content (rhizome) and Annual Acceptable Quota (935 MT) for trade in 2019 is attached herewith as per the report prepared by our Department.

.....
Savari Rajvahak
Senior Scientificc Officer

Annex 3: Letter from Scientific Authority on the endorsement of Taxonomy, Essential Oil and National Quota of Jatamansi

Government of Nepal
MINISTRY OF FORESTS & ENVIRONMENT
DEPARTMENT OF PLANT RESOURCES

Nardostachys jatamansi

Taxonomy

Regarding the taxonomy of *Nardostachys grandiflora* which is listed in CITES Appendix II in 1997 became the Synonym of *Nardostachys jatamansi* within the family Caprifoliaceae according to international database and Flora (Catalogue of Life: 2018 Annual Checklist; Tropicos; Flora of China Vol. 19 Page 661).Thus *Nardostachys jatamansi* is the accepted name and *Nardostachys grandiflora* is its synonym.

Accepted Name : *Nardostachys jatamansi* (D.Don) DC.
Synonyms : *Nardostachys grandiflora* DC.
Family : Caprifoliaceae

Oil Percentage

0.794 % - 1.54 % (A Compilation Report (Phytochemical and Biological Screening of Medicinal Plants of Nepal) 2014; GoN, Ministry of Forests and Soil Conservation Department of Plant Resources; Natural Products Research Laboratory Thapathali, Kathmandu, Nepal

Quota to export *Nardostachys jatamansi* from Nepal in 2019

Nardostachys jatamansi is found throughout the Himalayan region of Nepal from east to west in the high mountain, having a slope of 25-45 degree (Pradhan & Paudel, 2014).The five year management plan of 25 districts and two protected areas, in total shows that 9, 35,297 kg of jatamansi rhizome can be harvested annually which is 55% of total growing stock (DoF, 2018 and DNPWC2016). According to Report 2017 (Status Study/Mapping of Important Medicinal and Aromatic Plants (MAPs) of Nepal and Preparation of Document for Jadibuti Program) submitted to Department of Forest and Soil Conservation by Green Era Pvt. Ltd., Attariya, Kailali JV Nepal Forester's Association, Babarmahal, Kathmandu, total stock of *Nardostachys jatamansi* in wild is 6321 tons and its sustainable yield is 948 tons. This data shows that 935 tons of rhizome harvesting annually from Nepal is not detrimental to the survival of *Nardostachys jatamansi*.

Annex 4: Resource Inventory Register for Jatamansi

Government of Nepal
Ministry of Forests and Environment
Department of Forests and Soil Conservation
Division Forest Office.....

Jatamansi () Resource Inventory Register
Fiscal Year.....

Division Forest Office..... Sub division forest office,,,,,,.....VDC.....Ward no.....Name of the Forest..... Area of the Forest.....
Four Directions of the Forest: East.....West.....North.....South.....
Year and Months of Resource Inventory.....
Actual area of the forest likely to collect Jatamansi.....
Potential area of the forest to collect Jatamansi but left without collecting .....

Name and address of the Industry or Jatamansi collector Institution's name.....

Forest Block no.	Name of the Forest Block	Total area of the forest block	Potential area of the block forest likely to collect Jatamansi	Total harvestable amount of Jatamansi collection	Total Jatamansi amount to be harvested	Remarks
1						
2						
3						

Resource inventoried.....From Sub division forest office.....Labours name from DFO
Name of the official cross checked.....
1. Name and position..... 1.....
2..... 2.....

Submitted by **Checked by/Recommended by** **Endorsed by**
....
(Supervisor) (Ranger/AFO) Division Forest Officer

Annex 5: Sample of Transportation Order for the Dispatch of Jatamansi

Government of Nepal
Ministry of Forests and Environment
Department of Forests and Soil Conservation
Division Forest Office.....

Sample of Transportation Order for dispatch

Dispatch No... Release order no.....
Dispatched date.... Released order date...
Sack no..... Amount.....kg
Type of vehicle and no..... Name of Driver.....
From..... to.....
Name and address of release order holder.....

Dispatched no.	Forest block no.	Name of collecting labours	Name of transport labour	Place of storage	no. of transported sacks	Serial no. and weight of transporting sacks

Submitted by
.....
Supervisor
Officer

Checked and Recommended by
.....
Ranger/AFO

Approved by
…….. .....
Division Forest

Annex 6: Release Order of Jatamansi

Government of Nepal
Ministry of Forests and Environment
Department of Forests
Division Forest Office.....

Letter no. Date.....
Dispatched no.

Subject: Release order of Jatamansi

Shree.....
As per the released order no.....Dated..... of Division Forest Office....., and the required cash Rs…….. (In words……) has been deposited as mentioned in receipt/ Boucher no....., it is permitted to release following mentioned Jatamansi within……days from today. Release the Jatamansi within the said span of time, provision and place. It is informed that, you would subject to face legal actions if otherwise happen.

Details:

Dispatch no.	Name of the forest block and no.	Initial Storage place	Transported sack no.	Serial no. and weight of transported sack	Final Storage place	Remarks
						All the quantities detail papers are attached herewith

……
Division Forest Officer

CC: To be informed:

- Division Forest Office,…….(arrival Division)
- ……Sub Division Forest Office: Load , check and register in presence of staff
- Account Section

Annex 7: Monthly Progress Report on Jatamansi collection

Government of Nepal
Ministry of Forests and Environment
Department of Forests and Soil Conservation
Monthly progress report on Jatamansi collection
Division Forest Office……..

Monthly Collection Report of Jatamansi of Fiscal Year……..

1: Jatamansi collection details

a) Government managed forests

S.N.	**Name and address of industry**	**Name of the Jatamansi collected forest**	**Name and number of Jatamansi collected forest block**	**Amount of collected Jatamansi in kg.**	**Remarks**

b) Community Forests:

S. N.	**Name and address of industry**	**Name of the Jatamansi collected forest**	**Name and number of Jatamansi collected forest block**	**Amount of collected Jatamansi in Kg.**	**emarks**

2: Details of release order

a) Government managed forests

S. N.	Name and address of industry	Amount of Jatamansi released order in Kg.	Total revenue in NRs.	The amount of Jatamansi in the storage yet to get release order in Kg.	Remarks

b) Community Forest

S. N.	Name and address of industry	Amount of Jatamansi released order in Kg.	Total revenue in NRs.	The amount of Jatamansi in the storage yet to get release order in Kg.	Remarks

Submitted by

……

Approved by

Division Forest Officer

Annex 8: Annual Monitoring and Evaluation Format for Jatamansi

Government of Nepal
Ministry of Forests and Environment
Department of Forests and Soil Conservation

Annual Monitoring and Evaluation Format

Fiscal year…….

Division Forest Office…….Sub Division Forest Office……..V.D.C……..Ward no……..

Name of Forest……Name and number of Forest Block……..Area of Forrest Block

Four Directions of forests: East,,,,,,,,,,West……..North……South……..

Year and month of resource inventory……

Total potential area of Jatamansi collection……..

Total left potential collecting area without collecting Jatamansi ……

Name and address of Jatamansi collecting industry or organization……..

S. N.	Forest block no.	Amount of annual allowable harvest Kg.	Amont of Jatamansi collected Kg.	Remarks

- No. of forest block visited……..
- Whether the collection works are as according to collection procedures…..Yes/No
- Whether there is the involvement of local residential in Jatamansi collection and transportation…Yes/No
- Total amount of collected Jatamansi……..Kg.
- Total amount and revenue of Jatamansi from release order in Kg…….and……..NRs…….
- Total amount of Jatamansi storage……..Kg.
- Total area of forest delineated for Jatamansi conservation and management……
    - Overall quality of forest delineated for Jatamansi conservation and management
    - ***Very good/Good/Average/Poor***

- Mention whether there is the fulfillment of the provisions mentioned in the Approved IEE or EIA report
- In totality whether the collection, transportation, storage and release works are within the rules and regulations
- Mention suggestions if any

Name and signature of the staffs representing Industry or collector
……

From the side of Division Forest Office
……

Monitoring and Evaluated by
……

Annex 9: The responsible authorities and officials for CITES on plants in Nepal

Management Authority

1. **Dr. Ram Prasad Lamsal**
   Director General
   Department of Forests and Soil Conservation,
   Babarmahal, Kathmandu
   Phone: +977-1-4220303, +977-1-422123,
   +977-1-4216379
   Fax : +977-1-4227374
   Email : info@dof.gov.np

2. **Dr. Rajendra K.C.**
   Deputy Director General and Chief
   Division of Forest and Wildlife Conservation
   Department of Forests and Soil Conservation,
   Babarmahal, Kathmandu
   Tel: +977-1-4224193, +977-9851149420
   Email: rkc.gen@gmail.com; nfd@dof.gov.np

3. **Mr. Navin Giri**
   Undersecretary, Chief
   CITES Section
   Division of Forest and Wildlife Conservation
   Department of Forests and Soil Conservation
   Tel: +977-1-4224193, +977-9845269900
   Email: navingiri919@gmail.com

Scientific Authority

1. **Mr. Sanjeev Kumar Rai**
   Director General
   Department of Plant Resources
   Thapathali, Kathmandu, Nepal
   Phone: +977-1-4251161
   Email : sanjeevkrai@dpr.gov.np,
   sanjeevkrai4@gmail.com

2. **Ms. Sabari Rajbahak**
   Senior Scientific Officer
   Department of Plant Resources
   Thapathali, Kathmandu, Nepal
   Tel: +977-9841386118
   Email: sabarirajbahak@yahoo.com