

Diverging viewpoints on cordyceps harvesting and its ecological impacts: A Q-method study and survey of cordyceps harvesters in the Himalayas

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Photo: Bharat Bandhu



HIMALAYAN
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IOWA STATE UNIVERSITY
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Introduction

- High-altitude resources have been the center of the Himalayan communities' livelihoods
- From ancient times, communities of the Himalayan region have relied on natural resources for livelihoods, including medicinal plants' collection and trade (Olsen & Larsen, 2003)



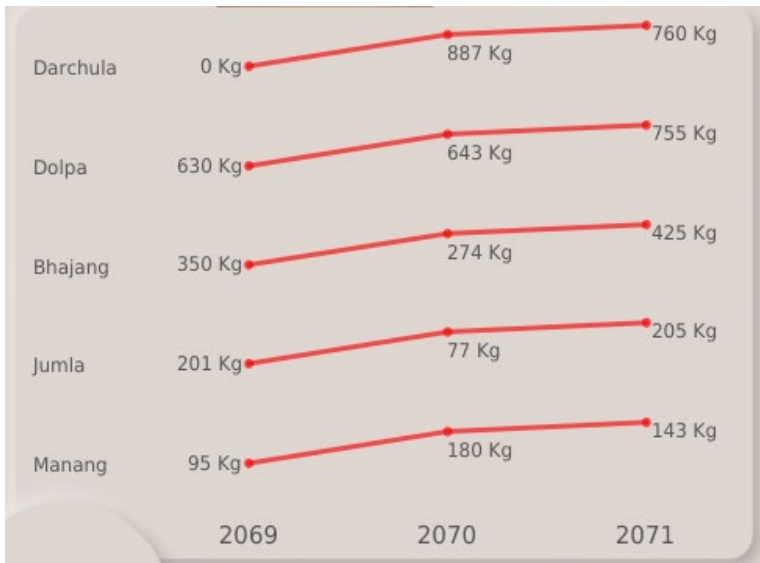
Introduction

- *Opiocordyceps sinensis* (*Cordyceps Yartsagumba*, *Kidajadi*, *Keera*)- is found in high-elevation (3500-5000 m.a.s.l) grasslands in the Himalayas (China, Nepal, India, and Bhutan)
- One of the most important medicinal species harvested by the Himalayan communities

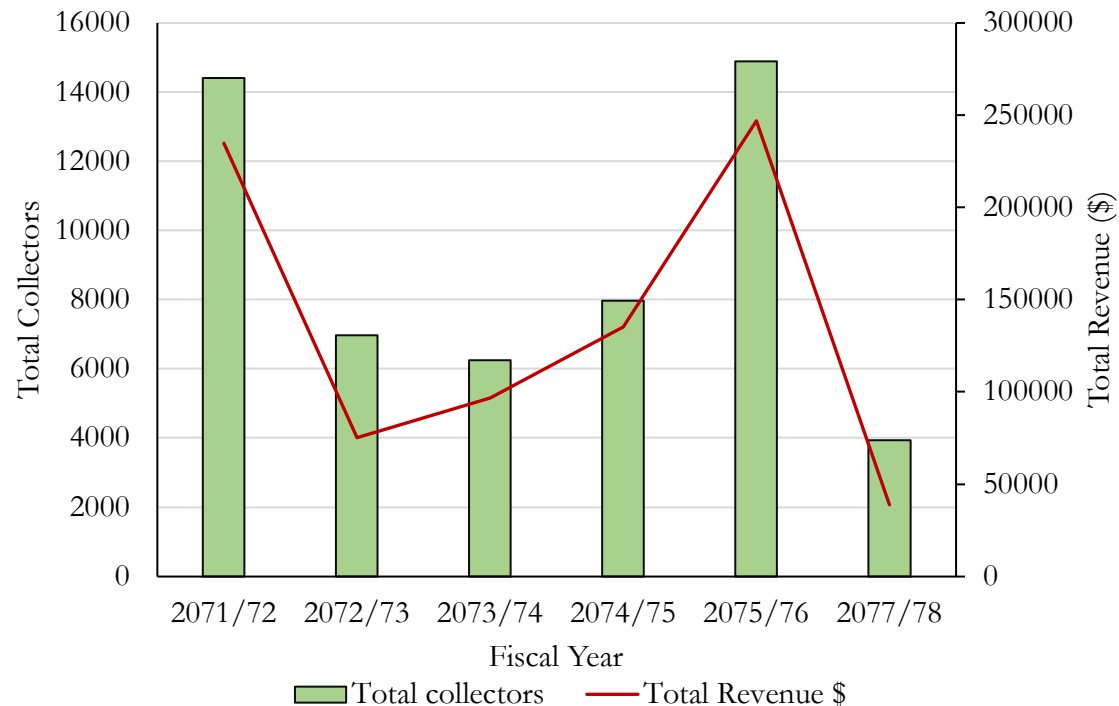


Introduction

- It is traded in large volumes in domestic and international markets



Source- NRB, 2072



Source- SPNP, Dolpa

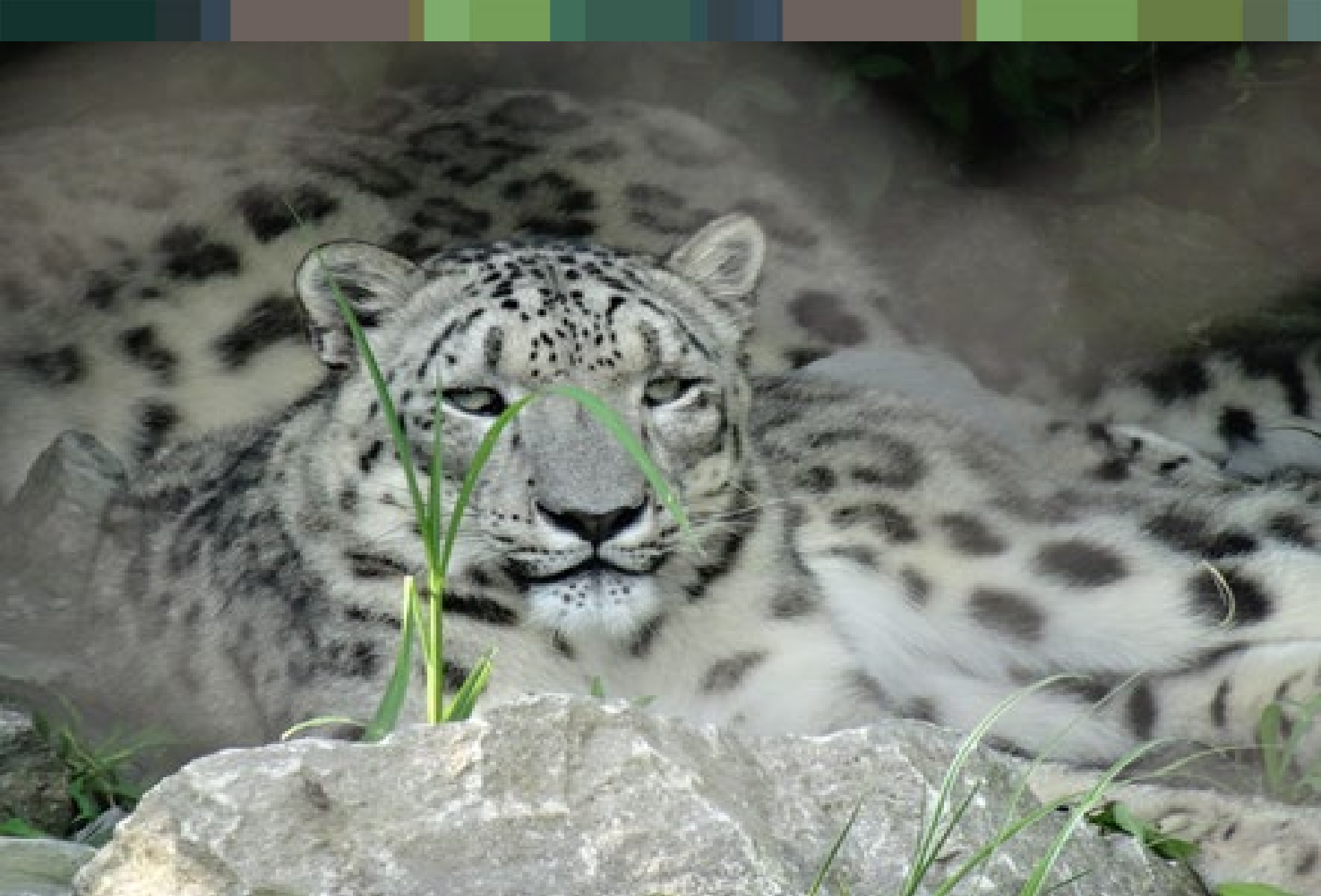
Introduction

- Due to unsustainable harvesting rates and practices, high-altitude ecosystems are under human pressure.

Photo: Bharat Bandhu











Introduction

- For maintaining the ecosystem's functioning and human well-being, it necessitates conservation
- However, conservation often involves contentious and complex decision-making dilemmas

Photo: Bharat Bandhu

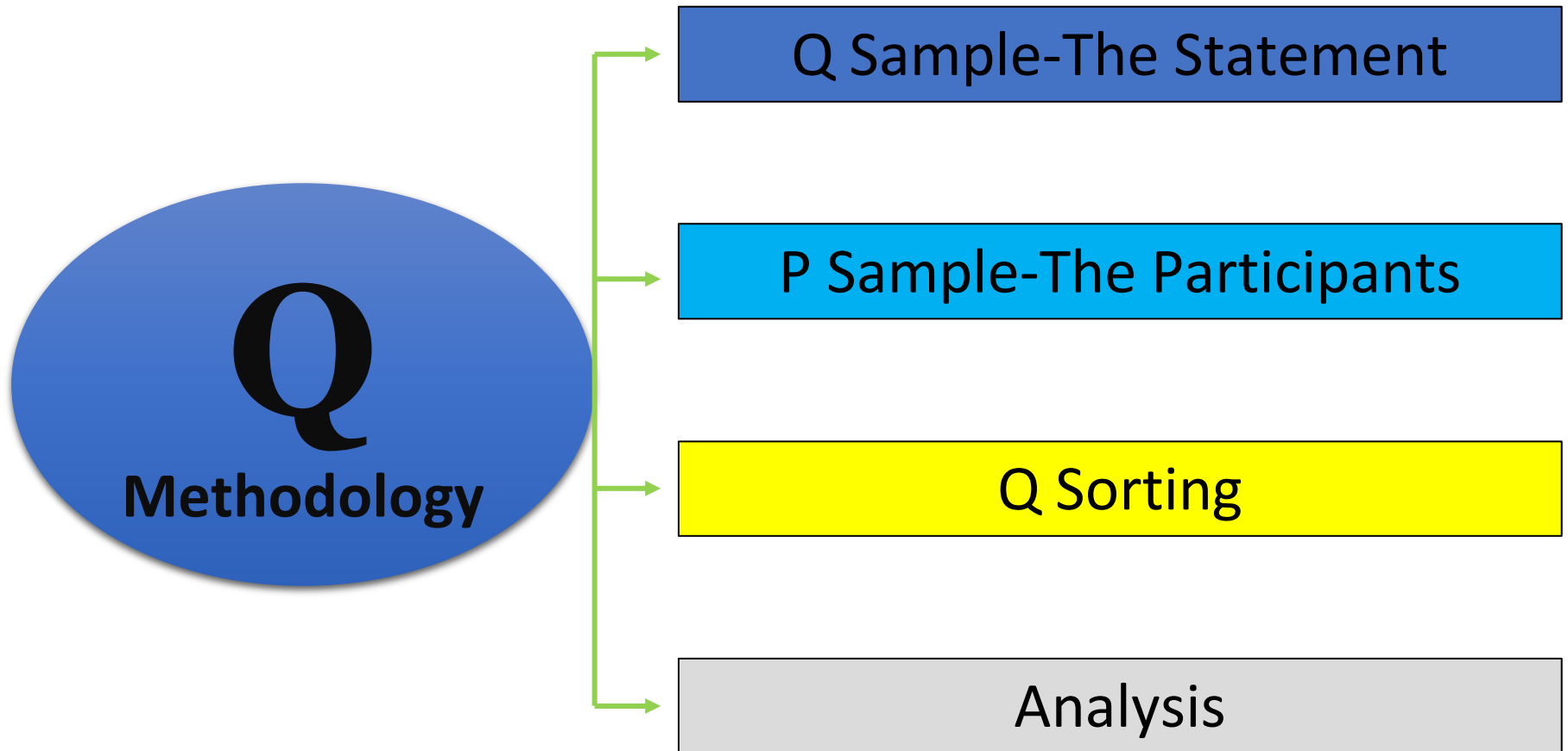
Introduction



Local Peoples' Participation is
Crucial

Understand harvesters' viewpoints on cordyceps harvesting and its ecological impacts

Methods



Methods (Q Samples)

यार्चाकुम्बु टिप्ने कामलाई प्रतिबन्ध गर्नुपर्दछ ।

१

मेरो उद्देश्य प्रत्येक वर्ष यार्चा कुम्बुको संकलनको मात्रा बढाउने हो ।

२

यार्चाको धेरै संकलन गर्नाले यसको संख्या घट्दै गएको छ ।

११

जनसंख्या वृद्धि नै यार्चाको संख्या घट्नुको मुख्य कारण छ ।

१२

विना कुनै लगानि संकलन गर्न पाउने स्वतन्त्रता भएका कारण म यार्चाको संकलन गर्ने गर्दछु ।

३

केन्द्रिय तथा स्थानिय सरकार को समन्वयमा पाटन क्षेत्रको व्यवस्थापन गर्नुपर्दछ ।

४

यार्चाको संकलनले वातावरणमा नराम्रो असर गर्दछ ।

१३

यार्चा संकलनबाट प्राप्त आम्रदानिको धेरै भाग मेरा छोराछोरिको शिक्षामा खर्च हुन्छ ।

१४

संकलनको बेलामा पाटन सरसफाई गरे वापत सरसफाई गर्ने व्यक्तिहरूलाई केही पैसा दिनुपर्दछ ।

५

सरकारले हिमाली जैविक विविधता संरक्षणमा प्रभावकारी कार्यक्रम सञ्चालन गर्नुपर्दछ ।

६

जैविक विविधता संरक्षणका लागि अझ धेरै नियम तथा कानूनको आवश्यकता छ ।

१५

स्थानिय समुदाय संगको सहकार्यले डोल्यामा यार्चाको दिगोपन रहन्छ ।

१६

यार्चा संकलनको सिजनमा नियम कार्यान्वयन गर्नका लागि वन तथा निकुञ्जका कर्मचारीको उपस्थिति हुनुपर्दछ ।

७

यार्चा संकलनको लागि सिमा निर्धारण तथा निति नियम स्पष्ट हुनुपर्दछ ।

८

यार्चाकुम्बुको संकलनले जोखिममा रहे का वन्यजन्तु जस्तै हिउँ चितुवाको वासस्थानमा असर गर्दछ ।

१७

जैविक विविधता संरक्षण र जनताको जिविकोपार्जनका विच सन्तुलन कायम गर्नु पर्दछ ।

१८

सरकारले संकलनकर्ताबाट सिधै यार्चा किन्ने व्यवस्था मिलाउनु पर्दछ ।

९

यार्चाको संरक्षण तथा व्यवस्थापनका निर्णयहरूमा स्थानियको सहभागिता आवश्यकता छ ।

१०

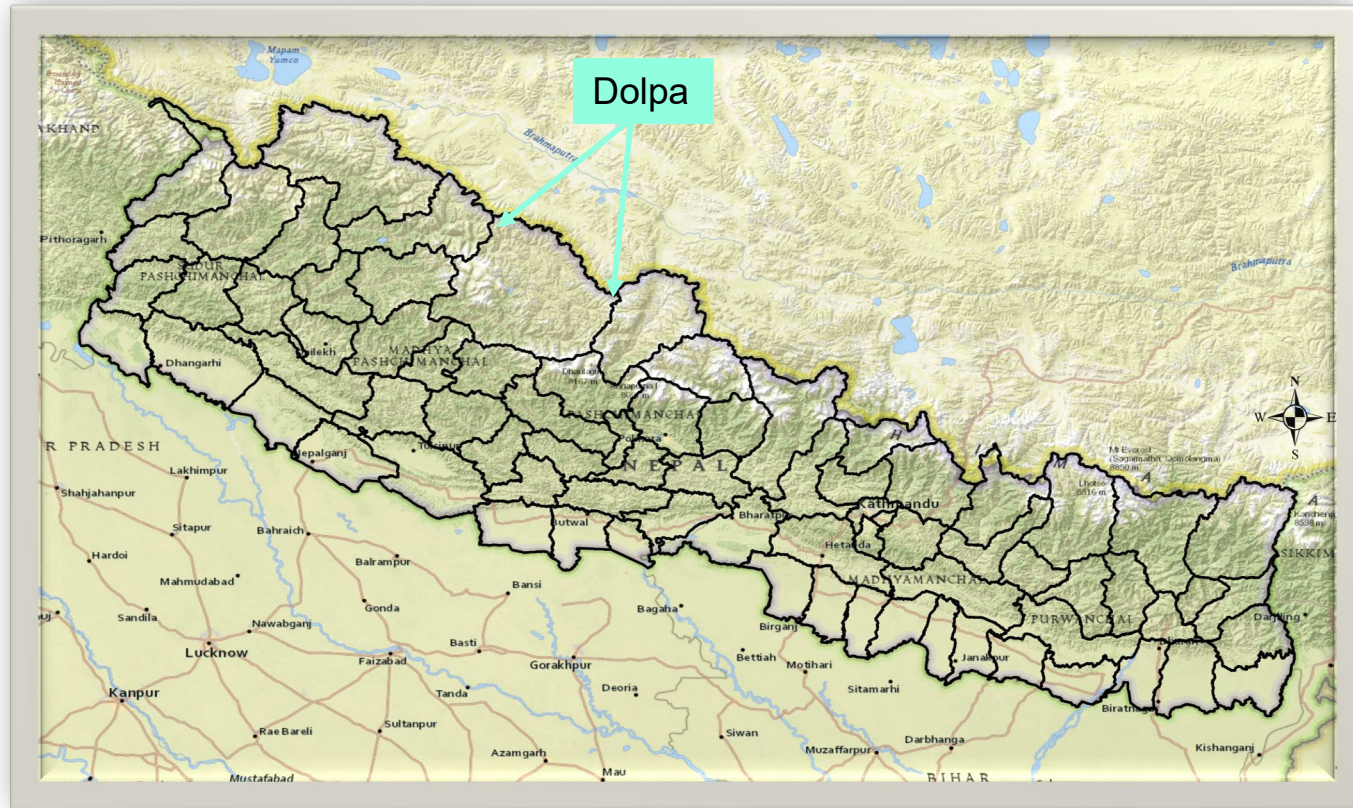
पाटन क्षेत्रमा यार्चा संकलनको समयमा जथाभावी फोहोर गर्नेलाई जरिवाना तिर्न लगाउनु पर्दछ ।

१९

प्रत्येक वर्ष छुट्टै छुट्टै पाटनमा यार्चा टिप्ने व्यवस्था गर्नुपर्दछ ।

२०

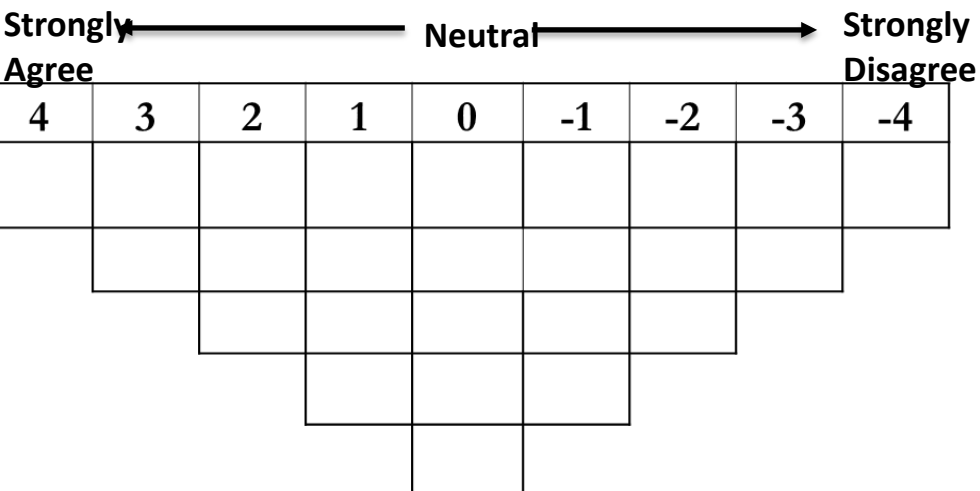
Methods (P Samples)



35 Harvesters

Experience of harvesting: \geq five years

Methods (Q Sorting)



Challenges and Prospects of Conservation of Yarsagumba
Q-Sort Record Sheet

नाम: [] मिति: []
 लिङ्ग: [] उमेर: []

शैक्षिक स्थिति: Job - SLC परिवारको मुख्य पेशा/व्यवसाय: Ag

तपाईंको परिवारले कहिले देखि तपाईंले विगत ३ सालमा कति याचा टिप्नु भयो ?
 याचाकुम्भु टिप्नु भयो? 2019 - 100
 2063 18 - 200
 17 - 300

तपाईंले याचा डोल्याली व्यापारीलाई दिनुभयो कि बाहिरका व्यापारीलाई दिनु भयो ? Do/No

पूर्ण रूपमा सहमत ← तटस्थ → पूर्ण रूपमा असहमत

4	3	2	1	0	-1	-2	-3	-4
14	17	3	24	6	12	22	25	1
	9	11	13	23	5	20	10	
		16	8	15	21	4		
			2	18	7			
				19				

तपाईंका सुभाव तथा सल्लाहरू के-के छन् होला?

बाहिरका व्यापारीलाई दिनु भयो ।

Methods (Analysis)

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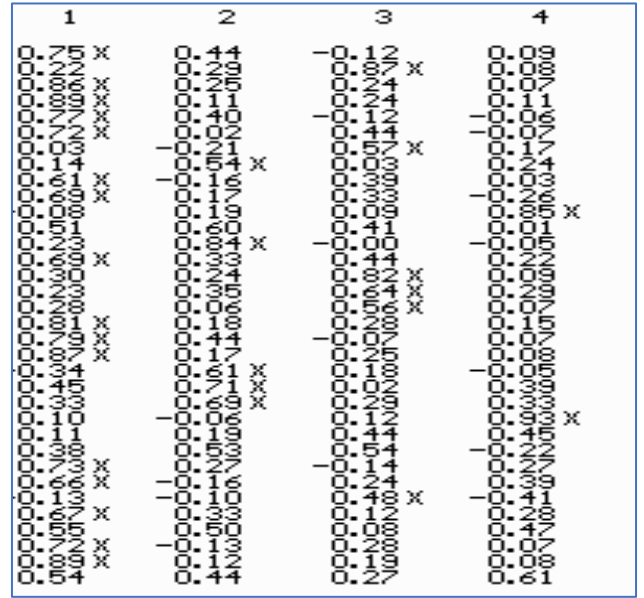
Current Project is ... C:\PQMETHOD\projects\BB2018
Choose the number of the routine you want to run and enter it.
 1 - STATES   - Enter (or edit) the file of statements
 2 - QENTER   - Enter q sorts (new or continued)
 3 - QCENT    - Perform a Centroid factor analysis
 4 - QPCA     - Perform a Principal Components factor analysis
 5 - QROTATE  - Perform a manual rotation of the factors
 6 - QVARIMAX - Perform a varimax rotation of the factors
 7 - QANALYZE - Perform the final Q analysis of the rotated factors
 8 - View project files travel.*
 X - Exit from PQMethod
    Last Routine Run Successfully - (Initial)

2
Checking old input data file ....
Enter the title of your study to a max of 68 characters.
Medium-distance decision making strategies
How many q statements are there?
42
  
```

PQMethod_Shortcut

	Eigenvalues	As Percentages	Cumul. Percentages
1	24.0720	70.8000	70.8000
2	2.5194	7.4099	78.2100
3	1.7961	5.2827	83.4926
4	1.2130	3.5676	87.0602
5	0.5203	2.7069	89.7671
6	0.7516	2.2106	91.9777
7	0.5860	1.7235	93.7012
8	0.4689	1.3793	95.0804
9	0.3938	1.1582	96.2386
10	0.3830	1.1266	97.3652
11	0.2265	0.6660	98.0313
12	0.1684	0.4953	98.5265
13	0.1180	0.3470	98.8736
14	0.1022	0.3007	99.1742
15	0.0880	0.2589	99.4322
16	0.0703	0.2093	99.6400
17	0.0357	0.1049	99.7450
18	0.0272	0.0801	99.8251
19	0.0251	0.0738	99.8989
20	0.0142	0.0419	99.9408

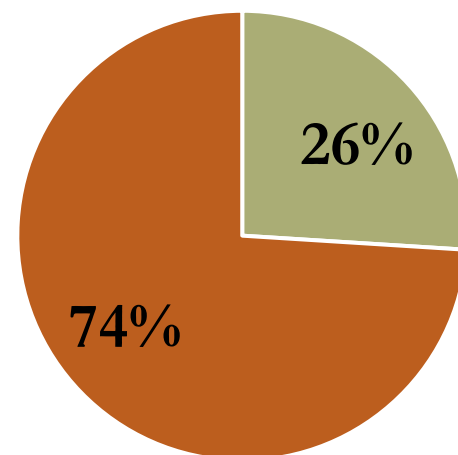
Press <ENTER> to continue



Results

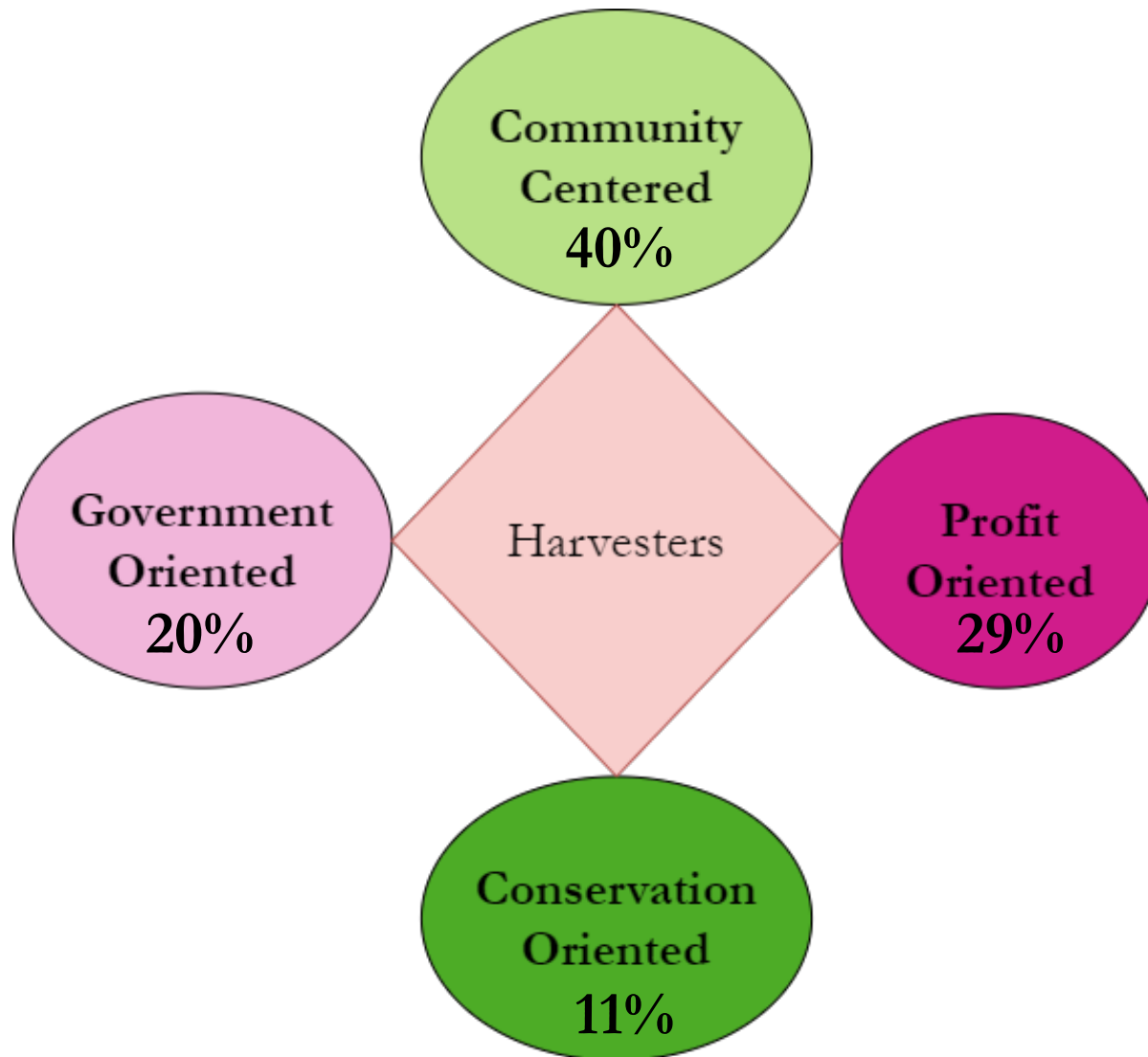
Age	22-49 (35)
Male/Female	85%/15%
Education	
Under SLC	49%
SLC	29%
Plus 2	22%
Occupation	
Agriculture	57%
Business	29%
Other	14%

Where do you sell your cordyceps?



■ Outside of Dolpa ■ Dolpa

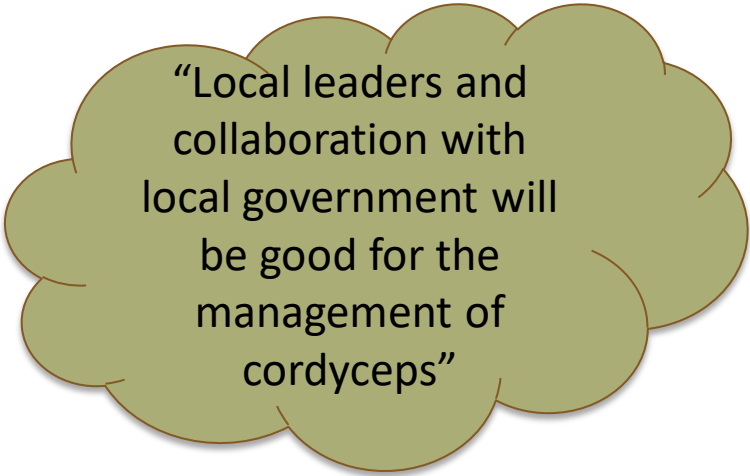
Results



Community Centered

Management of cordyceps should be done in collaboration with locals

- Management of cordyceps and its habitat should be done with collaboration between local communities and the government
- Partnership with local communities will ensure the long-term conservation of cordyceps
- Local and central government should manage the pasture land together

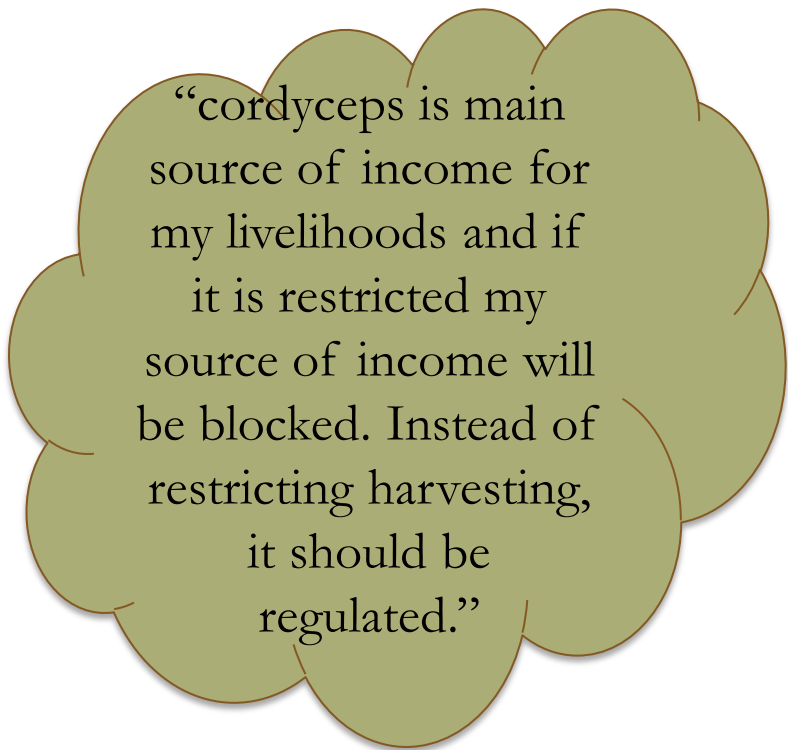


“Local leaders and collaboration with local government will be good for the management of cordyceps”

Harvester #11

Community Centered

- There should be balance between livelihoods concern and biodiversity conservation
- Conservation of cordyceps and its habitat requires more collaboration and communication between local communities
- Don't support the restriction of harvesting



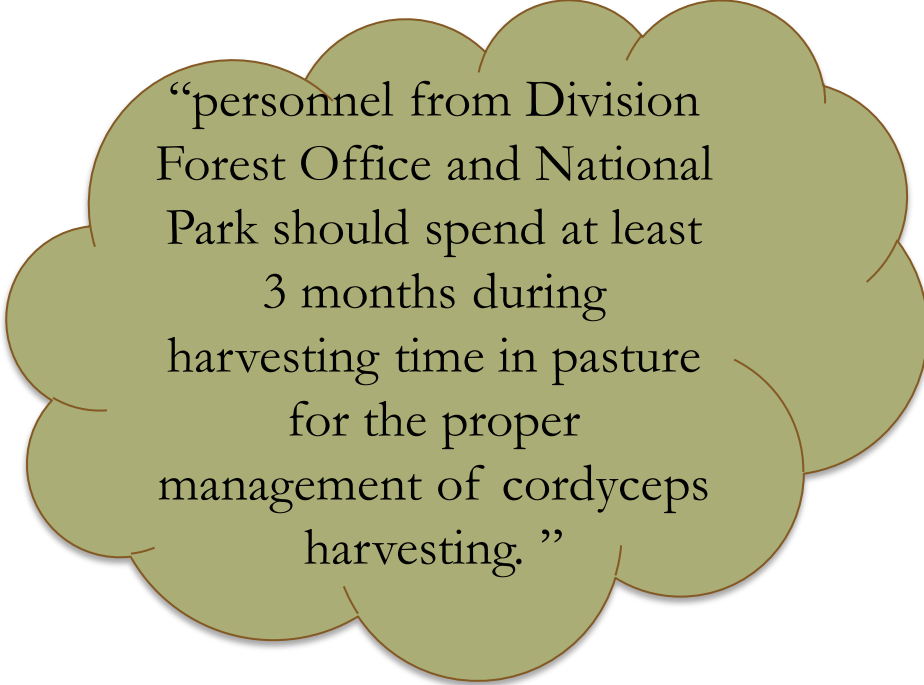
“cordyceps is main source of income for my livelihoods and if it is restricted my source of income will be blocked. Instead of restricting harvesting, it should be regulated.”

Harvester #12

Government Oriented

Harvesting of cordyceps and pasture should be managed and regulated by the government

- Government should buy cordyceps from harvesters
- There should be the presence of forest/national park officials enforcing regulations
- They believe rules and regulations are important and more is needed

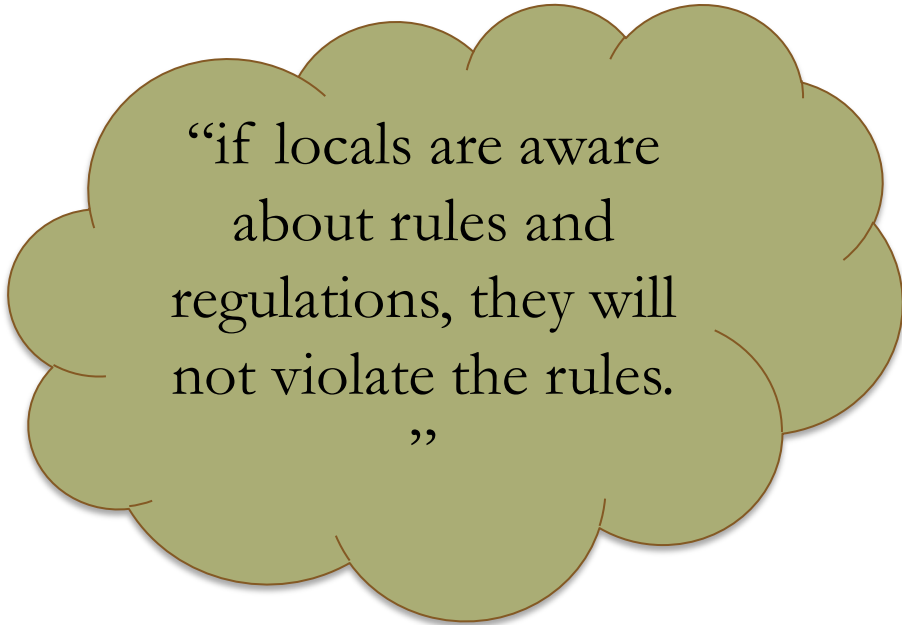


“personnel from Division Forest Office and National Park should spend at least 3 months during harvesting time in pasture for the proper management of cordyceps harvesting.”

Harvester #3

Government Oriented

- Illegal harvesting is a problem and should be controlled
- Support clear boundaries and rules for harvesting
- Substantial penalty for leaving trash in the pasture during harvesting



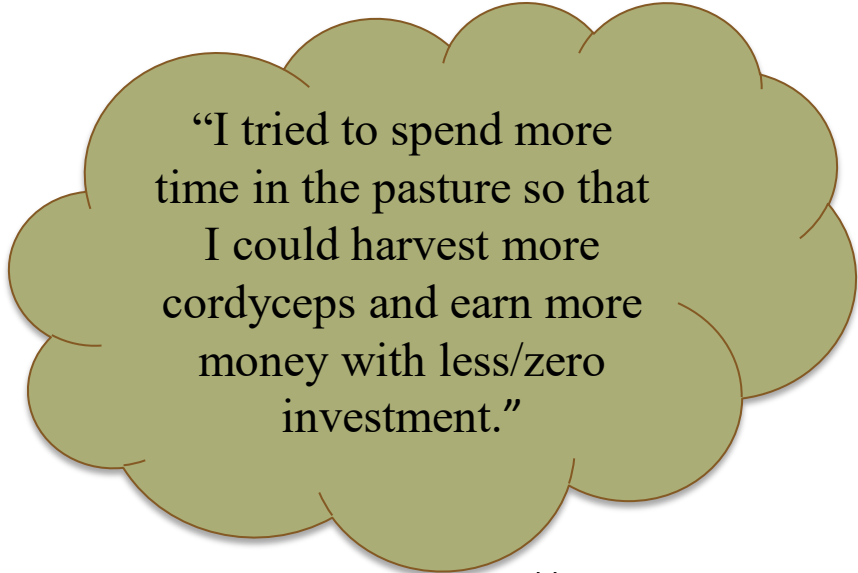
“if locals are aware about rules and regulations, they will not violate the rules.”

Harvester #3

Profit Oriented

Focused on profit-making and are against rules and regulations

- Are against the presence of forest/national park officials to enforce regulations
- There should not be clear boundaries and rules for harvesting cordyceps
- Their objective is always to increase the harvesting amount every year
- Generally are not conservation oriented




“I tried to spend more time in the pasture so that I could harvest more cordyceps and earn more money with less/zero investment.”

Harvester #32

Profit Oriented

- They believe that people should be paid to maintain pasture clean during harvesting
- They don't worry about sustainability as they believe that cordyceps is not threatened
- They did not see any direct connection between nature degradation and harvesting
- They don't want the government to implement effective conservation programs



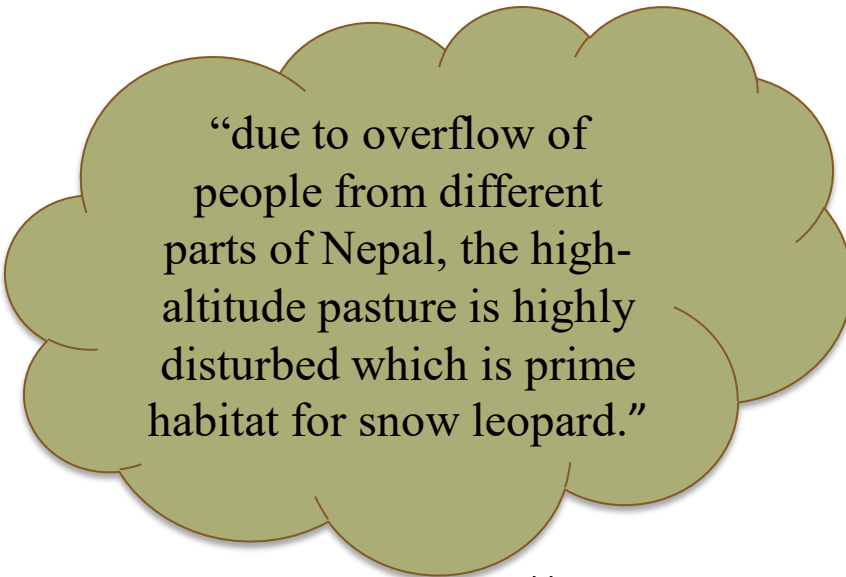
“If government wants me to make pasture clean, they should pay me.”

Harvester #32

Conservation Oriented

There is a connection between nature degradation & harvesting of cordyceps

- Harvesting of cordyceps directly affected the habitat of endangered species such as snow leopard
- Illegal harvesting is a major problem and should be controlled
- Law enforcement agencies should be present
- The harvesting plan should be there

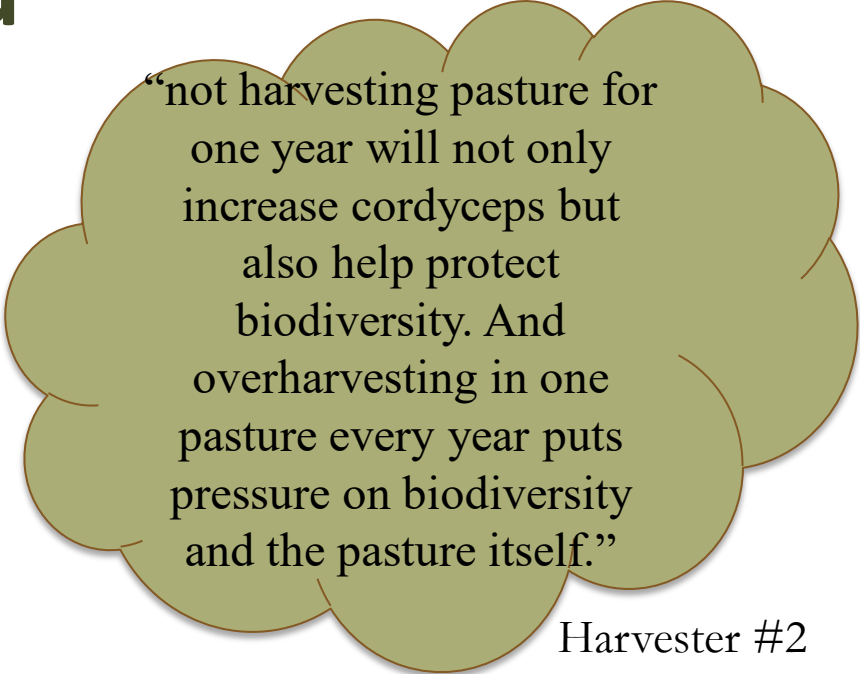


“due to overflow of people from different parts of Nepal, the high-altitude pasture is highly disturbed which is prime habitat for snow leopard.”

Harvester #23

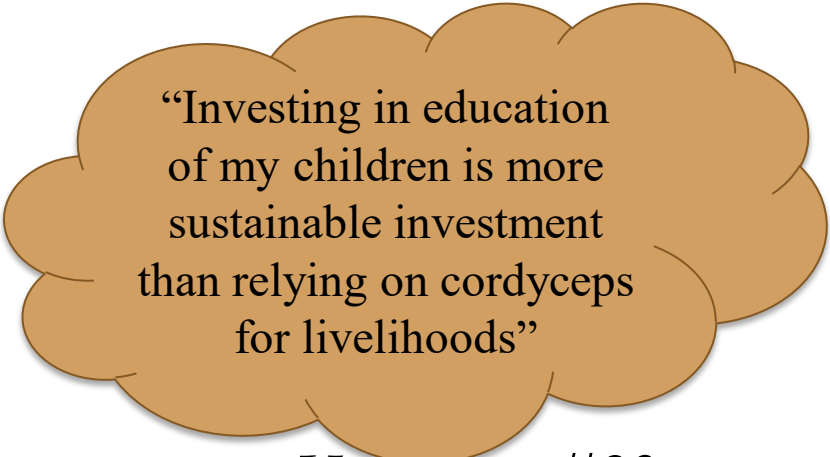
Conservation Oriented

- National harvesting plan with harvesting calendar should be implemented
- They did not focus on increasing the harvesting every year
- They spend most of their income from cordyceps to the education of their children



“not harvesting pasture for one year will not only increase cordyceps but also help protect biodiversity. And overharvesting in one pasture every year puts pressure on biodiversity and the pasture itself.”

Harvester #2



“Investing in education of my children is more sustainable investment than relying on cordyceps for livelihoods”

Harvester #23

Conclusions and Discussion

- Divergent viewpoints exist among cordyceps harvesters about cordyceps harvesting and its ecological consequences
- Four major harvesters types as per their view points-Community Oriented, Government Oriented, Profit Oriented, Conservation Oriented
- To achieve conservation goal, local harvesters participation is crucial and their viewpoints should be consider on planning process

Future Work

- Understand traders' viewpoints
- How local government can integrate divergent viewpoints into conservation planning?

Acknowledgment

IOWA STATE UNIVERSITY.

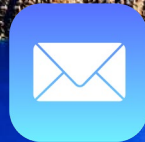


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