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Facility Management

ICBC Institut für Chemie
und Biologische Chemie

Value addition through Eco-labelling of unique synergistic attributes of Indian coffee appreciated by the citizens of Swiss / EU

Collaboration of

- University of Agricultural and Horticultural Sciences, Shivamogga, India
- University of Agricultural Sciences, Bangalore, India
- Zurich University of Applied Sciences, Wädenswil, Switzerland

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Promoting Indian coffee in Switzerland by improved quality, labeling and positioning for the socio economic betterment of coffee farmers in Karnataka, India

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Linking Kodagu and Swiss landscape and culture

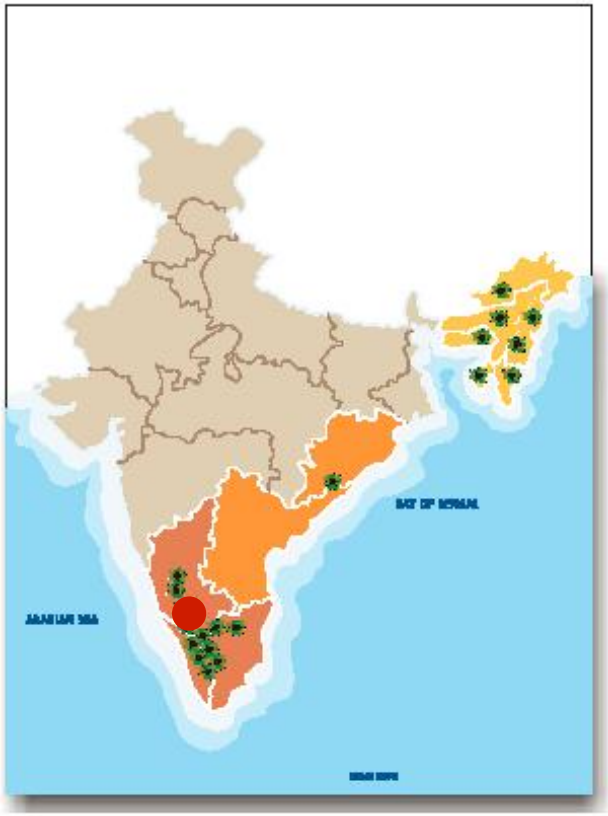
specific objectives

- Analyze the unique features of Indian coffee ecosystem
- Review objectively the quality of Indian coffee from different ecosystems
- Analyze the economics, demand and market situation in Switzerland for positive claims, labels and positioning of Indian coffee

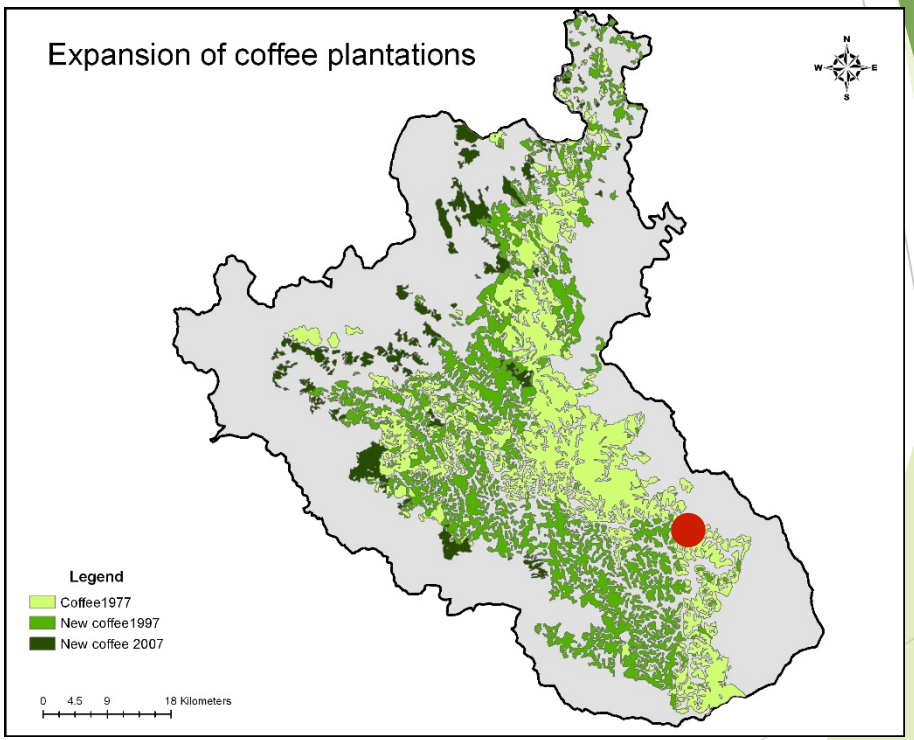
Research approach

- Selection of the farms, ecological importance thereof (diversity of trees, shade, etc)
- Coffee sampling design
- Standards and farm suitability from Swiss` point of the view, coffee quality, sample collection at the farm
- Sample processing at ZHAW (sorting, roasting, grinding, coffee extraction)
- Sample analysis with HS (SPME) GC/MS
- Sensory evaluation by expert panel

Selection of coffee farms in India



Source: Coffee Board of India



Source: unpublished Nanaya K


Coffee
Forest
Palm
Rice

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Ecological importance of the farms

- Biodiversity hotspot of the world
- High diversity of many taxa recorded
- Close proximity to endangered wildlife
- 100 per cent shade grown
- Cultural landscape

Possible questions tried to answered

- Overall quality of Indian robusta coffee.
  - Physical, chemical and sensory
- Effect of early and late coffee harvesting
- Effect of organic and normal coffee.
- Effect of varieties.- Possible?

Farmer sample name	Remarks
Arun-I	Test quality based on time of harvest
Arun-II	
Ashok	
Jaya	
Karun	
Kashi I	Test quality based on time of harvest
Kashi II	
Kushalappa-Normal	Test quality between organic and normal coffee
Kushalappa-Organic	
Prathap I	Test quality based on time of harvest
Prathap II	
Sampath	
Shakila	
Suji	

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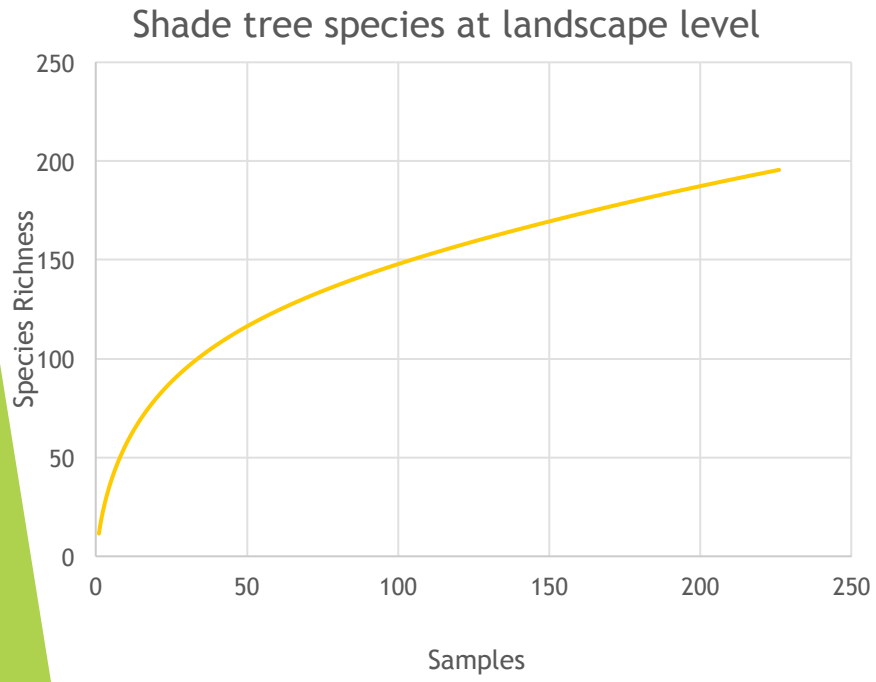
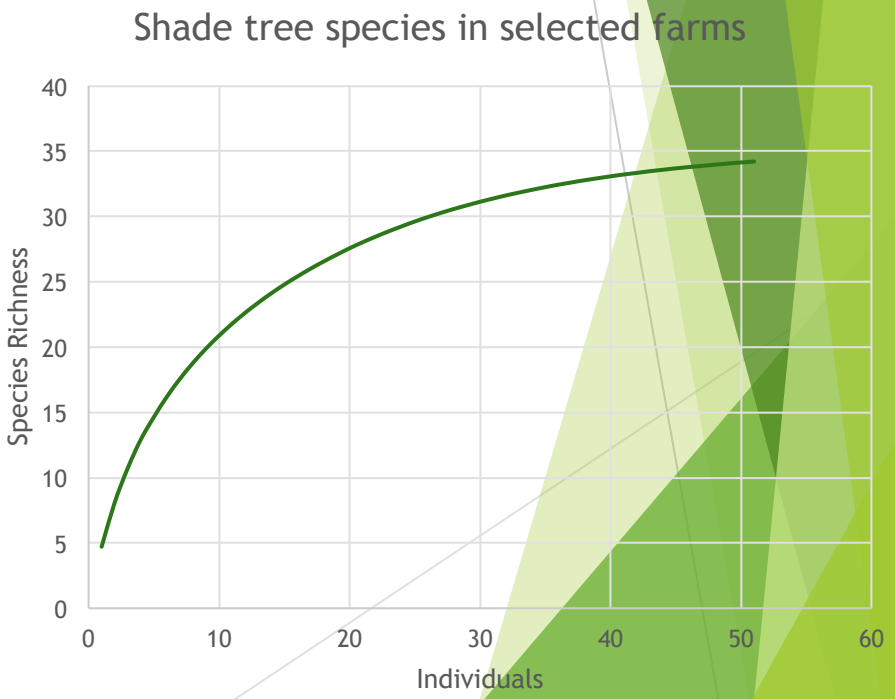
Ecological importance of the farms: Comparison of study area with the landscape





Sample collection and processing

Analyse unique features of Indian coffee ecosytems

Analyse unique features of Indian coffee ecosytems

- Standards and farm suitability from Swiss` point of the view
- analytical and sensorial analysis of coffee quality

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Standards and farm suitability from Swiss` point of the view

- **sustainability assessment: SAFA-Guidelines FAO (2013)**
  - **environmental integrity**
  - **social well-being**
  - **economic resilience**

- **Standards: Bio-Suisse and Fairtrade**

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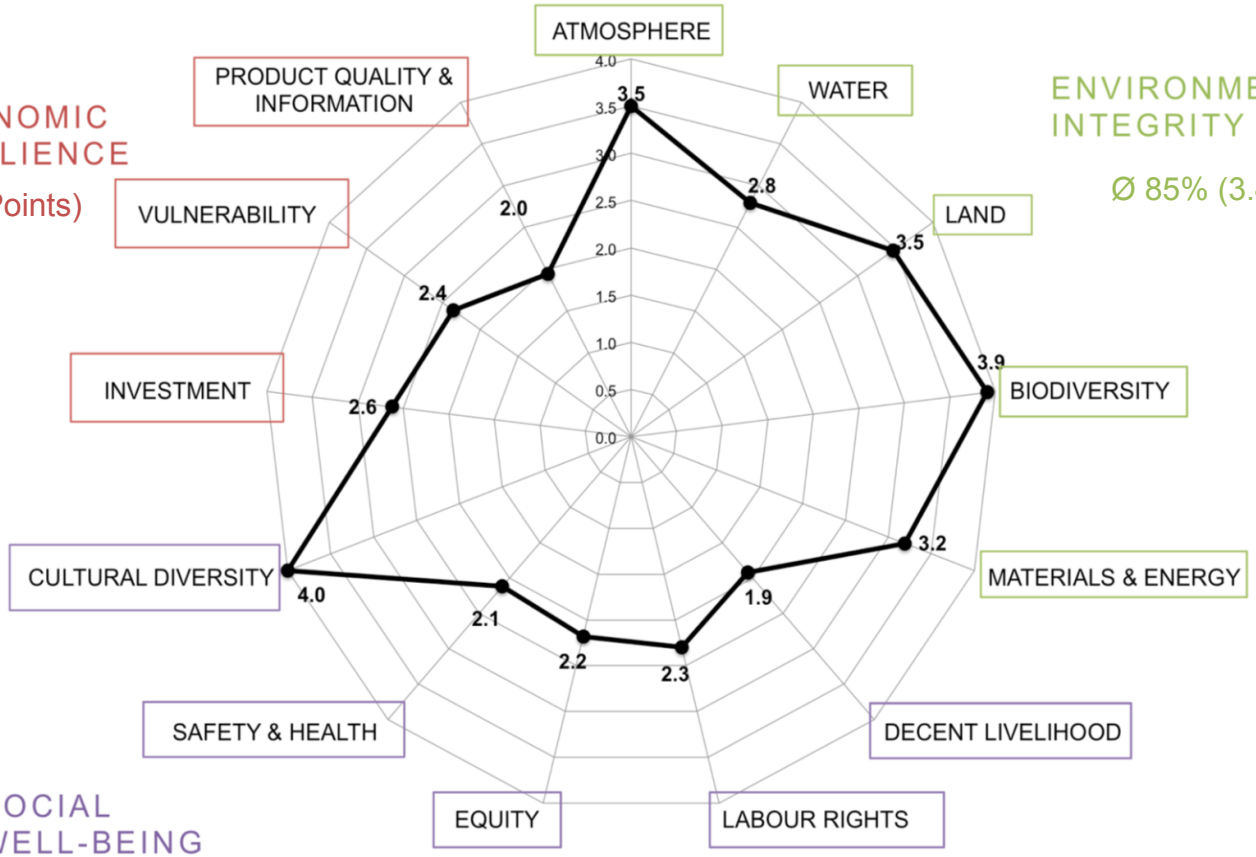
How sustainable do the farmers produce?



ECONOMIC RESILIENCE

Ø 58% (2.3 Points)

ENVIRONMENTAL INTEGRITY

Ø 85% (3.4 Points)

SOCIAL WELL-BEING

Ø 63% (2.5 Points)

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Performance of 10 farms

Compliance to Labels

BIO SUISSE

75% achieved!

FAIRTRADE MAX HAVELAAR

67% achieved!

- **high performance in environmental sustainability and cultural diversity**
- **weaker in social and economic sustainability (except one farm)**
- **for both labels: lack of traceability**

Analytical and sensorial analysis of coffee quality

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zh
aw

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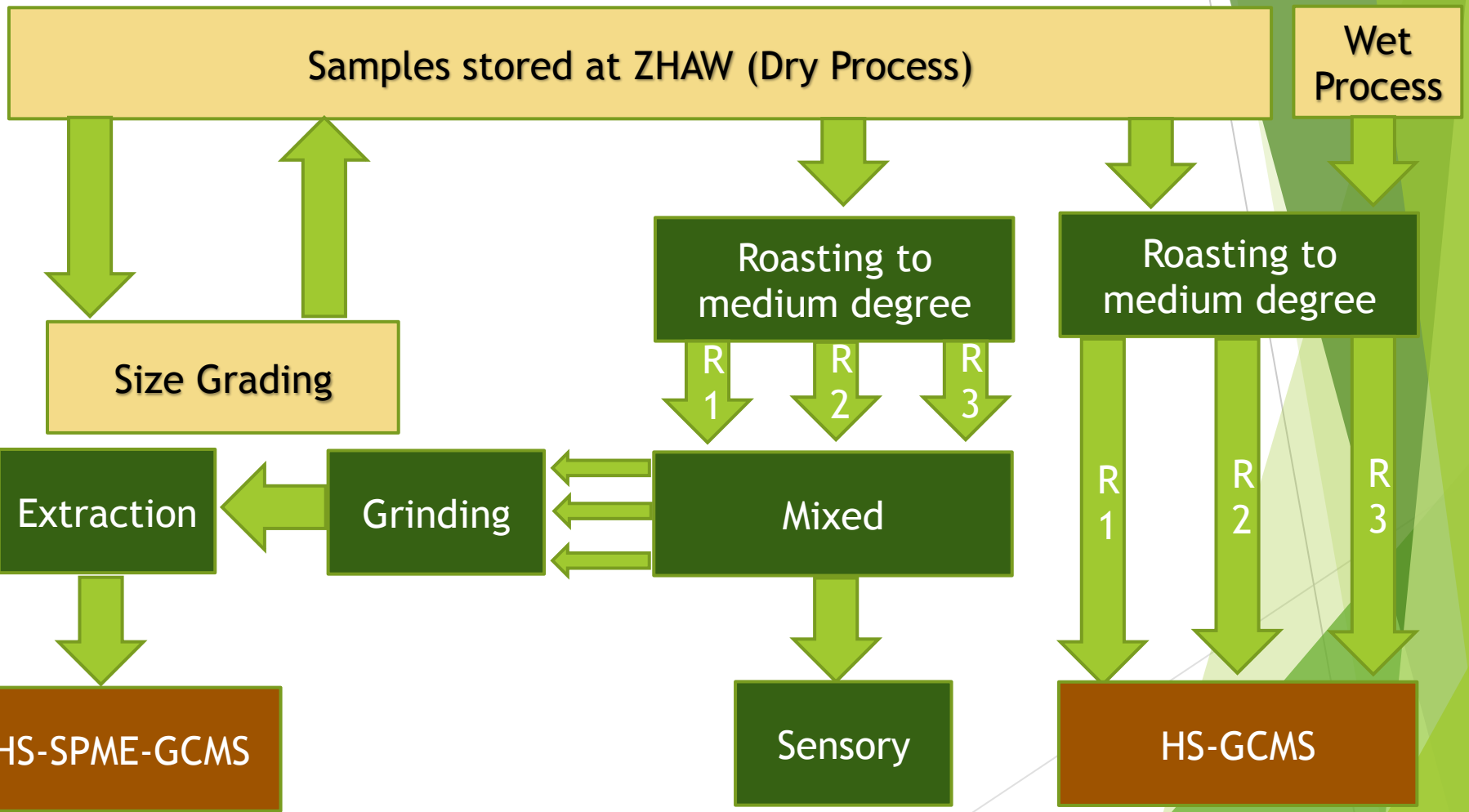

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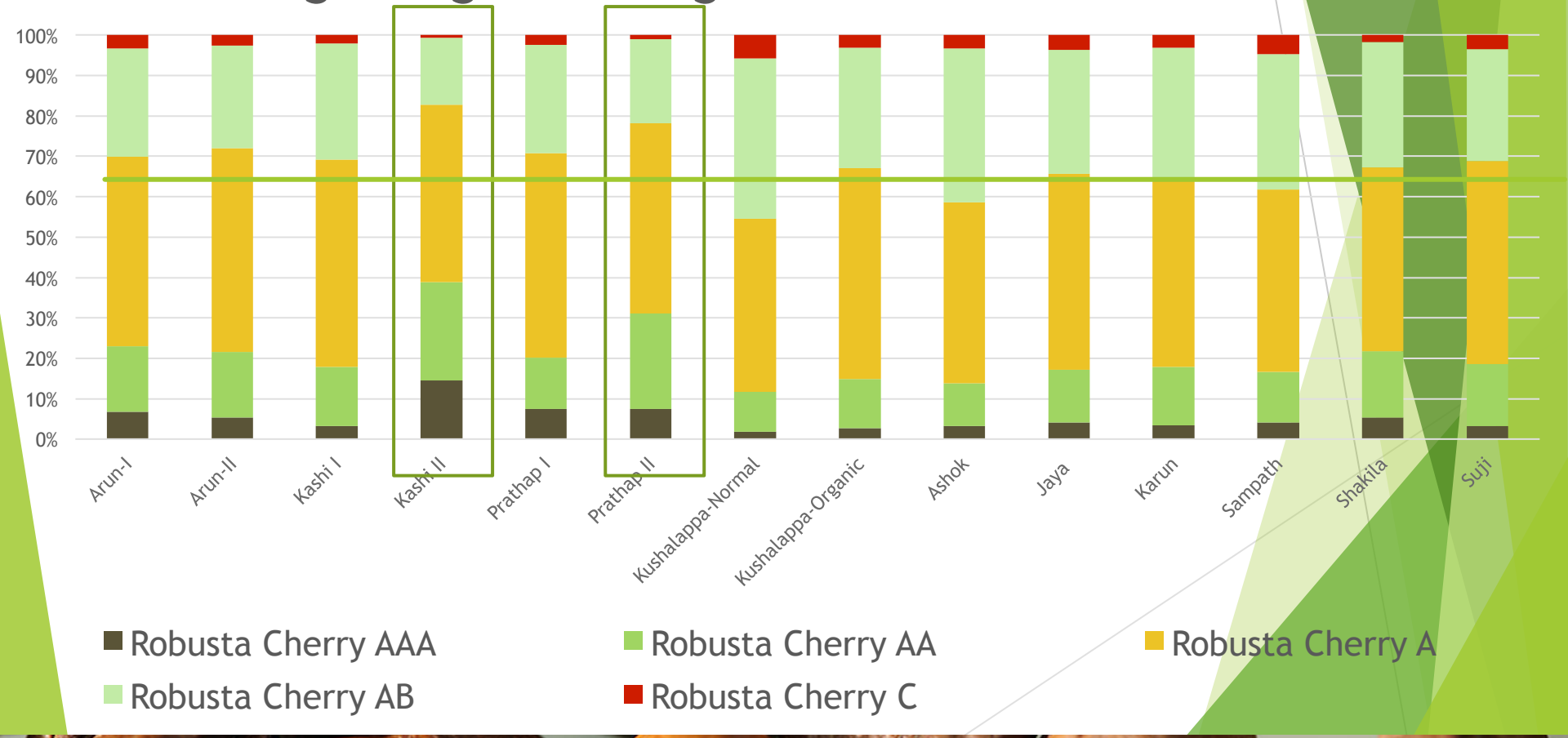
Size grading according to Indian robusta standards



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Analysis with HS (SPME) GC/MS

Two methods were applied:

1. **Aroma analysis above roast and ground powder**

   4 g of ground powder filled in nitrogen atmosphere: HS GC/MS analysis

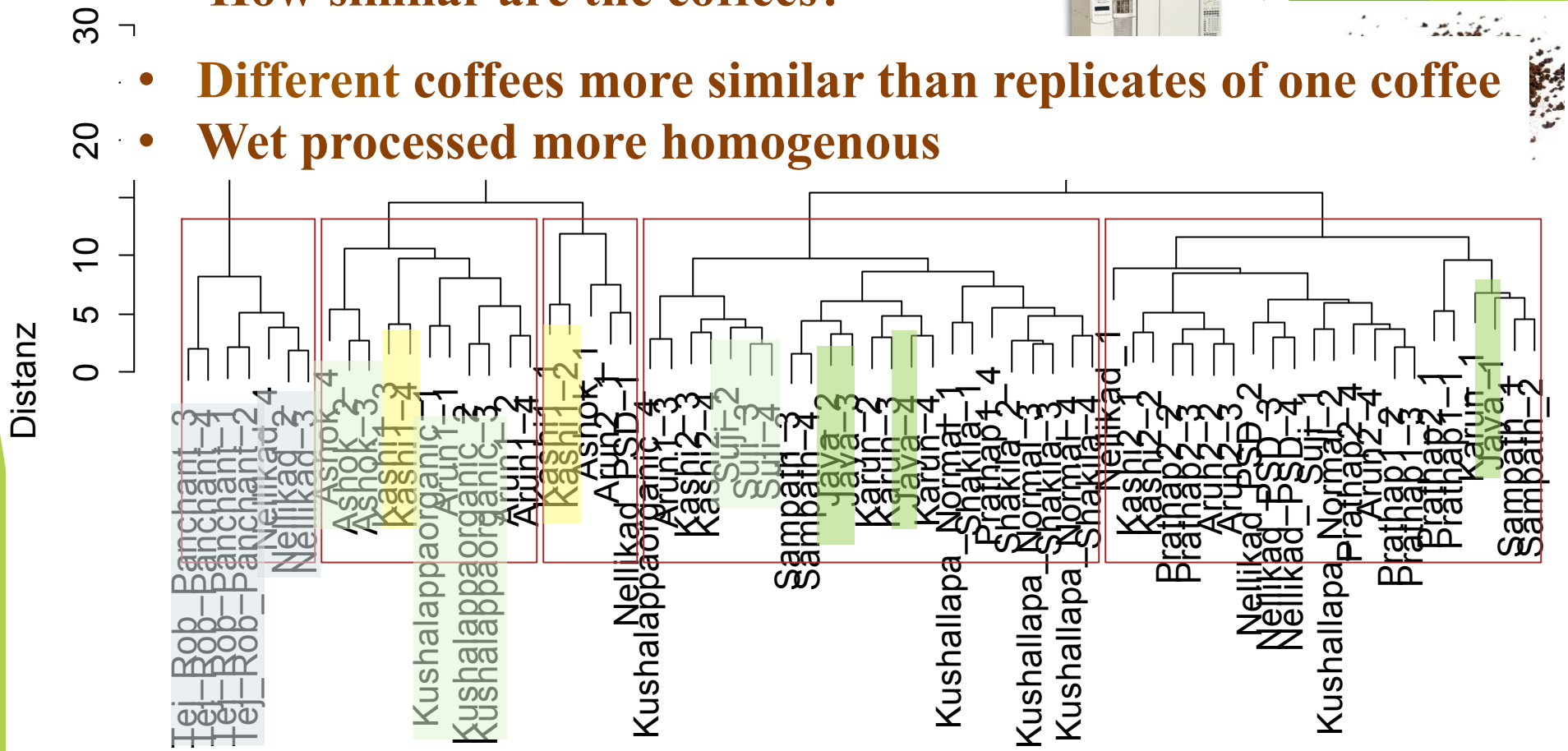
2. **Aroma analysis above coffee brew**

   15 g of ground powder, 250 mL water @ 92°C, 4 min extraction time: 10 mL for HS SPME GC/MS analysis

HS GC/MS

How similar are the coffees?

- Different coffees more similar than replicates of one coffee
- Wet processed more homogenous



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Results: GC/MS analysis

General:

- Samples were rather similar
- Replicates of coffees more different than coffees
- Due to heterogenity of with in samples?
- Wet processed samples were more homogenous

No direct conclusions possible:

- early vs. late harvest
- organic vs. normal

Sensory evaluation

Expert panel

Three persons evaluated in triplicate

8 attributes

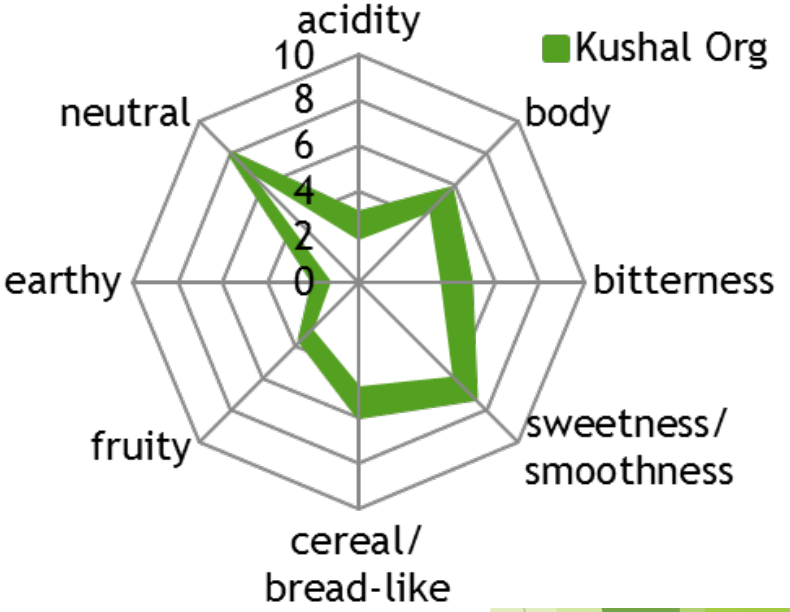
- Acidity
- Body
- Bitterness
- Sweetness/ smoothness
- Cereal/ bread-like
- Fruity
- Earthy
- Neutral

results:

Sensory evaluation

Sensory specialties

- Samples were similar
- High in sweetness
- Low in earthy
- Smoothness



wet processed vs. dried cherries

- no loss of sweetness
- even less earthy
- smoothness enhanced

evaluation done by
Nanaya, Samo and Alexia,
no expert panel!

Conclusions

- samples are rather similar
- sorting could make them more homogenous
- wet processed led to more homogenity of samples
- special sensory properties: sweetness, smoothness, low in earthy
- wet processing maintained sensory specialties

Recommendations

Recommendations to Coffee Farmers (1)

Farming practices

- Sorting cherries at the farm gate to increase homogeneity of coffee
- Cup the coffee for quality assessment
- maintain tree diversity
- wet processing to increase coffee quality without losing special positive sensory properties (long term)

Recommendations to Coffee Farmers (2)

trading / marketing

- unique selling points:
  - special sensory properties
  - high biodiversity, forest coffee
  - story telling: sacred groves

- build “farmer’s circle” as contact point for Swiss roasters

- offer a diversity of products: coffee, honey, pepper, cascara tea… which Swiss roasters can sell as well (as part of the story telling)

own label for Coorg farmers?

- potential of promoting Coorg Forest Coffee to roasters
- build up quality reputation (with implementing quality measures first)
- diversification of products (honey, husk-tea, pepper)
- Indian Robusta: high demand and market growth

but

- lack of market knowledge and market access
- coffee growing = core competence, not marketing

Recommendations to Swiss partners (1)

research

- undertake additional GC-MS research to define cup profiles of the farmers continuously along the quality improving steps

- analyze effect of sustainable coffee growing under shade trees on coffee quality (chemical composition of the green bean, coffee aroma, …)

- analyze impact of coffee quality improvement on livelihood of farmers

Recommendations to Swiss partners (2)

interaction with Swiss roasters

- enhance the visibility and awareness of coffee from Kodagu in Swiss markets based on ecological and quality attributes via
  - visit of Swiss roasters to India
  - Workshops
  - Social media and web
- explore new marketing mechanisms like Landscape Labelling

Outlook / further perspectives

Outlook / further perspective (1)

- present standards and directives to coffee farmers for improving coffee quality
- follow the quality improvements
  - by chemical and sensory analysis
  - by assessing the improvement of farmer's livelihood
- continue working together and exchanging research results
- work together with local coffee organizations

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Outlook / further perspective (2)

- enhance the visibility and awareness of coffee from Kodagu in Swiss markets

- build up a direct trade of Indian coffee to Swiss roasters
  - farmer circle in India
  - roaster circle in Switzerland
  - platform for collaboration
    http://www.thecoffeegateway.org/

Possible funding for next steps

- Nestle Nespresso was contacted to assess possible avenues for collaboration in India.
- The India coffee board was contacted to explore common interest and funding possibilities.
- SNSF programs are being explored as possible sources for funding