



Markets as incentives for sustainable models of on farm diversity in production systems – Lessons from sub-tropical fruits from India



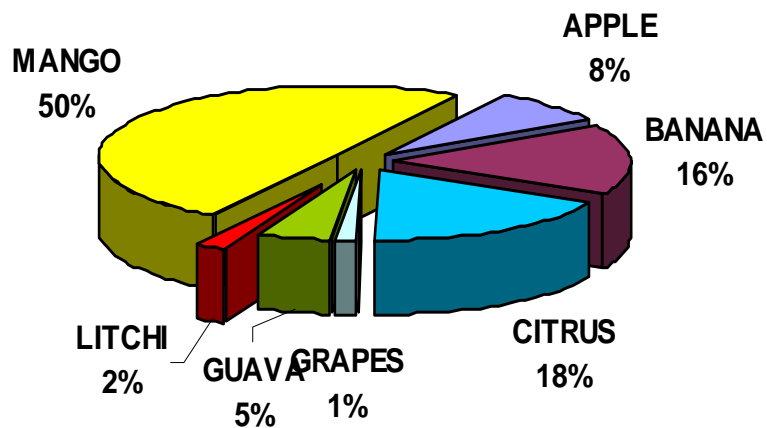
Sudha Mysore and Froukje Kruijssen



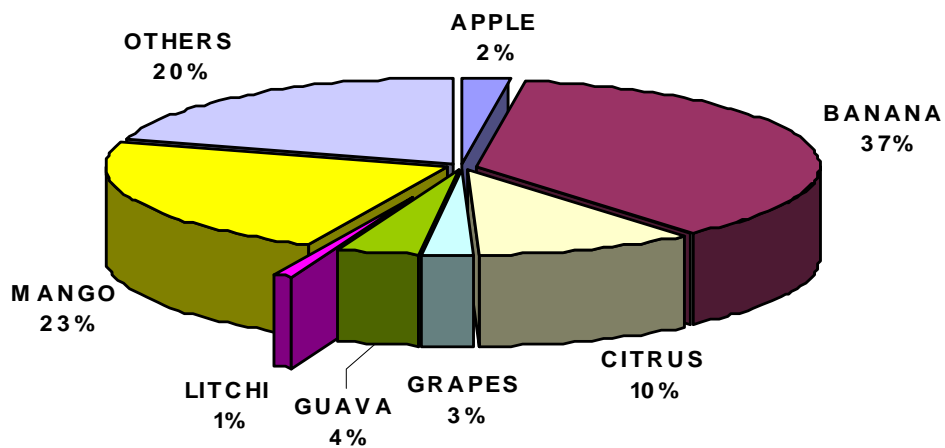
TFT Diversity status



CROP WISE AREA UNDER MAJOR FRUITS IN INDIA



PRODUCTION SHARE OF MAJOR FRUITS IN INDIA



Status of area and production of important fruits in India

Crop	Area (^{'000} ha)	Production (^{'000} t)	Productivity (t / ha)	Highest productivity in India (t /ha)
Apple	193	1348	7.0	10.1 (J & K)
Banana	475	13304	28.0	62.9 (Mah)
Citrus	563	5677	10.1	22.7 (Kar)
Grape	52	1248	24.0	28.1 (Mah)
Guava	155	1793	11.6	20.0 (Chat)
Litchi	54	476	8.8	1.6 (Bih)
Mango	1623	12733	7.8	16.3 (U.P.)
Papaya	68	2147	31.6	82.0 (T.N.)
Pineapple	80	1172	14.7	40.4 (Kar)
Pomegranate	107	743	9.5	10.5 (Kar)
Sapota	84	913	10.8	25.0 (T.N.)

Status of diversity of TFT in India

Fruit name	Intra specific / Inter generic diversity	No. of cultivars In active commercial cultivation	Remarks
Mango	Intra specific	30	Largest producer with well developed markets for conservation through utilisation
Citrus	Inter specific	25	
Grape	Inter specific	20 and above	
Banana	Intra specific	9	
Litchi	Intra specific	33	Absence of efforts

Contributing factors for agri-biodiversity maintenance

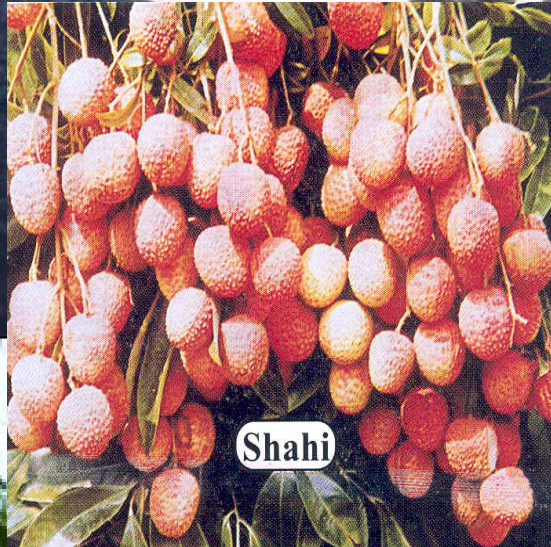
Production oriented

- Agro-climatic suitability – **multi layered cropping / specific crop**
- Season of availability – **mixed orchards, orchards with intercrops**
- Diversified utility – **table types, processing types**
- Technological – **tissue culture, grafting etc.,**

Market oriented

- Consumer preference – **varietal preference**
- price advantage – **premium price**
- Institutional support – **specialized/ exclusive market infrastructure**
- Favorable policy – **incentives for exports, special emphasis**

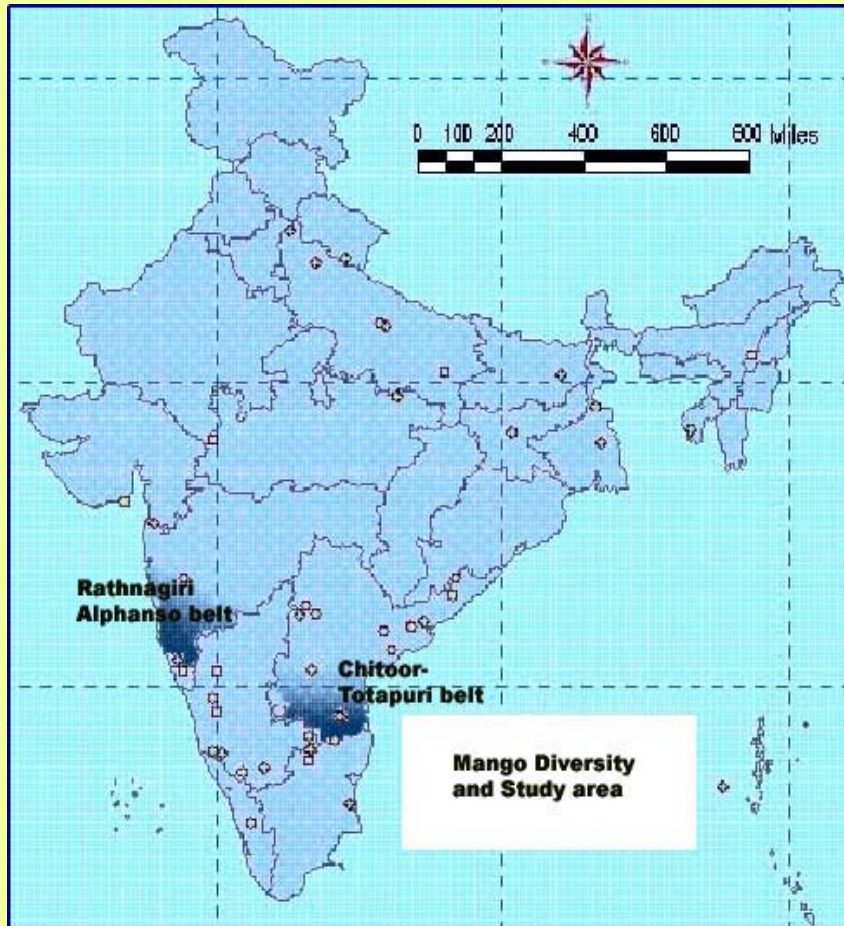
Diversity of TFT – Intra specific; inter specific



Diversity of Mango in India



Distribution of Diversity of the Mango



Chittoor has 55 000 ha, with 427 000 t production, 70% is from totapuri, houses over 47 semi-processing units

Alphanso from West (Ratnagiri from Maharashtra) and

Totapuri from South (Chittoor in Andhra Pradesh) are main sources of mango pulp for export and domestic use.

Mango

Case Study : Mango

Farmers maintain about ten varieties on farm.

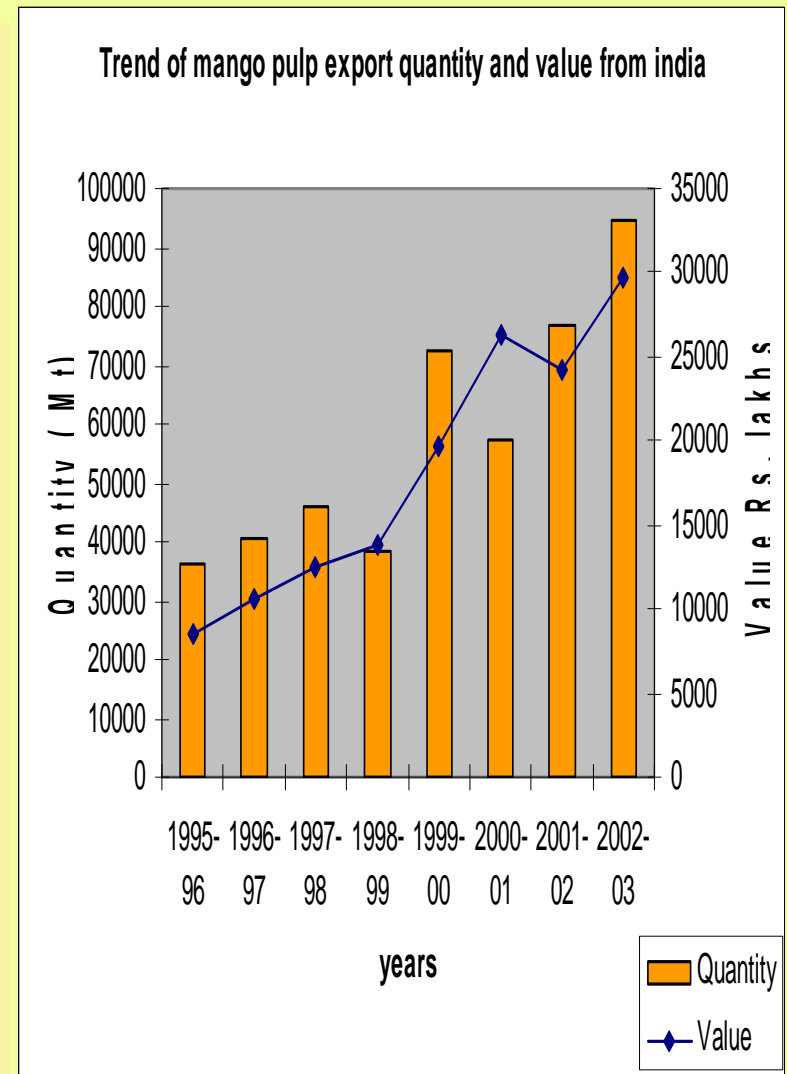
While totapuri accounts for 50 % of the farm area, others like neelam, beneshan and badami also hold significant farm area

Totapuri is mainly processed

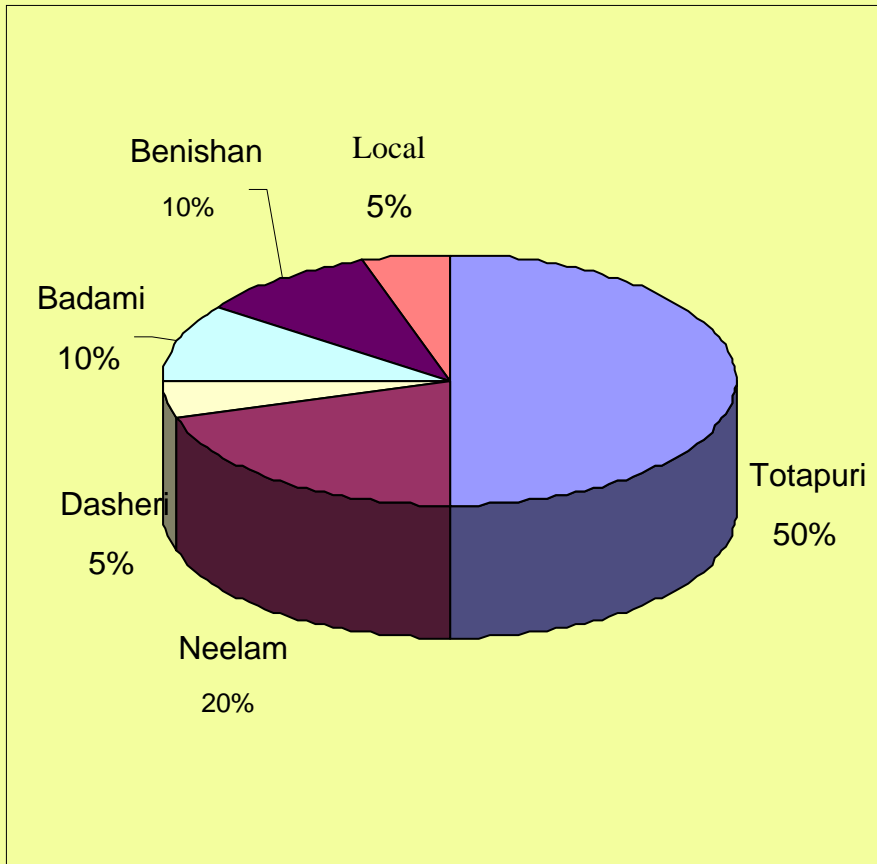
Export of mango pulp recorded a growth of 2 % per annum.

Of the total Rs.2 970 million earned, 50 % is from totapuri

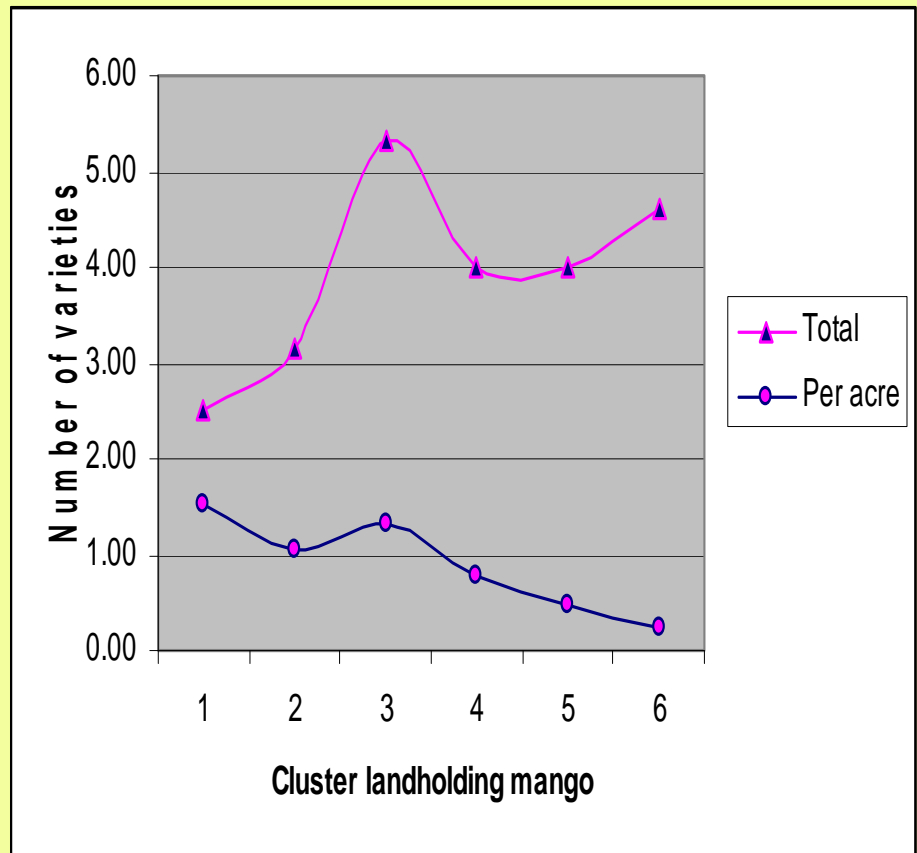
Different varieties are grown for different purposes. Neelam being late fetches a premium price



Mango Diversity on Farm

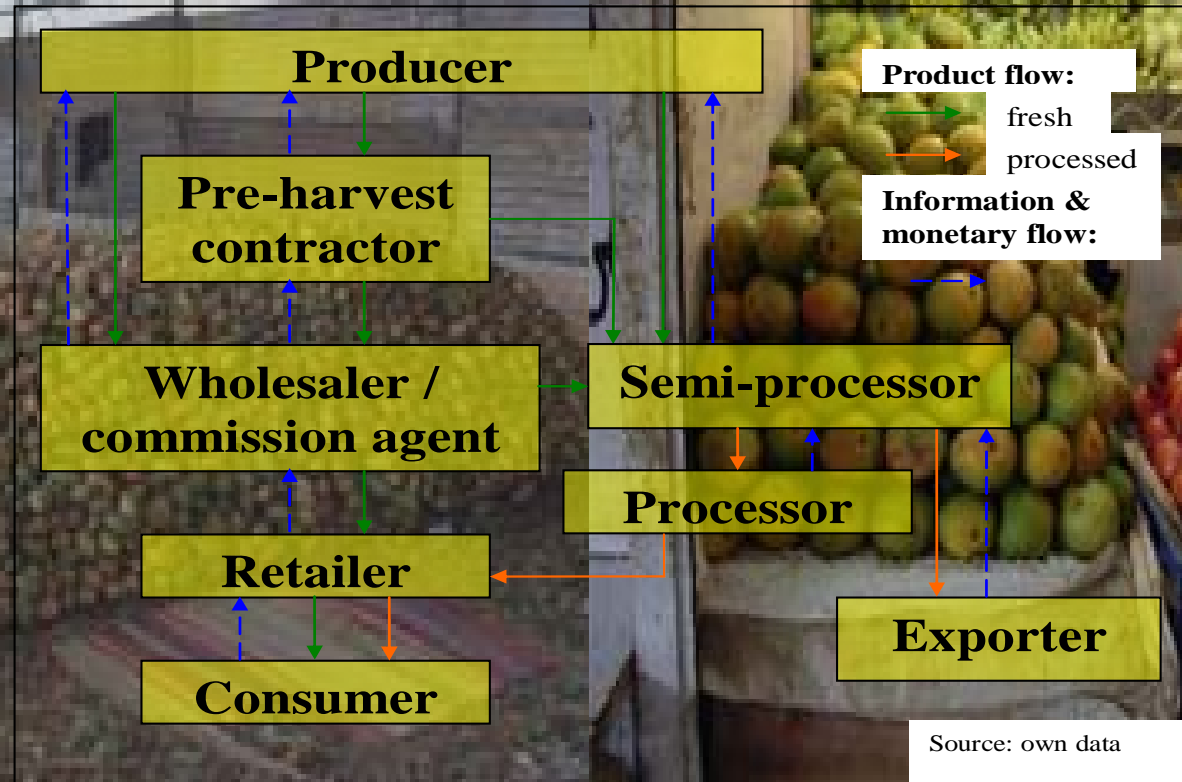


Proportion of varieties/farm



Distribution of diversity across farms

Mango market chain



Number of players

Pre Harvest Contractor is the most prominent player

Wholesaler/ Commission agent dominant actor

Information flow is weak across the chain

Alternate Marketing Channels

Fresh sale all mango

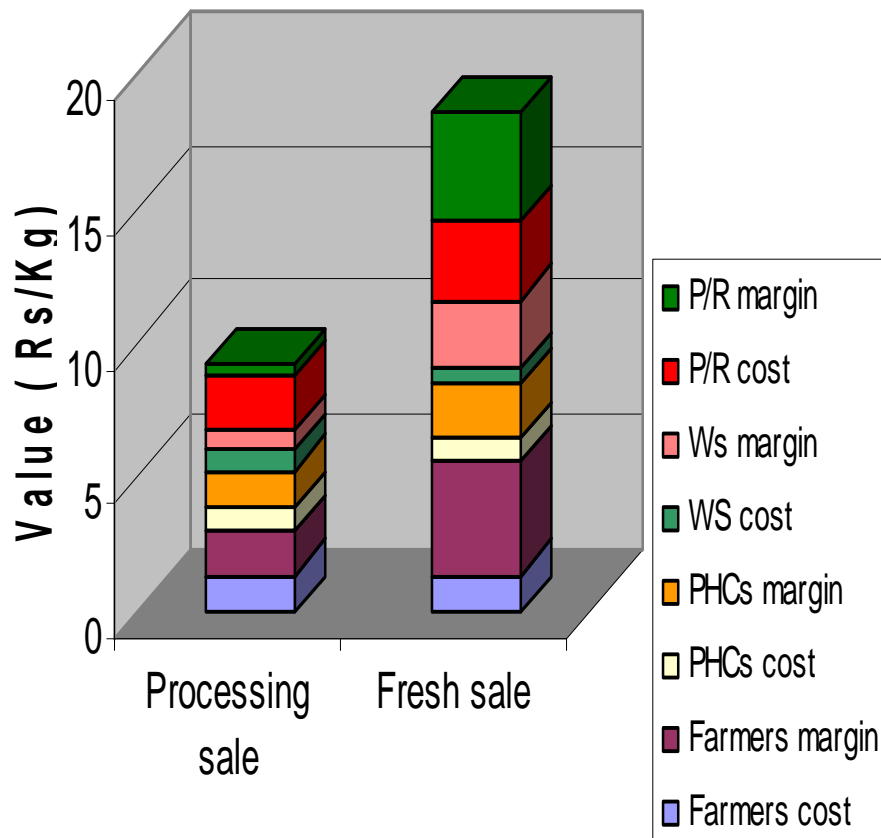
- **Producer (P) -Pre Harvest Contractor (PHC)- Wholesaler/commission agent (WS/CA) – Retailer (R) – Consumer (C) : >60 %**
- **P – PHC – Co-operative market – R – C : 15 %**
- **P – WS /CA- R- C : 15 %**
- **P – C : 5%**
- **P – Exporter – Foreign market : 1%**

Sale for processing

- **Producer (P) -Pre Harvest Contractor (PHC)- Wholesaler/commission agent (WS/CA) – processor- Retailer (R)- Consumer (C) : >40 %**
- **P – Processor (Semi-processing) – Exporter – Foreign market : 40 %**
- **Semi-processing**
- **Small- scale, Canning units, Three months in a year**
- **Custom processing, raw material and packing material provided by the buyer, Rs. 2250/t for converting to pulp.**
- **Sell to big processors or exporters**

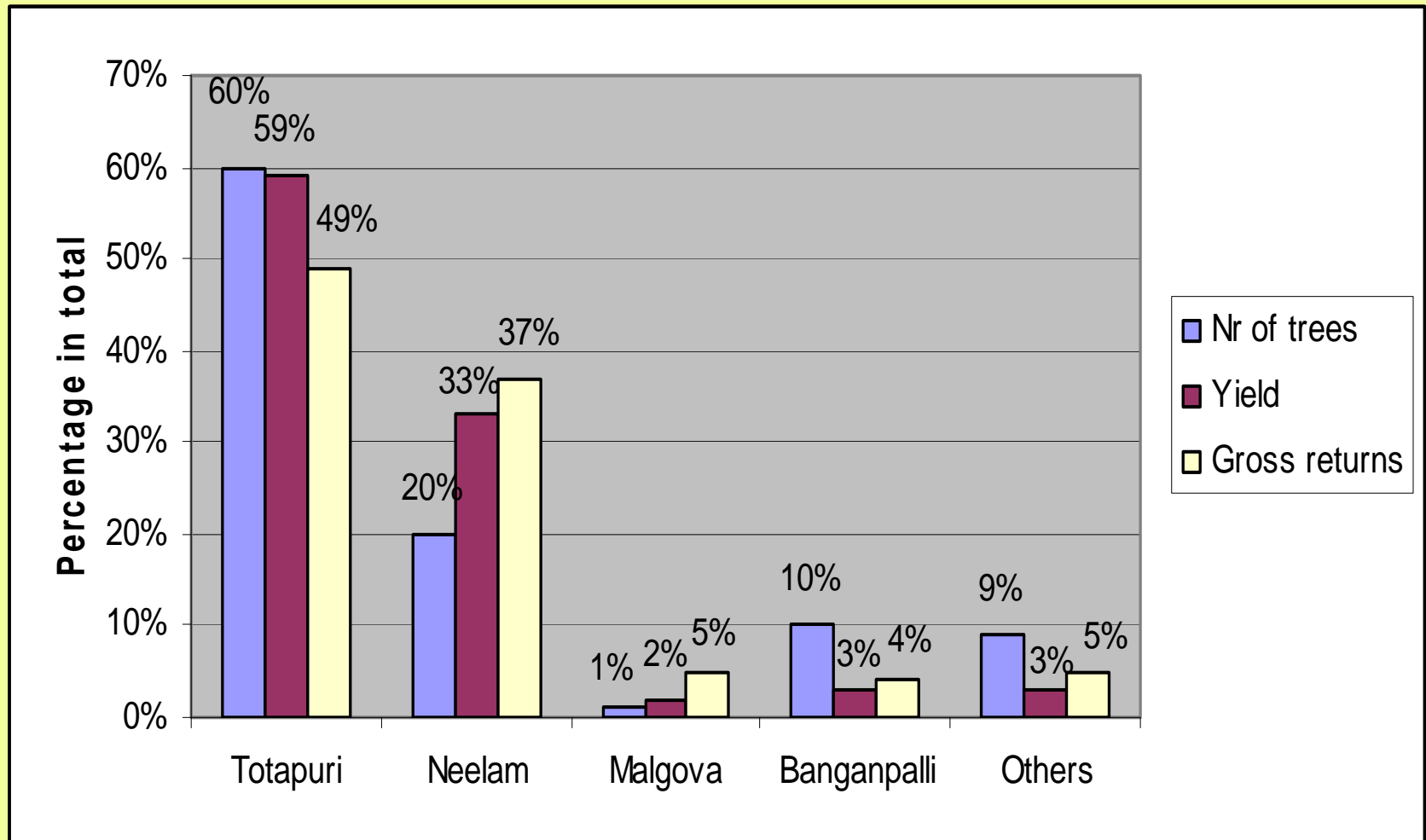
Costs and Margins in Fresh Vs Processed sales

Costs and margins of mango fresh Vs processing sale



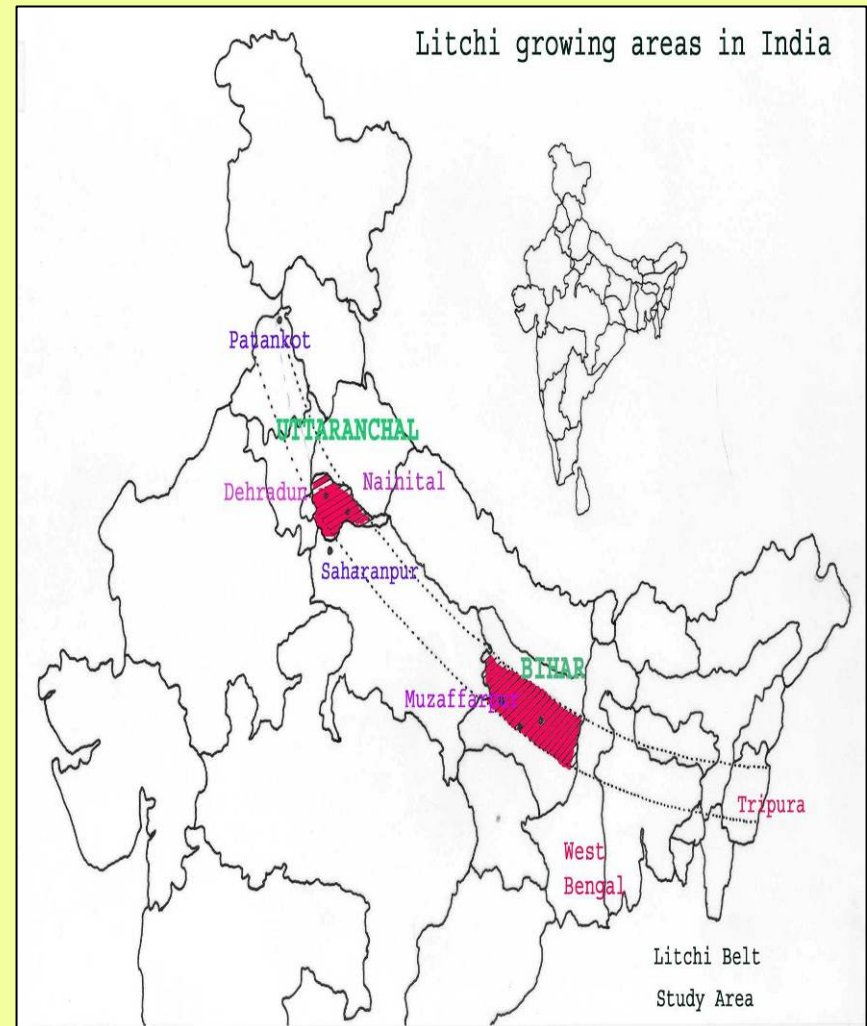
	Processed (Totapuri)	Fresh (Neelam)
Farmer		
Net gain	17.8%	22.9%
Costs	14.8%	7.4%
PHC		
Margin	15.2%	10.8%
Costs	9.1%	4.5%
WS		
Margin	8%	14%
Costs	8%	3.5%
Pro/ret		
Margin	4.9%	21%
Costs	22%	16%

Contribution to Farm Income



Case Study 2: Litchi

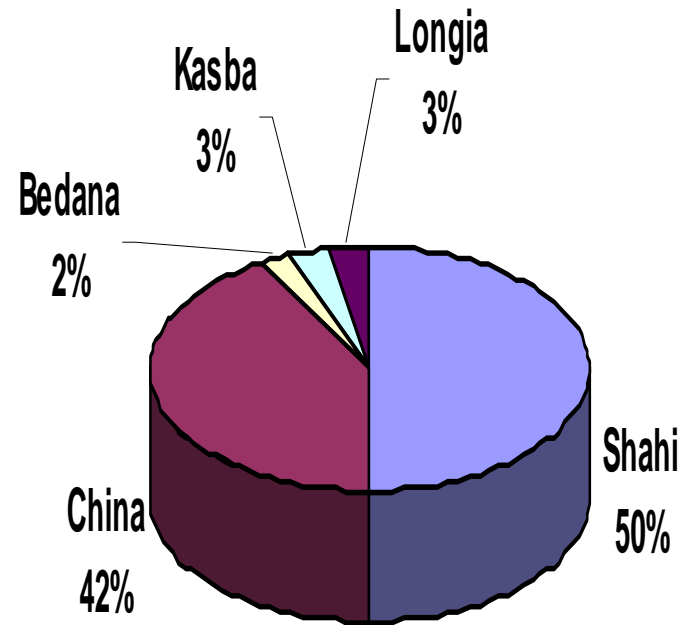
- **Second largest producer in the world next to China (56,000 ha and 460000 t)**
- **Cascading production but available for two months in a year (mid May to Early July)**
- **< 1 % exports**
- **Poor maintenance and under exploited.**
- **33 varieties available, only 2 are commercially grown**
- **Main markets away from the production centres and exploitative middlemen and marketing practices**



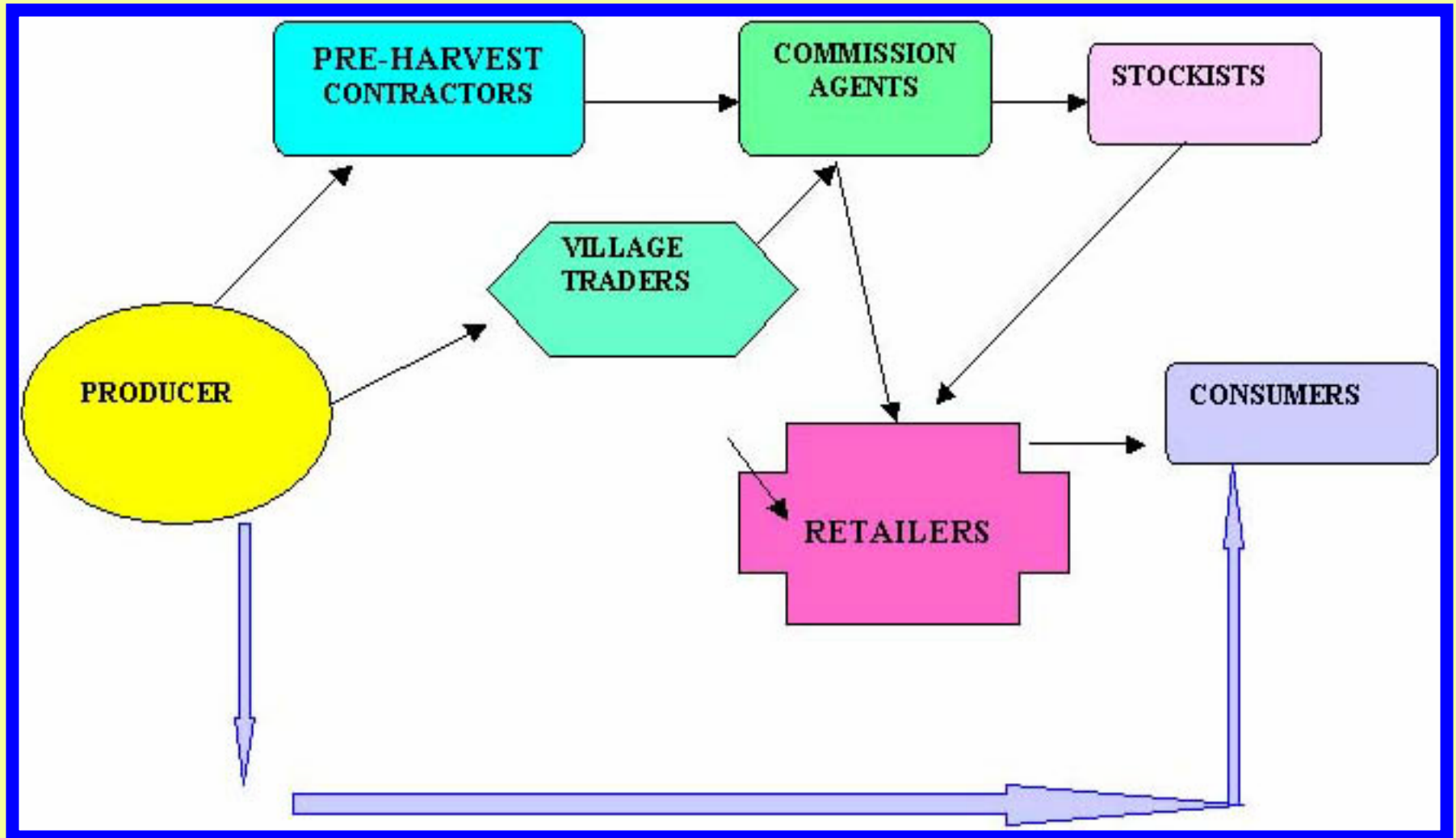
Varietal Distribution across growing regions

States	Varieties
Bihar	Deshi, Purbi, China, Kasba, Bedana, Early Bedana, Late Bedana, Dehra Rose, Shahi, Manragi, Maclean, Longia, Kaselia and Swarna Rupa
Uttar Pradesh	Early Large Red, Early Bedana, Late Large Red, Rose Scented, Late Bedana, Calcuttia, Extra Early, Gulabi, Pickling, Khatti, Dehra Dun, Piyazi
West Bengal	Bombai, Ellaichi Early, China, Deshi, Purbi and Kasba
Haryana Punjab	/ Early Seedless, Late Seedless, Seedless-1, Seedless-2

Litchi Diversity on Farm



Litchi market chain





Litchi arrivals into the mandi

Exploitative Under Cover auction in progress



Price Spread in Domestic marketing

Sl No	Particulars	Channel I (Sale Through PHC)		Channel II (Self-Marketing)	
		Price (Rs/Kg)	Percent to Total	Price (Rs/Kg)	Percent to Total
1	Price realised by the Producer	10.5	17.5	20.00	33.33
2	Cost for PHC/grower	2.5	4.17	8.00	13.33
3	PHCs margin	15.00	25.00	-----	
4	Commission agents price	28.00	46.67	28.00	46.67
6	CA s Margin	6.00	10.00	6.00	10.00
7	Stockists price	34.00	56.67	34.00	56.67
8	Cost and Margin of the Stockist	7.00	11.67	7.00	11.67
9	Retailers Price	41.00	68.33	41.00	68.33
10	Retailers Cost	7.00	11.67	7.00	11.67
11	Retailers margin	12.00	20.00	12.00	20.00
12	Consumers Price	60.00	100.00	60.00	100.00
	Price Spread	49.5	82.5	40.00	66.66

Impact of non-performing market on diversity maintenance on farm

- **Farmers do not take up self-marketing,**
- **Depend heavily on other marketing channels**
- **PHC gets benefit**
- **Farmer does not take care of his orchards, does not apply fertilizers or pesticides**
- **Does not have incentive to maintain different varieties or for different purposes.**

Conclusions

- On farm diversity is a tool to augment risk
- Adds to farm income
- Varietal features could
 - influence consumer preference and differential price
 - Prolong season
 - Support livelihoods
- On farm diversity maintenance may be slow but is influenced by markets
- Markets and infrastructure needs to be upgraded for increasing on farm diversity of tropical fruits

Thank you

