

Economics of Maize Seed Production, Marketing and Value Chain System under Community Based Seed Production System in the Hills of Nepal

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INTRODUCTION

- Maize is the most important life saving cereal crop in the hills of Nepal-addressing food security and livelihoods.
- It is second important cereal crop in terms of area (876,000 ha) and production (1.85 million ton) with average productivity of 2.12 t/ha (MOAC 2010)
- Maize in the mid hills represents more than 70% of area and production. More than 95% maize farmers are small land-holders (<0.5 ha) but produce more than 80% of total production.
- Farmers have limited access to seed of improved varieties seed (formal sector meets <1% total seed demand) and other inputs.



METHODS

- Primary cross-section data on cost of cultivation and seed production was obtained from CBSP group members of Hill Maize Research Project (HMRP), Nepal during 2010-2011.
- Focus group discussions with CBSP group members and major actors of seed value chain (cooperatives, seed companies, and agro-vets) were conducted to obtain required information.
- Secondary information was collected from various reports and publications.

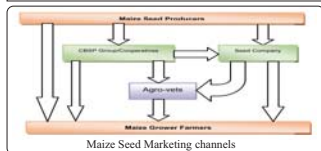
RESULTS AND DISCUSSION

Cost of Cultivation and Production

- Per hectare cost of cultivation was NRs 44,223 (US\$632).
- Operational costs accounted 98%.
- Human labor cost accounted highest share (51% or 150 man-days) followed by manures (17% or 5 t), fertilizer (8%, 41:23:12 NPK/ha), bullock (12% or 18 pair-days) and seed (2% or 25 kg).
- Per kg cost of production of seed was NRs 6.6.



Major Maize Seed Marketing Channels



Price Paid by Buyers in various Maize Seed Marketing Channels

Seed cost at various trading levels	RoKg	US\$Kg
Seed producer - Buyer	35.00	0.50
Seed producer - Cooperatives - Buyer	49.50	0.71
Seed producer - Cooperatives - Seed company - Buyer	56.50	0.81
Seed producer - Cooperatives - Seed company - Agro-vets - Buyer	64.70	0.92
Seed producer - Cooperatives - Agro-vets - Buyer	57.70	0.82
Seed producer - Seed company - Buyer	46.50	0.66

Marketing Costs

- Total marketing costs per kg seed varied from NRs 11.3 (Channel III) to NRs 15.7 (Channel I) accounting for about 24% of buyer's price.
- Cooperatives incurred cost NRs 10.75/kg in Channel-I and II, accounted 68.3% and 79.6% of total costs, respectively.
- Seed Company incurred NRs 2.25 in Channel I and II accounted 14.3% and 100% of total cost, respectively.
- Agro-vet incurred NRs 2.75 per kg in Channel I and II accounted 17.5% and 20.4% of total costs, respectively.

Expenses incurred by intermediaries

Margin of Item	Channel I	Channel II	Channel III	
Amount	%	Amount	%	
Cooperative	10.75	68.3%	10.75	79.6%
Seed company	2.25	14.3%	2.25	100%
Agro-vets	2.75	17.5%	2.75	20.4%
Total	15.75	100.0%	13.50	100.0%

Seed Cost: Farm-gate to End Market

- Total increase in per kg seed cost from farm gate price to end market was highest in Channel I (NRs 35.0 to NRs 64.7 or 84.8% increase) (3 traders involved)
- Lowest in Channel III (NRs 39.5 to NRs 46.5 or 17% increase) (Only 1 trader involved)
- It was NRs 35 to NRs 57.6 or 64.8% increase in Channel II (2 traders involved)

Cost on Various Marketing Functions in Marketing of Maize Seed

Cost Item	Channel I	Channel II	Channel III	
Amount	%	Amount	%	
Leading/trailing charge	0.75	4.8%	0.50	3.7%
Transportation charge	1.50	9.5%	1.00	7.4%
Processing and grading charges	2.50	15.9%	2.50	18.5%
Packaging charges including material	0.00	0.0%	0.00	0.0%
License/fees/processing and packaging	0.50	3.2%	0.50	3.7%
Storage charges	0.50	3.2%	0.50	3.7%
Total	5.75	36.6%	5.00	37.0%



Farmers showing maize



Farmer in the seed production plot

CBSP Approach for Maize Seed Production in Nepal

- Community Based Seed Production (CBSP) is an approach of producing seeds of farmer-preferred varieties selected through participatory variety selection (PVS) process with exclusive participatory involvement of farmers' groups.
- CBSP groups are more functional in remote hill districts-substantially increased the access of improve seeds to the resource-poor farmers where seed companies are not fully established.
- Seed production under CBSP is market-oriented in a value chain system where maintenance of seed quality, processing/grading, packaging and labeling are carefully applied.
- Seeds produced under CBSP channeled to buyer mostly through groups, cooperatives, seed companies, and agro-vets with truthful labels.
- During last 10 years 174 CBSP groups and cooperatives have been formed and the volume of seed production increased from 14 t in 2000 to 830t in 2010 (HMRP, 2010).
- CBSP has been highly efficient to fill the increased seed demand gap.

Price Spread

$$PS = \frac{Pp}{Bp} * 100$$

PS= Price Spread (%)

Pp= Price received by producer (NRs)

Bp= Price paid by buyer (NRs)

- Producer's share in buyer's price varied from 54% (Channel I) to 85% (Channel III).
- Price spread in Channel II was 61%.

Price Received by Producer, Marketing Cost, Margin and Price Paid by buyer

Item	Channel I		Channel II		Channel III	
	Amount	%	Amount	%	Amount	%
Price received by producer	35.00	54.1%	35.00	60.7%	39.50	64.5%
Total marketing cost	15.75	24.4%	13.50	23.4%	11.25	24.1%
Total marketing margin	13.52	20.9%	8.80	15.3%	4.72	10.1%
Price paid by buyer	64.67	100.0%	57.60	100.0%	46.50	100.0%

Marketing Margins

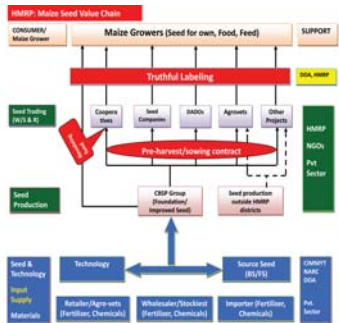
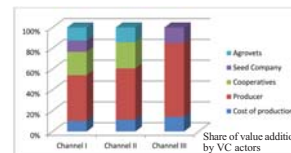
- Total marketing margins varied from NRs 4.7 (Channel III) to NRs 13.5 (Channel I) accounted 10% to 21% of the price paid by the buyer.
- Agrovet's margins was relatively high (Channel I: 39.6% and channel II: 60.8%) compared to cooperatives (25.5%) and seed company (34.9%) in Channel I.

Marketing Margin of Intermediaries

Margin of Item	Channel I	Channel II	Channel III	
Amount	%	Amount	%	
Margin of profit of Cooperative	4.72	8.2%	4.60	9.7%
Margin of profit of seed company	4.72	8.2%	4.72	10.0%
Margin of profit of agro-vets	5.51	9.8%	5.21	11.0%
Total	13.52	20.8%	8.80	18.9%

Seed Value Chain and Value Addition

- Maximum value on seed was added by producer in all 3 Channels (49% to 82%).
- In Channel I, cooperatives added value by 25%, seed company 12.1%, and agro-vets 14% on total value.
- In Channel II, cooperatives and agro-vets respectively added 28.4%, and 15.9% value on the total value, and seed company added 17.5% in Channel III.



Marketing Efficiency (ME)

$$ME(\%) = \frac{\text{Buyer's Price}}{\text{Marketing Cost} + \text{Margin}} - 1$$

- Marketing efficiency Index for Channel-I, II, and III were worked out to be 1.2, 1.6, and 1.9 (most efficient), respectively.

CONCLUSIONS

- Unavailability of quality improved seed, fertilizer and lack of assured seed market, respectively affected on productivity and less encouragement to seed production.
- Per hectare net income cultivating maize seed amounted to NRs 53,336 (US\$762).
- On average 62% of the buyer's price was reached in the hands of seed producer and marketing costs and profit of intermediaries accounted for 23% and 15%, respectively.
- Higher marketing efficiency was observed in Channel-III due to presence of only one seed trader.

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 (Exchange Rate: NRs 70.0 = 1 US\$)



Maize seed production plot



Maize storage in remote hills, Nepal