An assessment of the Bean Seed Distribution Models Implemented Under the Bean Technology Dissemination Project:

Results of key informant interviews and surveys conducted in Guatemala, Honduras and Nicaragua

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Strategic goals of the BTD project

- To introduce technologies (i.e., varieties) that improve bean productivity to a **large number of rural families**
- To lay the foundation for **a sustainable bean seed system** as measured by the ability to supply and meet the country's need for affordable quality seeds of improved varieties

How did the BTD project operationalize these goals?

- Through **scaling up** the multiplication and distribution of bean seed of improved varieties (IVs) in four countries from 2010-2013
- These efforts were built on:
  - The **long history** of engagement in the region by the CRSP
  - The use of **different models** of seed multiplication and dissemination **to meet the set targets of reaching thousands of farmers** across four countries

Focus of the Assessment Study

- To do an in-depth **analysis of the unique features of different models** used for seed multiplication and distribution
- To **assess the benefits** from the perspective of the beneficiary farmers
- To **identify principles of sustainability** present / absent from these models and derive implications and lessons for broader applicability to other countries

- Country focus: Guatemala, Honduras and Nicaragua

Method/Approach Used

Mixed method approach:

- Conducted **expert elicitation interviews** with major partners along the seed value chain (GUA, HND)
- Review of **reports and discussions** with project coordinator
- Survey of **community seed banks** (NIC)
- Survey of a sample of **beneficiary farmers** (GUA, HND, NIC)

Method/Approach Used (2)

- Due to time and resource constraints:
  - The assessment was focused on three countries
  - It took a snap shot approach of focusing on the experience in Year 1 (NIC) and Year 2 (GUA, HND)
  - In GUA & HND, the farmer surveys were focused on FTF Departments

- Therefore: results may not be representative of the BTD project in all the countries across all three years

Outline of this presentation

1. Description and achievements of the scaling up models
2. Analysis of the features of different models used in light of the goal of developing a sustainable seed multiplication and distribution system: *Perspective from the supply side*
3. Assessment of the benefits, advantages and disadvantages: *Perspective from the demand side*
4. Implications and lessons for broader applicability to other countries

Before we present the results of this study…

Let us understand what we mean by a sustainable seed system!

Principles of a sustainable seed system

- **Cost-recovery:** can the 'system' recover the cost of producing, multiplying and distributing seeds?
- **Quality:** can the 'system' supply quality seeds to farmers?
- **Quantity:** can the 'system' supply enough quantity of quality seeds to meet the needs?

Principles of a sustainable seed system (2)

- **Diversity:** can the 'system' supply adequate quantity and quality of diverse varieties of seeds to meet the needs?
- **Service/accessibility:** can the 'system' deliver these seeds in a timely manner in locations that are accessible to farmers?
- **Price:** can the 'system' supply these seeds at an affordable price?

Throughout this presentation…

Our reference to 'sustainability' evokes these six principles

1. Description and Achievements of the Seed Distribution Models

Basic elements of a seed distribution system

1. Production of basic/foundation seed
2. Production of registered seeds
3. Multiplication of certified/apta seeds
4. Distribution of the certified/apta seeds to the farmers

The models across the three countries:

- Share similarities in elements 1 and 2;
- But vary in operationalizing elements 3 and 4

(see handouts of seed supply maps)

Summary of major features of the seed PRODUCTION model used in three countries

Seed production	Guatemala	Honduras	Nicaragua
Foundation seed	NARS (ICTA)	University (PIF/Zamorano)	Accessed from Honduras; and some produced by NARS (UNISEM)
Registered seed	NARS (ICTA)	DICTA; but this step was by-passed for the seeds channeled through Zamorano's network	Produced by NARS (INTA expt. stations)
Design features	Simplistic; based on existing structures; complements the mandate of ICTA	Mixed system; non-linear; based on existing structures and institutional relationships; complements the mandate of PIF/Zamorano and DICTA	Simplistic; based on existing structures and institutional relationships; complements the mandate of INTA and UNISEM

Summary of major features of the seed PRODUCTION model used in three countries (cont'd)

Seed production	Guatemala	Honduras	Nicaragua
Quality declared seed	Outsourced to private seed producers	Seed banks, seed micro-enterprises, UNA, CIALs and NGOs; but this step was by-passed for the seeds channeled through UNAH, farmer groups, municipalities and rural banks	Community seed banks
Design features	Simplistic; control on the price/cost of seed; requires training and supervision for quality control	Complex system; relies on existing institutional relationships and capacity of partners; requires training and supervision for quality control;	Conceptually simple; requires technical assistance to ensure quality seed is produced; no control on how the seed is used; relies on local capacity and voluntary time from members

Summary of major features of the seed DISTRIBUTION models used in three countries

Seed distribution	Guatemala	Honduras	Nicaragua
Foundation seed	NARS (ICTA)	Zamorano responsible to distribute the seed to DICTA (Ceda), a network of partners and some directly to farmers	INTA/UNISEM
Registered seed	ICTA responsible for conditioning, packing and distributing to regional offices and other partners	DICTA seed processing unit responsible to distribute the seed to a network of partners	INTA expt. stations deliver the seed to INTA central office, who in turn distributes to INTA regional offices, and eventually to a network of CSBs
Design features	Complex system involving many partners; had to use new institutional structures / mechanisms to distribute the seed in Year 2	Complex system involving distribution to many partners; non-linear; based on existing structures and institutional relationships	Conceptually simple; but requires huge logistical infrastructure to distribute registered seeds to community based seed banks; relies on regional offices' capacity to distribute the seed to CSBs; can be integrated as part of technico's job description

Summary of major features of the seed DISTRIBUTION models used in three countries (cont'd)

Seed distribution	Guatemala	Honduras	Nicaragua
Quality declared seed	Distributed by government and non-government organizations, regional offices of MAGA & ICTA; A multiple-tier system within each organization was used; seed was finally delivered to farmers by municipalities, promoters, development committees and MIDES ; or directly distributed by the agency/partners (extension workers, farmer associations)	Distributed by government and non-government organizations, CIALs, farmer groups, farmer field schools, religious groups, DICTA's regional offices, extension service, USAID projects	Community seed banks
Design features	Relied on partner organizations' existing links with local communities; relied on their infrastructure; community and farmer selection was by partners; no control on the quantity of seed distributed , its packaging and payment agreements with final users		Relied on CSB's links with farmers; no control on the quantity of seed distributed , its packaging and payment agreements with farmers

Inputs/Investments in the seed system

Detail	Guatemala	Honduras	Nicaragua
$$	• To produce Foundation, Registered, Quality-declared/Apta seed • Seed conditioning & transportation		
Human Resources (HR)	• Staff: ICTA • Coordinators & sub-coordinators: 35% or 2.8 FTE/yr • Partners: 43 staff or 3.6 FTE/yr	• Staff: EAP, DICTA • Coord. & Sub-coord.: 23% or 2.3 FTE/yr • Partners: 21 staff, or 1.8 FTE/yr	• Staff: INTA (coordinators, regional offices, ext. staff) • Staff: CSBs members & promotores
Transaction Costs (TC)	• Establish alliances with partners • Identify beneficiary communities and farmers • Coordinate activities across time, space and network of partners		
Features	• Some of $$ costs paid by BTD • Most HR & TC costs borne by partners		
		• Most cost of QDS covered by	• Most cost of Apta seed covered by

Achievements, all years & Year 2

Detail	Guatemala		Honduras*		Nicaragua		Total*
	3 Años	Yr 2	3 Años	Yr 2	3 Años	Yr 2	
Foundation (qq)	n.a.	n.a.	430	120	n.a.	n.a.	430
Registered (qq)	n.a.	n.a.	182	76	n.a.	n.a.	182
Quality-declared (qq)	3,928	819	3,273	1,164	3,545	1,287	10,746
# Unique varieties	4	3	28	17	5	n.a.	37
# Beneficiary farmers	33,344	7,364	17,549	5,980	16,045	4,966	66,938

*For Honduras, data came from BTD project databases (excludes 2014)

2. Analysis of the features of different models used in light of the goal of developing a sustainable seed system:

Perspective from the supply side (Yr 2)

How does the experience of the BTD project measure against the principles of sustainability? Supply side perspective

Cost-recovery

- In all three countries the foundation and registered seeds were distributed to QDS seed producers free of cost;
- In terms of cost recovery of producing QDS from the farmers—the most common method suggested was in-kind payment
- But the repayment rate towards this cost recovery was less than 100% in all countries. For example:

Guatemala	Honduras	Nicaragua
According to the expert opinion, roughly only one out of every three farmers had paid back the seed they received	According to respondents that had confirmed the repayment status, 50-70% of beneficiary farmers had paid back the seed they received	The Centro Norte had the lowest recovery rate, partly because a the payment agreement was only pound for pound; Pacifico Sur (88%) and Las Segovias (81%) had the highest grain recovery rate of 2lbs for 1lb of seed

How does the experience of the BTD project measure against the principles of sustainability? Supply side perspective

Cost-recovery

- To be fair, this was not the goal of the BTD project; the seed models were implemented in the mode of a 'development project' and partners were not expected to develop a seed production and distribution system based on this principle
- But if this principle is imposed, there is potentially a greater probability of recovering the cost of seed production in models where farmers get the final seeds from a 'local' entity such as a CIAL or a CSB. Because:
  - Farmers know each other in the community and are more inclined to pay the seed back to keep his/her good reputation in the community.
  - Farmers see the value of repaying the seed to be able to access more seed in the future

How does the experience of the BTD project measure against the principles of sustainability? Supply side perspective

Quality

- Experience in three countries suggest varying results on meeting the seed quality requirement. For example:

Guatemala	Honduras	Nicaragua
On average the quality of seed produced and distributed to farmers was high. More than 90% of respondents shared their view that farmers liked the varieties and seed quality they received	75% of experts interviewed said that farmers were satisfied with the varieties they received. Some farmers were not satisfied with the varieties because these did not perform well in their fields	On average the seed produced by CSBs in 2011 met the humidity and germination rate standards (average humidity rate across surveyed CSBs was 15.8% and the average germination rate was 88%); The average physical purity rate was 86.6% and only 23 CSBs reported physical purity of at least 97.5%

- Results suggest that there is scope for improvement on this aspect

How does the experience of the BTD project measure against the principles of sustainability? Supply side perspective

Quantity

- Experience in three countries suggest that the existing systems have limited capacity to respond to high volume demand for seeds
- There was a large unmet demand. For example:

Guatemala	Honduras	Nicaragua
While two out of three extension workers reported that the amount of seed distributed per farmer in 2012 was adequate, 20% of these respondents said that farmers wanted more seed	Less than one-third of extension workers reported that the amount of seed distributed per farmer was adequate; they reported that farmers wanted more seed. The level of satisfaction of meeting the seed quantity needs was higher in models where CIAL/farmer groups were involved	CSBs in aggregate reported a total seed production of 2,014 QQ in 2011, enough to disseminate 20lbs seed bags to 10,000 farmers; but only 43% of CSBs reported being able to satisfy the demand of the variety provided in their community

- To meet the quantity needs would require improved facilities and more resources for distributing the seed

How does the experience of the BTD project measure against the principles of sustainability? Supply side perspective

Quantity (cont'd)

- To meet the quantity needs would require improved facilities and more resources for distributing the seed
- In the case of the CSB model, capacity to meet quantity of seed demand may vary across CSBs; there is a need to find a mechanism to transfer access seeds from surplus CSBs to deficit CSBs in a rapid and effective manner

How does the experience of the BTD project measure against the principles of sustainability? Supply side perspective

Diversity of varieties

- Experience in meeting the diversity needs varied across countries. For example:

Guatemala	Honduras	Nicaragua
More numbers of varieties were produced and distributed in these two countries; significantly more in Honduras Thus, between 93%-100% of key informants in GUA and 75%-100% in HND reported farmers were satisfied with the varieties they received		Most CSBs focused on one variety per year; In year 1, one variety was promoted all over the country; 49% of CSBs reported they had received requests from the community for other varieties;

How does the experience of the BTD project measure against the principles of sustainability? Supply side perspective

Diversity of varieties (cont'd)

- In some cases, the decision on which seeds to produce and disseminate was top-down and not based on a bottom-up approach (not always!);
- It may be challenging to come up with an efficient system to match the diverse needs for seeds of different varieties through the multi-tier system and when huge numbers of partners are involved in the value chain
- CSBs capacity to meet diversity needs may be limited
- The Government not officially recognizing PPB varieties was identified as a weakness of the seed system in Honduras; this can potentially undermine the inability of a formal seed system to meet this diversity principle

How does the experience of the BTD project measure against the principles of sustainability? Supply side perspective

Service/timely availability of seeds

- In all there countries there were issues with late seed deliveries—some more severe than others. For example:

Guatemala	Honduras	Nicaragua
There were mixed opinions on the timely distribution of seed to the farmers. Overall, a majority of seed was distributed on time, which is remarkable, given the extremely limited amount of time available between the harvest of seed and the planting date	27% percent of extension workers reported that the seed was delivered late for planting In general, CIALs/farmer groups did a better job at distributing the seed on time since only 17% of these respondents said that the seed was delivered late for planting (this is understandable that CIALs/farmer groups do not have to transport the seed large distances for conditioning and distribution)	Many CSBs received seed and inputs later than ideal planting date in their area There was wide variability in the way the seed was delivered to the farmers; Only 49% of CSBs reported disseminating seed in packages with labels; and many did not include necessary information on the label;

How does the experience of the BTD project measure against the principles of sustainability? Supply side perspective

Service/timely availability of seeds (cont'd)

- In the case of the CSB models: only 5% of CSBs reported receiving administrative and financial management training; 19% of CSBs reported receiving seed marketing or commercialization training.
- For CSBs to provide efficient service to farmers, they need seed marketing and business administrative skills training

How does the experience of the BTD project measure against the principles of sustainability? Supply side perspective

Price of seeds

- In none of the countries, the seed was 100% sold to farmers for a cash price. The price of the seed and method of payment varied across CSBs.
- Farmers paid for seed ‘in-kind’ and the rate differed across the setting.
- It appears that the ‘price’ was not based on ‘cost-recovery’ principle and the recovery rate varied across models

How does the experience of the BTD project measure against the principles of sustainability? Supply side perspective

Price of seeds (cont'd)

- Experience suggests that in:

Guatemala	Honduras	Nicaragua
There are reports of farmers not agreeing to the payment arrangement, and wanting free seed	Price of the seed varied across regions and partners involved; opinion on whether farmers agreed and honored the payment arrangement varied among experts interviewed; In general, the price of seed distributed through CIALs was higher (2:1 ratio) and the recovery rate was better	Three repayment rates were reported by CSBs surveyed and varied greatly by region; grain recovery rate was reported to be high

3. Assessment of the benefits, advantages and disadvantages:

Perspective from the demand side

Data

- Beneficiary surveys conducted in:
  - Nicaragua (2012) for a sample of 480 cohort 1 beneficiaries
  - Guatemala (2013) for a sample of 500 cohort 2 beneficiaries
  - Honduras (2013) for a sample of 441 cohort 2 beneficiaries

Objectives

- Main objectives of the beneficiary surveys were:
  - To present a descriptive analysis of BTD project beneficiary profiles and the household bean production economy in the target areas
  - To assess the pros and cons of the availability of seeds of improved varieties distributed by the BTD project as perceived and realized by the project beneficiaries

DESCRIPTIVE ANALYSIS RESULTS

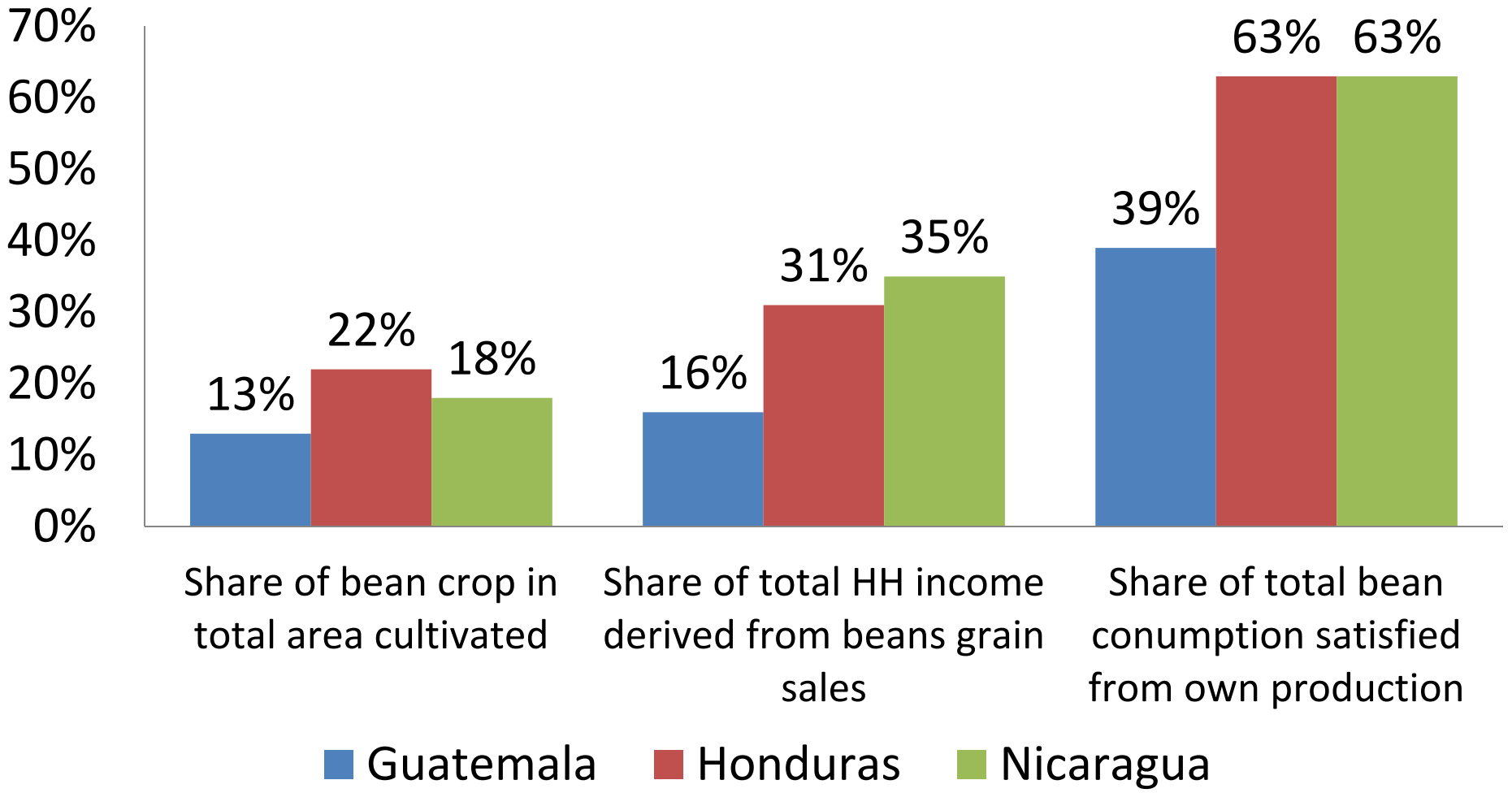
Profile of Beneficiaries

	Guatemala		Honduras		Nicaragua	
	Mean	N	Mean	N	Mean	N
Average age of the beneficiary (years)	41.7	500	43.5	441	42.8	480
Gender (% of beneficiaries)						
Male	42	500	82	441	73	480
Female	58	500	18	441	27	480
Average number of years of education	2.68	500	4.22	441	4.80	480
Percentage of beneficiaries who cannot read/write	32.2	500	8.6	441	11.7	480
# of years of farming experience	22.16	493	22.98	441	19.80	480
# of years of experience of growing beans	16.67	493	19.46	441	18.00	480
Membership in a local community seed bank (% of beneficiaries)	0.2	500	16.8	441	24.0	480
Membership in a farmer organization/association (% of beneficiaries)	30.6	500	17.7	441	33.0	480

HH characteristics

	Guatemala		Honduras		Nicaragua	
	Mean	N	Mean	N	Mean	N
Average size of the HH	6.56	500	5.27	441	5.17	480
Percentage HH members -- female	51.8	500	49.0	441	47.8	480
Average land holding (manzana)	0.58	500	2.52	403	9.82	480
Tropical Livestock Units (TLU) owned (average number of TLUs/HH)	1.13	500	1.76	441	5.13	480
Average distance of the house from the nearest market (km)	6.3	495	13.8	376	16.4	480
Average distance of the house from the nearest paved road (km)	6.3	464	16.0	404	8.5	480
Percentage of farmers that have easy access to certified seeds of bean	18.8	499	43.9	441	32.3	480
Likelihood that an average beneficiary HH is below the national poverty line	70%		69%		dnc	

Importance of beans in household economy: Production, income and consumption



Season in which the project seed was planted

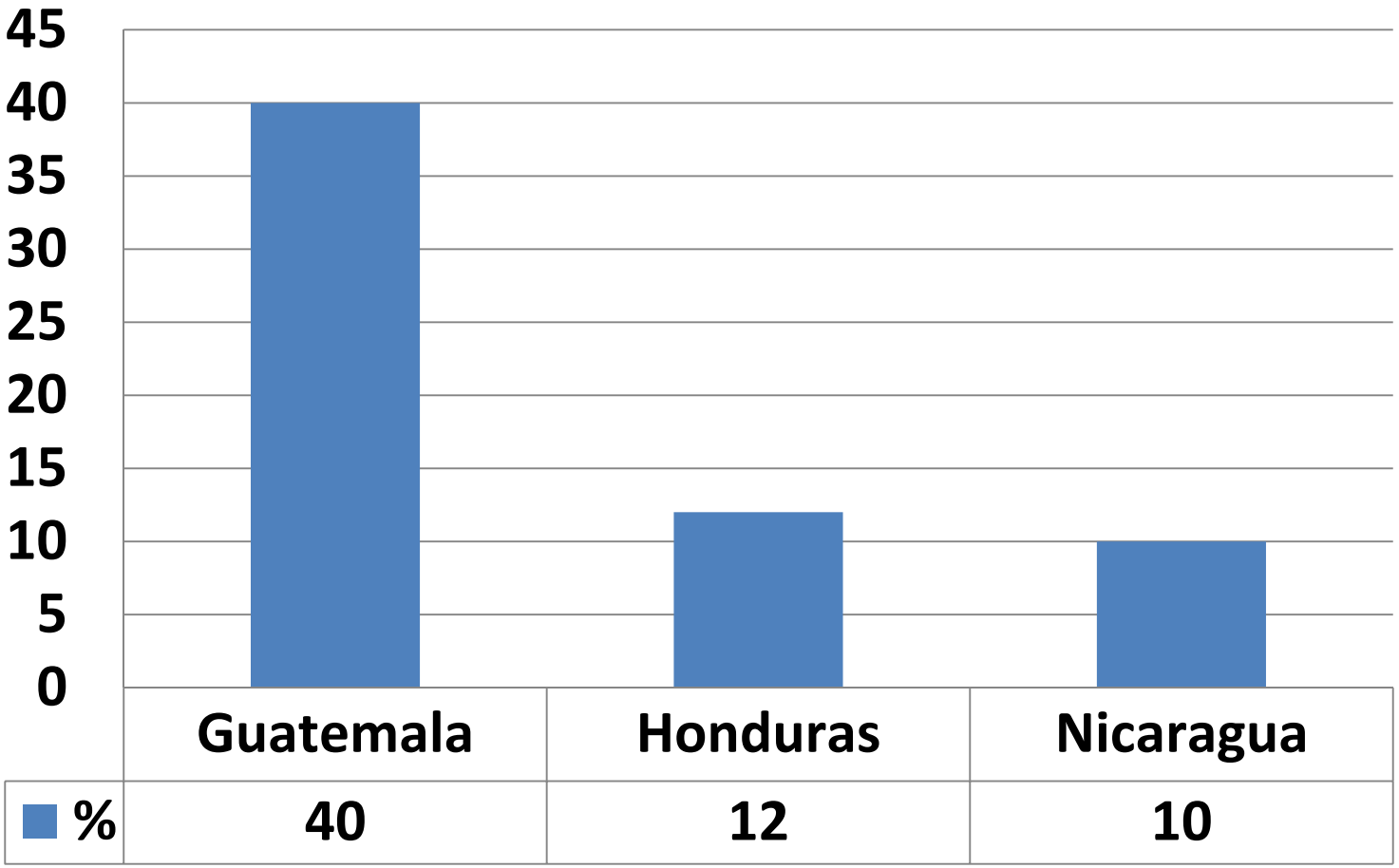
	Guatemala		Honduras		Nicaragua	
	Mean	N	Mean	N	Mean	N
Season in which the project seed was planted (% of farmers)						
Primera 2011	-	500	-	441	5.2	480
Postrera 2011	-	500	-	441	67.9	480
Apante 2011-12	-	500	-	441	18.8	480
Primera 2012	46.8	500	31.1	441	8.1	480
Postrera 2012	40.8	500	37.0	441	-	480
Apante 2012-13	8.2	500	14.7	441	-	480
Primera 2013	4.0	500	15.4	441	-	480
Did not plant in any season	0.2	500	1.8	441	-	480
Percentage of HHs reported receiving seed from the project more than one time	0.0	500	1.4	441	0.4	480
Percentage of HH reporting that the seed received was certified	63%	500	94%	449	0%	69

Bean area planted to project seed

	Guatemala		Honduras		Nicaragua	
	Mean	N	Mean	N	Mean	N
Total area planted to beans in the season when project seed was planted (after adjusting for intercropping) (manzana/HH)	0.11	499	0.44	433	1.48	478
Average bean area planted in parcel where project seed was planted (after adjusting for intercropping) (manzana/HH)	0.09	487	0.36	449	0.61	484
Share of bean area planted with project seed in total area cultivated to beans in that season (%)	84%		81%		41%	

‘Bean insecurity’

Percentage of farmers who reported their bean grain reserves last not more than three months after harvest



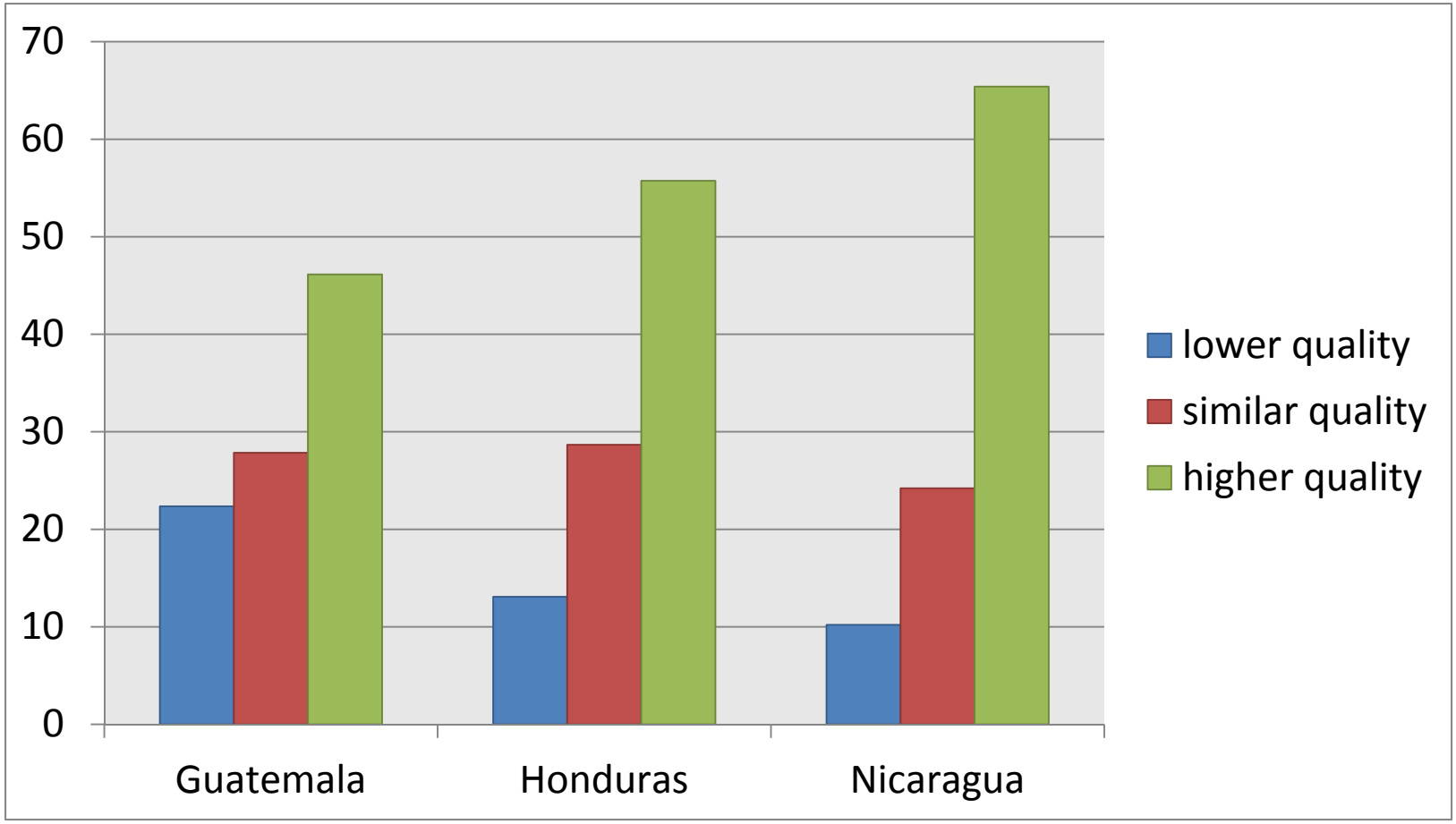
In summary…the data indicates that

- The socio-economic profiles of beneficiary HHs in Guatemala fall more on the disadvantaged end of distribution than the average HH beneficiaries in the other two project countries
- Beans play an important but varying role in HH economy across the 3 countries;
- Bean area cultivate in Nicaragua is 3.4 times larger than in Honduras, which in turn is 4 times larger than in Guatemala
- 'Bean security' is highly correlated with the land area cultivated to beans (and thus with the production capacity)

PROS AND CONS

Quality

Farmers' **rating on the <u>quality of seed</u>** received compared with other seed planted in that season (% of respondents)



Quality

Top two characteristics **most liked** about the variety received from the BTD project (% of respondents)

	Guatemala	Honduras	Nicaragua
First	**Cooking quality/taste** (52%)	**Good yield** (72%)	**Good yield** (81%)
second	**Good yield** (47%)	**Cooking quality/taste** (29%)	Resistance to disease (32%)

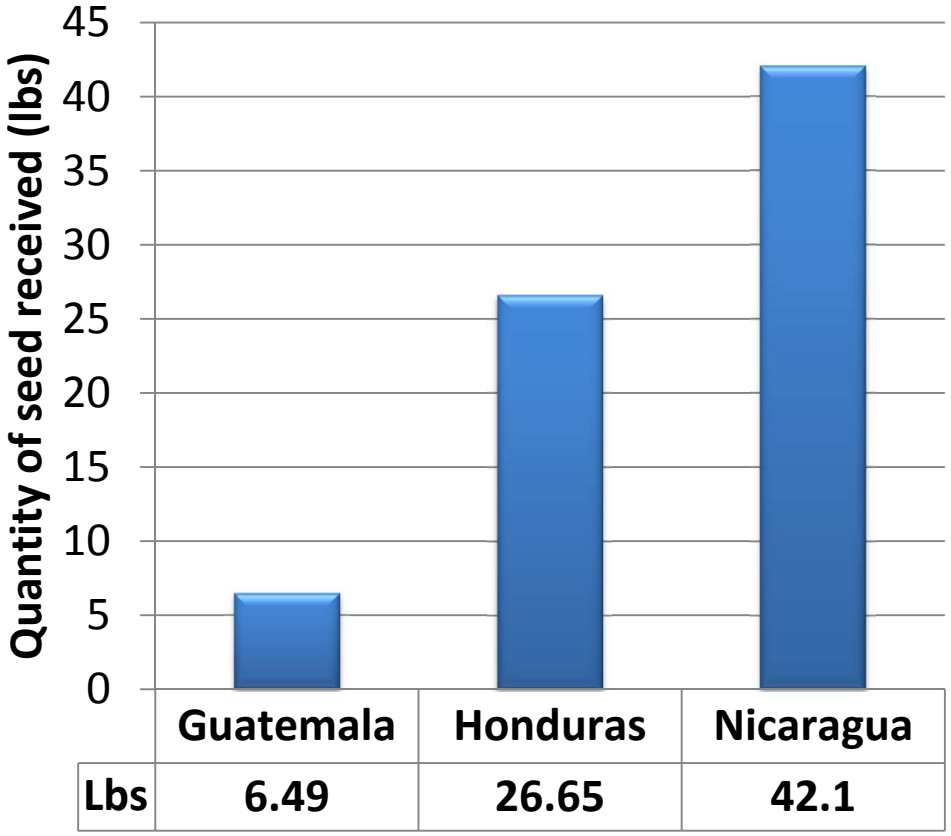
Quality

Despite high seed quality ratings and 'good yield' reported as the most liked characteristic…the ***reported yield and seed to grain ratio is not spectacular*** across countries

	Guatemala	Honduras	Nicaragua
Total quantity of bean grain harvested (lbs/parcel)	55.0	457.7	493.5
Total quantity of beans harvested per unit of area planted (lbs/manzana)	756.0	1,299.0	796.6
Total quantity of beans harvested per unit of seed planted (lbs of grain/lbs of seed)	13.6	17.9	10.7

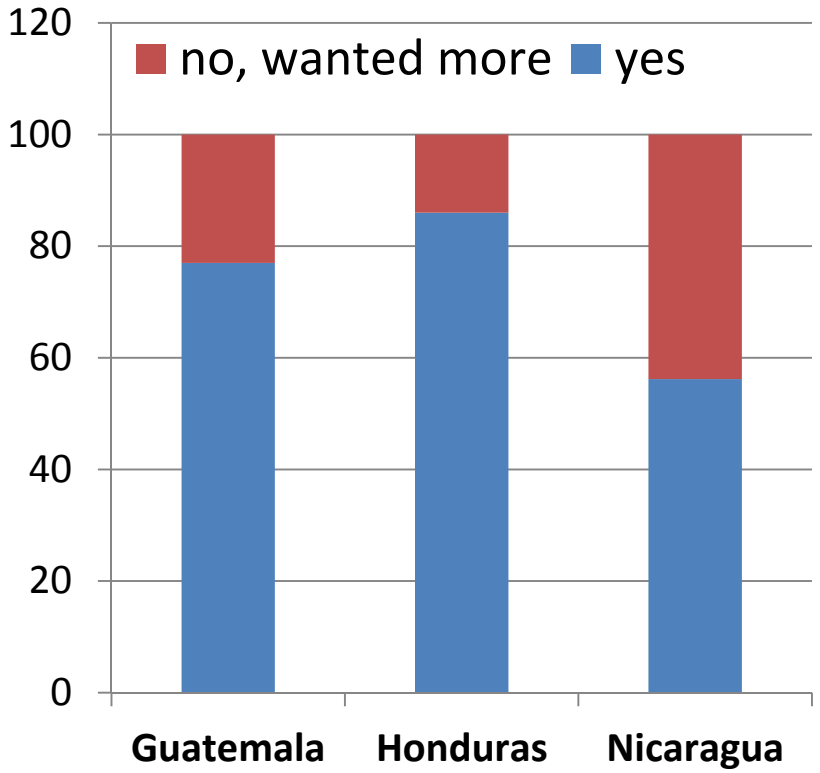
Quantity

Average **quantity of seed received** from the BTD project (lbs)



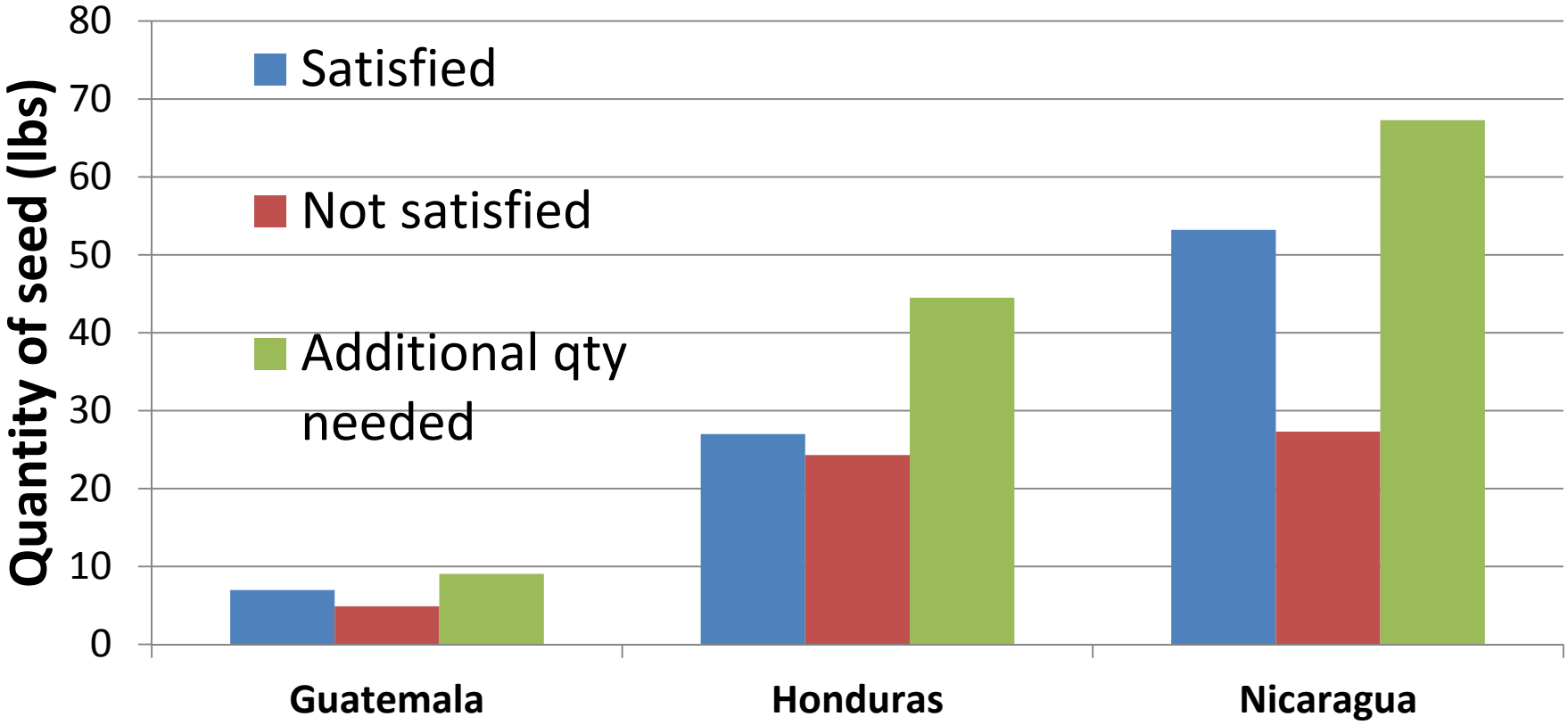
	Guatemala	Honduras	Nicaragua
Lbs	6.49	26.65	42.1

Was the quantity of seed received **adequate** for the farmers' needs? (% of respondents)



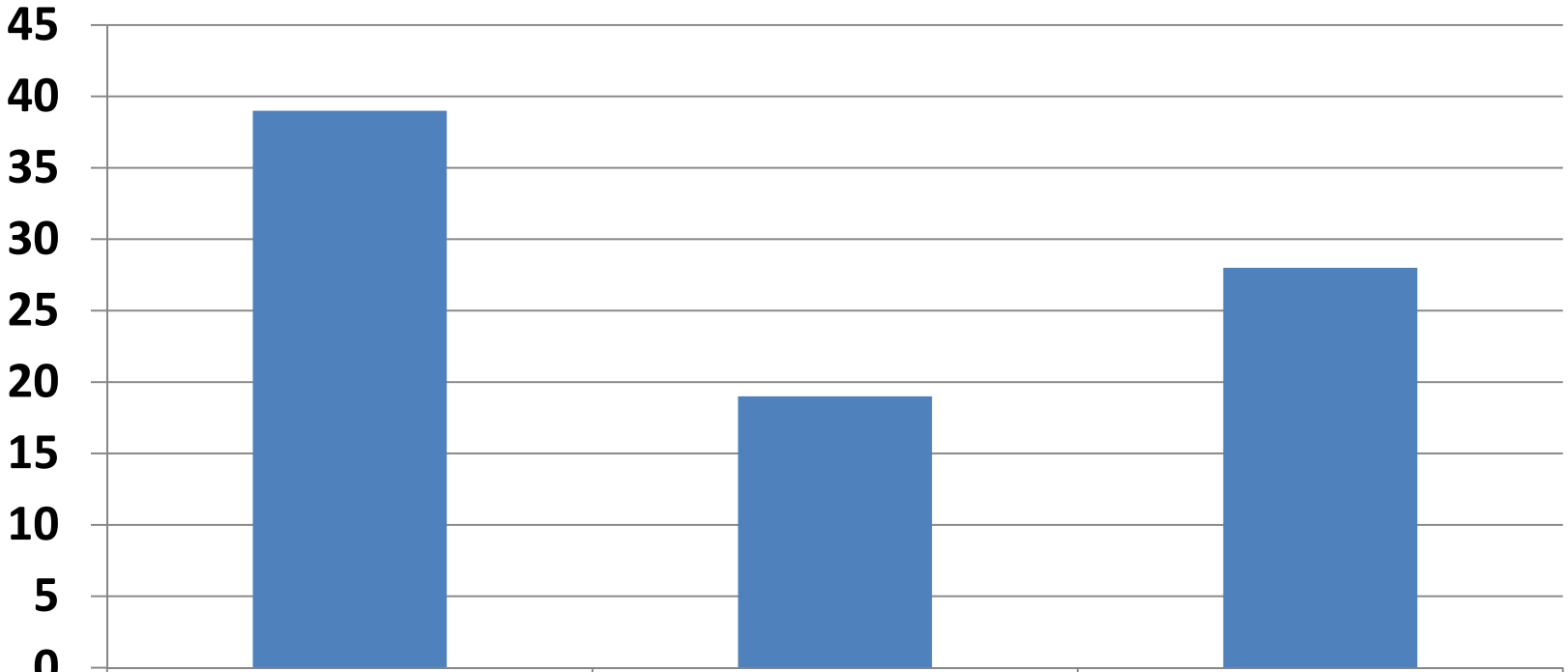
Quantity

Quantity of seed received by farmers that were **satisfied and not satisfied** with the quantity of seed received, and **additional quantity of seed needed** (lbs)



Quantity

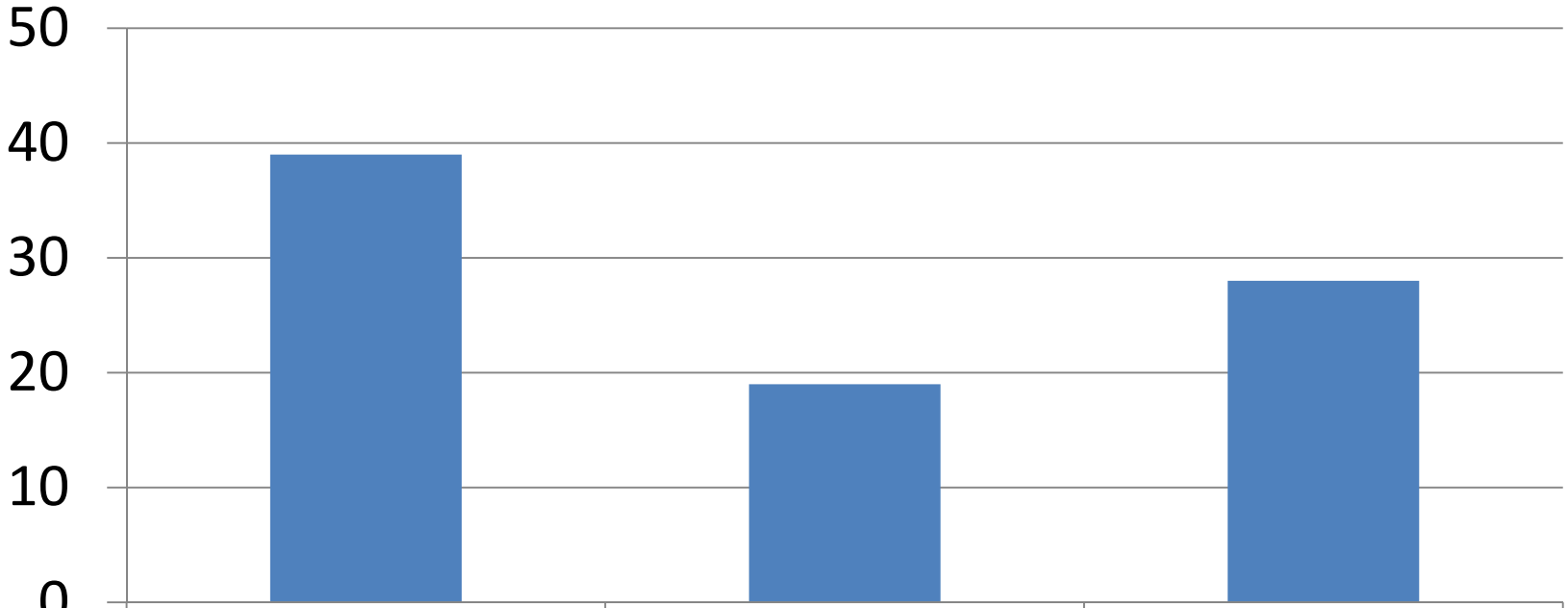
Percentage of farmers that considered '***Inadequate capacity to meet*** *the seed needs of the community in terms of* ***quantity***' as one of the top two **disadvantages of the seed system** used by the BTD project



	Guatemala	Honduras	Nicaragua
%	39	19	28

Diversity

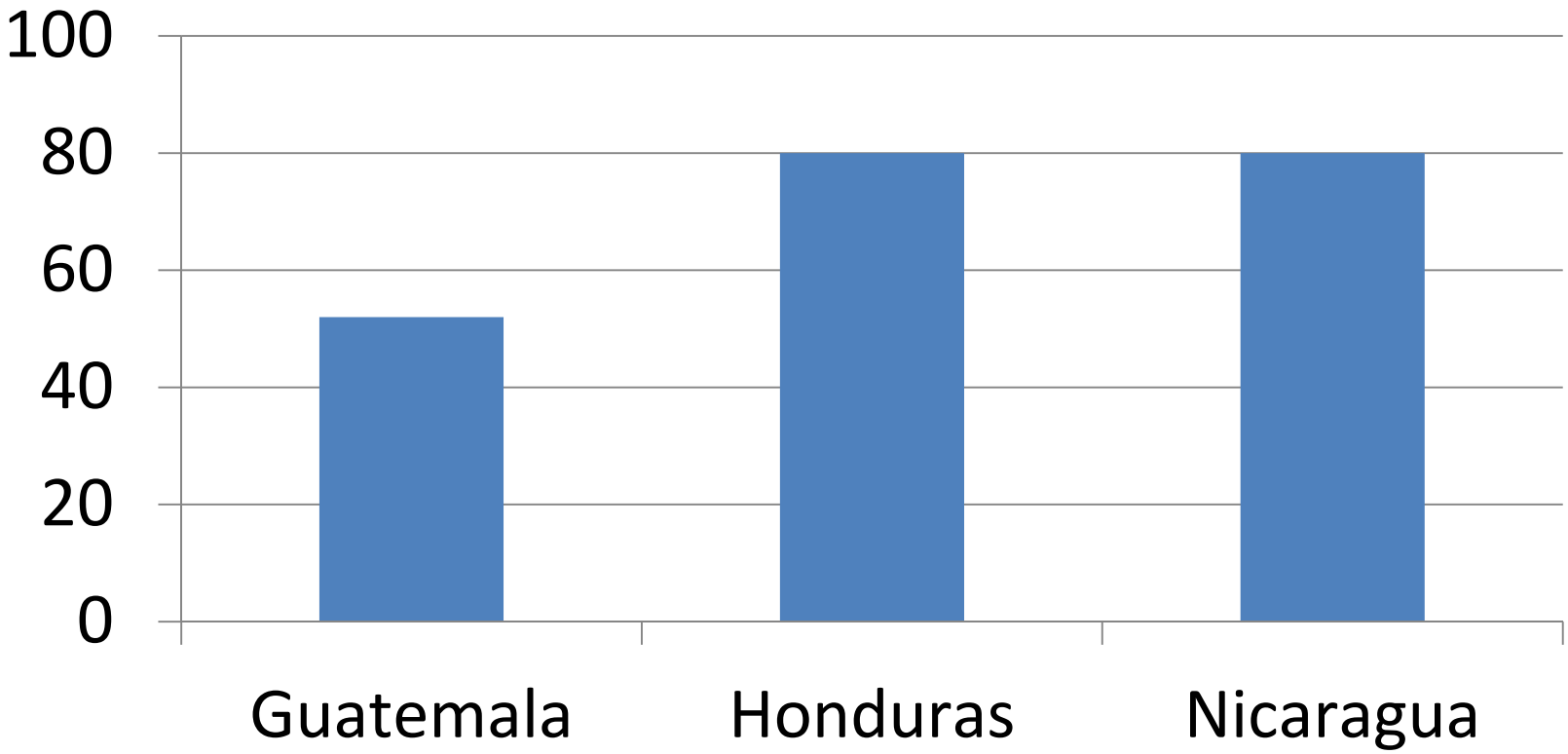
Percentage of farmers that considered '***Inadequate capacity to meet*** *the seed needs of the community in terms of* ***diversity***' as one of the top two **disadvantages of the seed system** used by the BTD project



	Guatemala	Honduras	Nicaragua
%	39	19	28

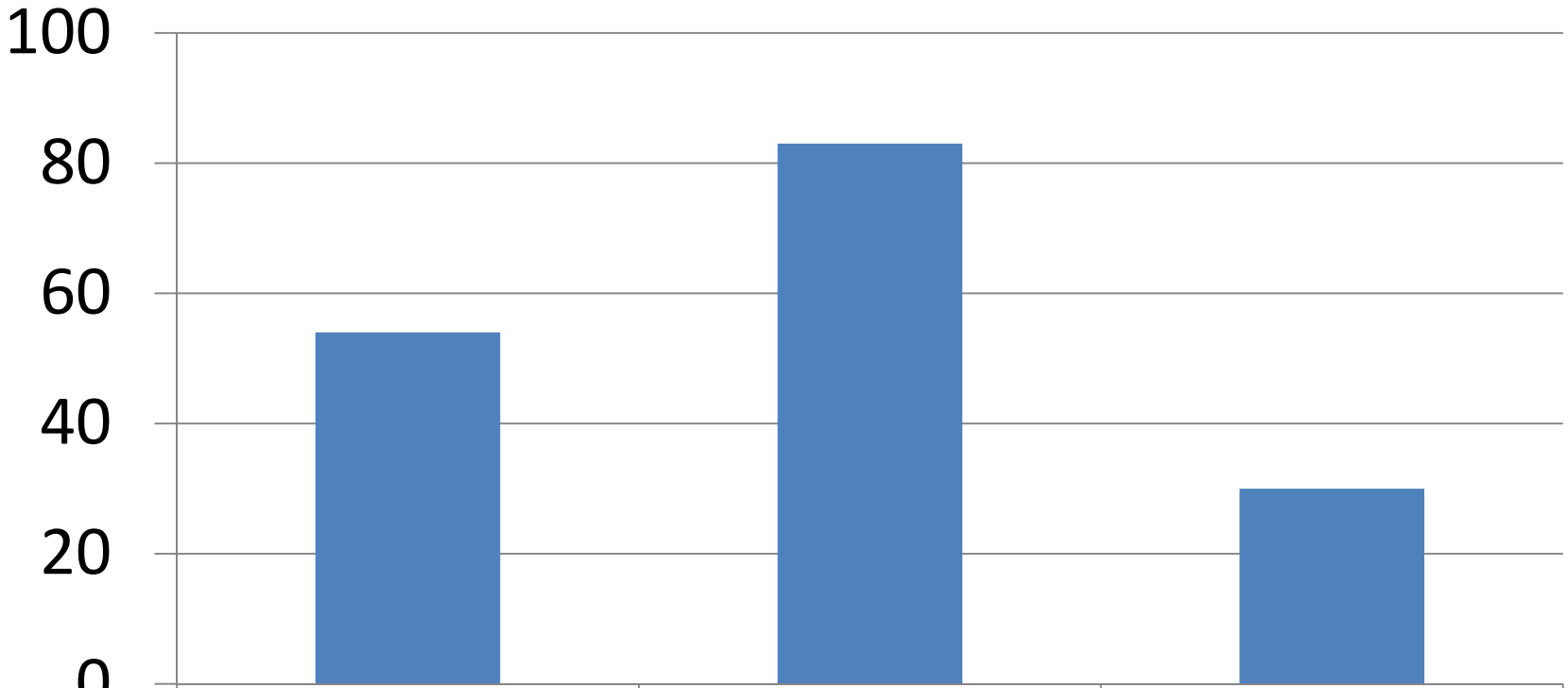
Timely availability of seed

Percentage of farmers that **received the seed <u>at least one week before</u> the planting date**



Service – How was the seed provided?

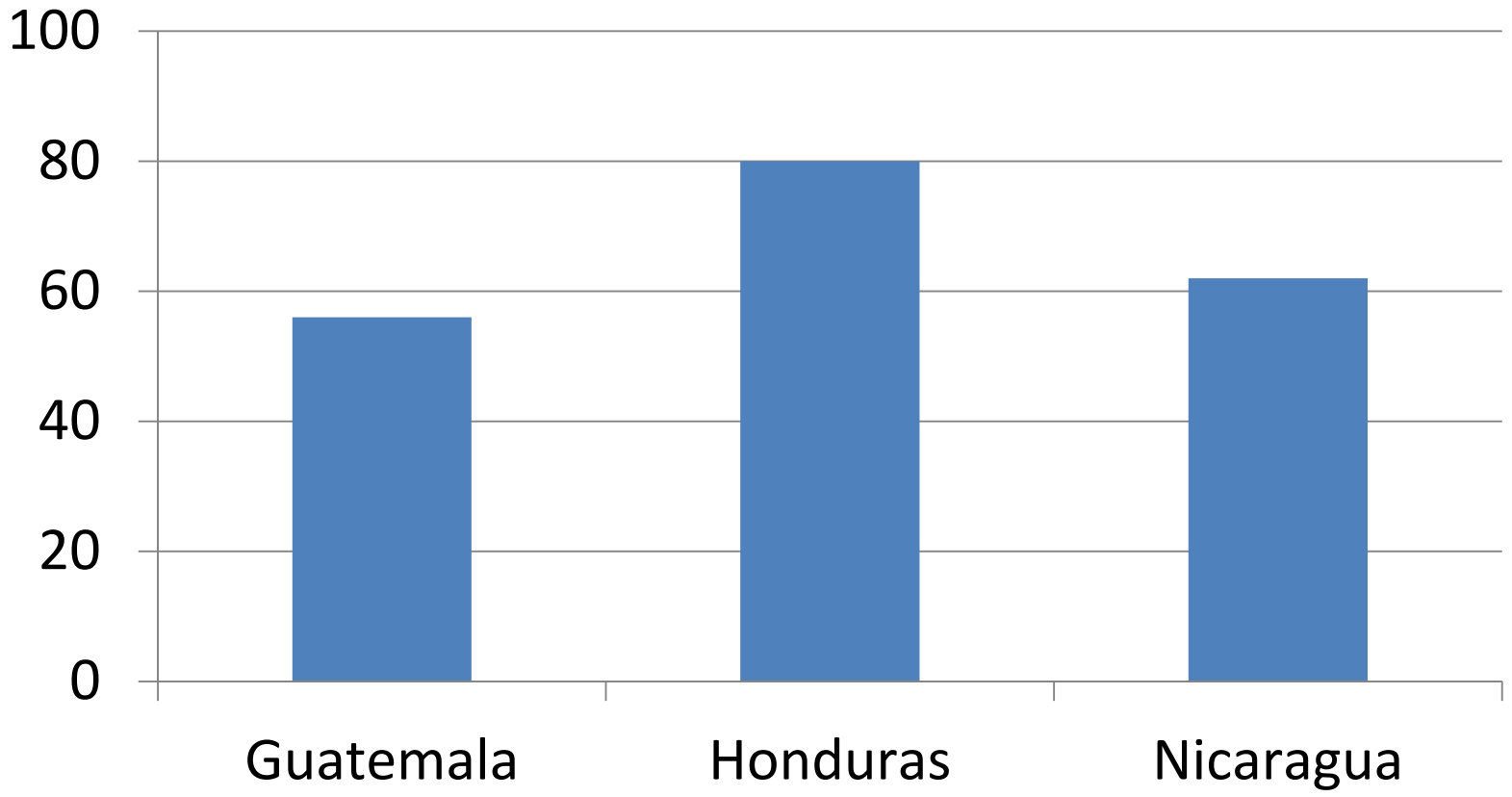
Percentage of farmers **that received the seed in a <u>sealed package with a label</u>**



	Guatemala	Honduras	Nicaragua
%	54	83	30

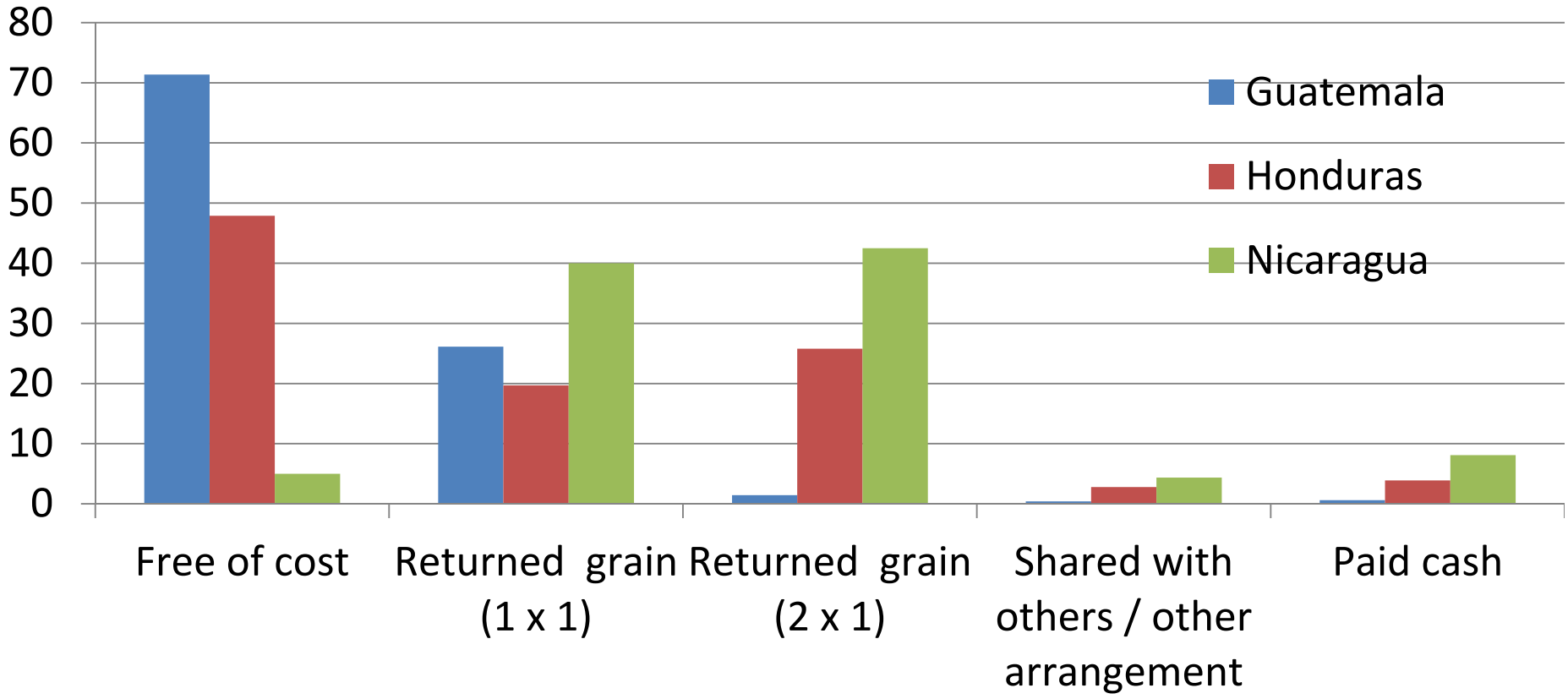
Service—Where was the seed delivered?

Percentage of farmers that **received the seed <u>in the community</u>**



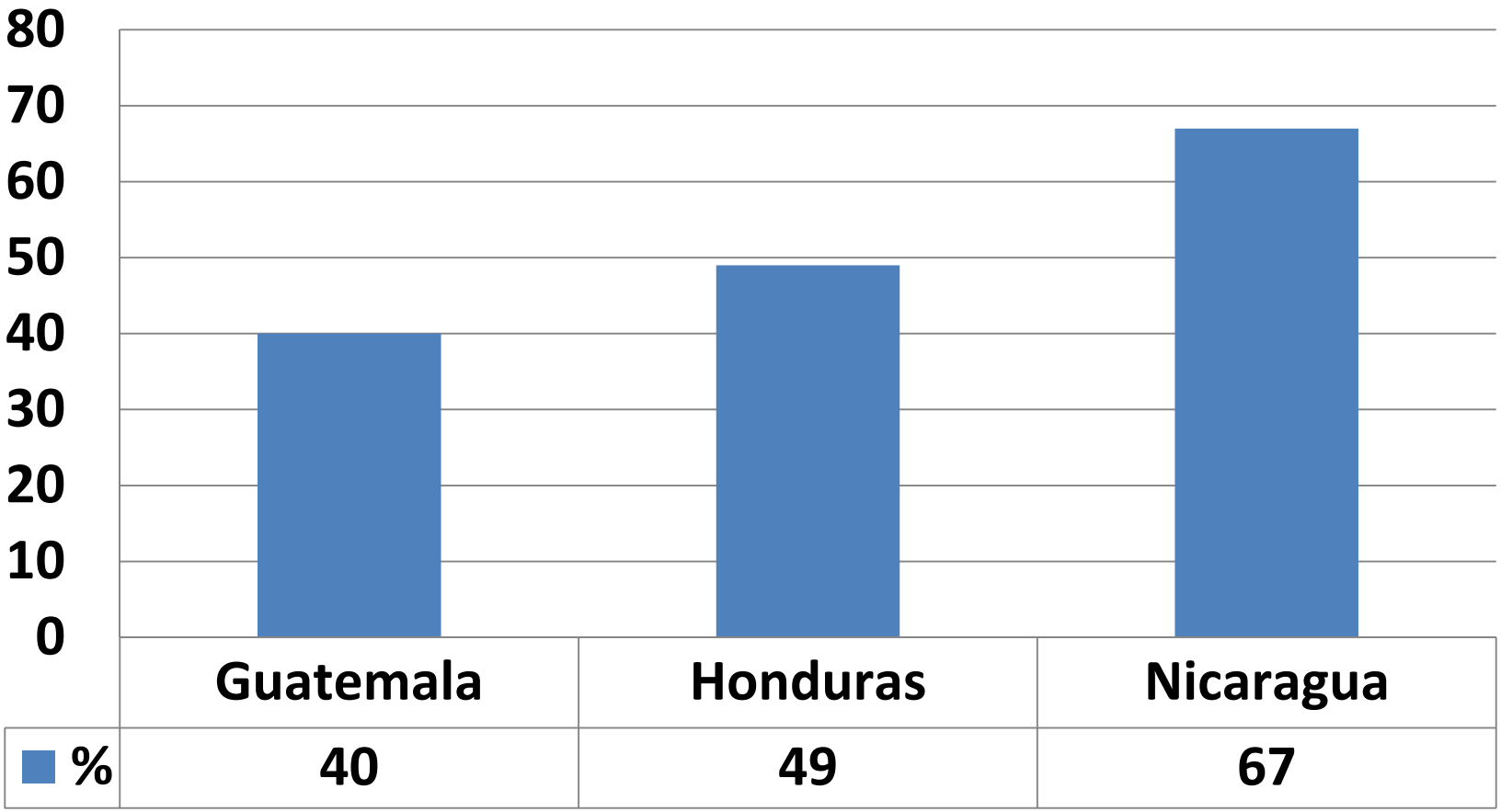
Price

Payment agreement on the seed received from the BTD project (% of farmers)



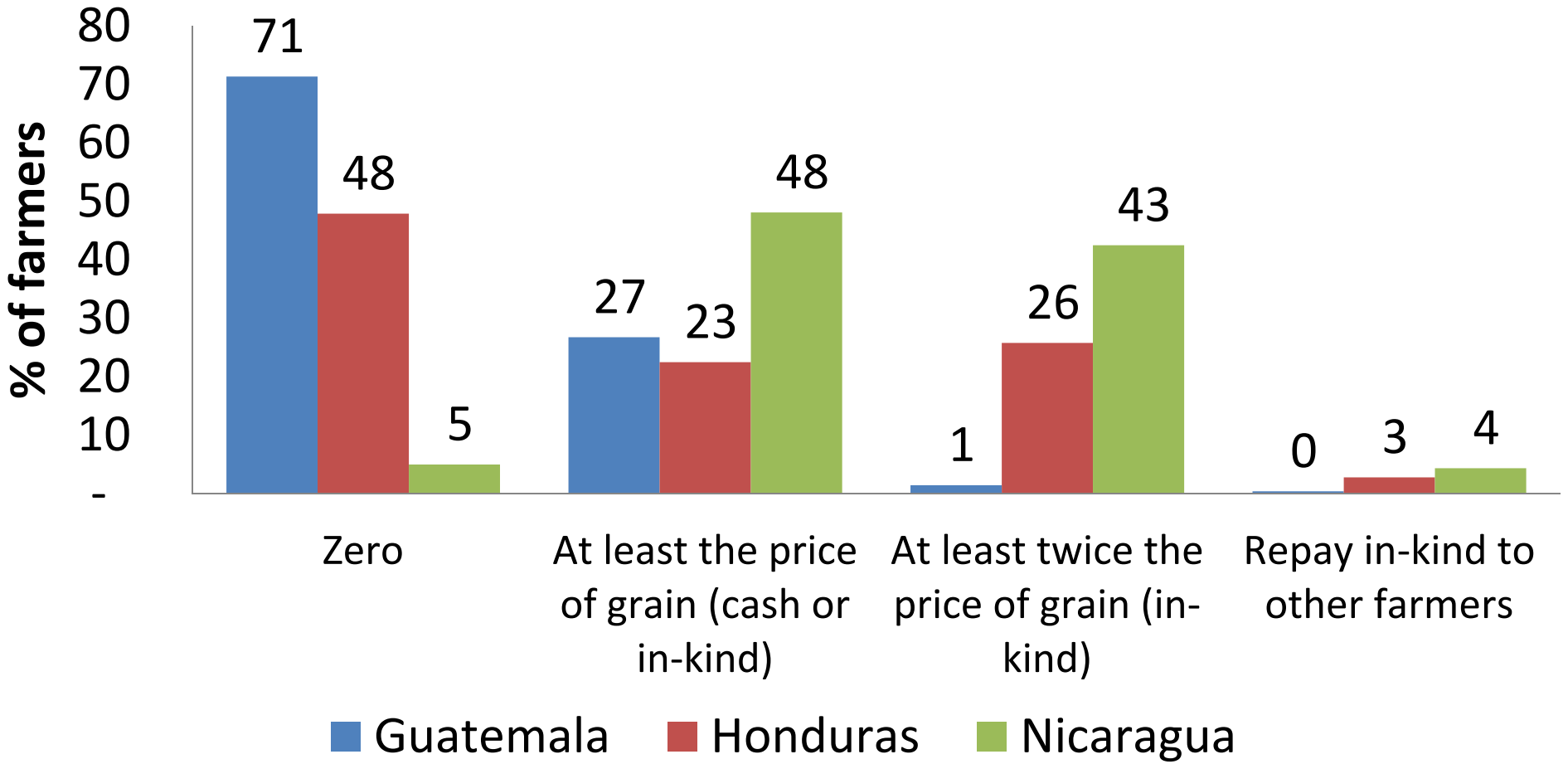
Price

Percentage of farmers that considered '**flexibility** in payment' **as one** of the top two **advantages** of accessing seed from the system used by the BTD project (% of farmers)



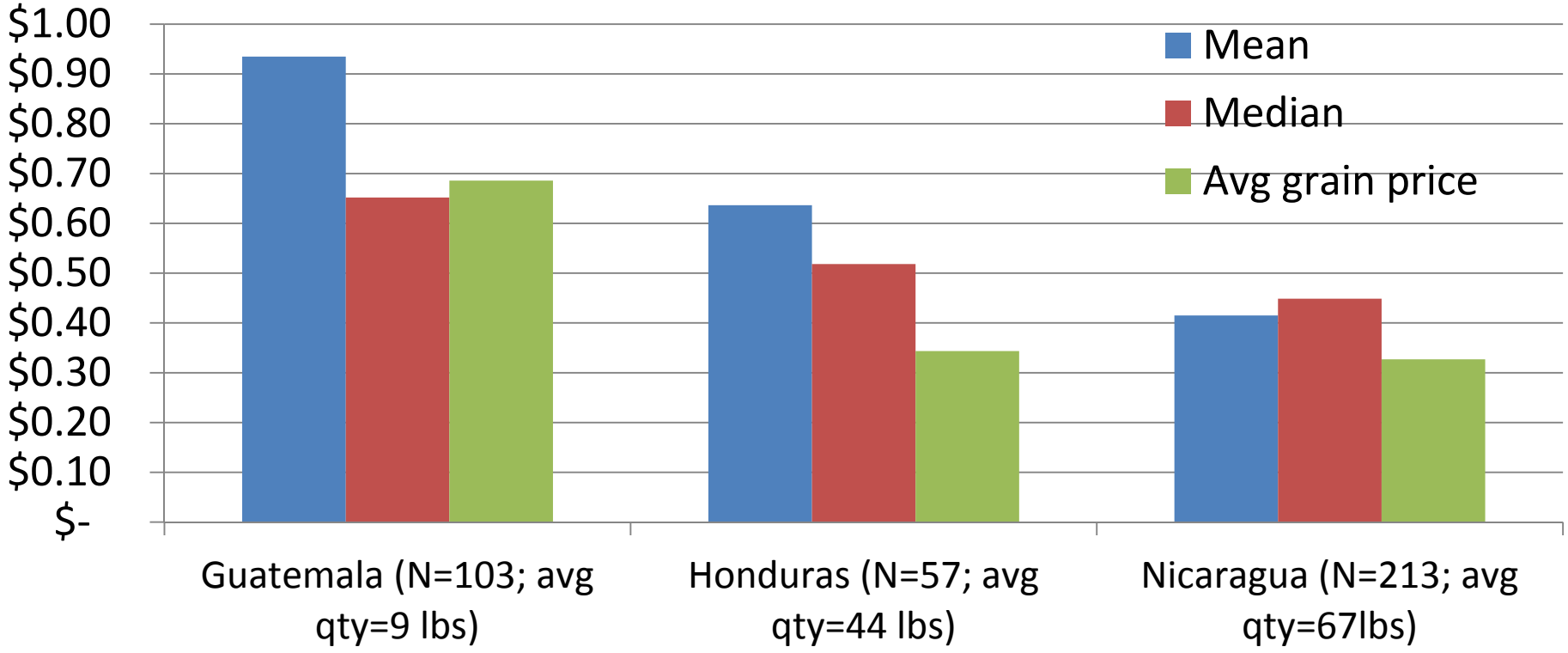
Cost Recovery

What does the survey result indicate about **farmers' willingness to pay for seed** and the amount?



Cost Recovery

Those that needed additional quantities of seed, their **willingness to pay for seed in relation to the average bean grain price** (US$/lbs):



% of farmers willing to pay for seed more than	Guatemala	Honduras	Nicaragua
The average price of grain	41	79	75
Twice the average price of grain:	7	33	7

Cost Recovery

- Results indicate that there is a willingness to pay for quality seed if made available
- The willingness to pay and the amount willing to pay varies across countries and highly correlated (not a surprise) with the economic status of bean farmers
- In some of the communities meeting the seed needs of the farmers based on cost-recovery principle may not be possible

Behavioral indicators of satisfaction expressed by beneficiary farmers

	Guatemala	Honduras	Nicaragua
Farmers who plan to grow the variety received in the next season	70%	76%	88%
Farmers who plan to increase or not change the area planted to a given variety in future	84%	93%	90%
Farmers who are willing to purchase/seek seed from the same source he/she obtained the project seed	55%	76%	86%

Behavioral indicators of satisfaction expressed by beneficiary farmers

- Overall, there was a high level of satisfaction with the project
- Beneficiaries gave a very positive evaluation of the project

But…there is always room for improvement

- 10-22% of farmers rated the seed quality lower than other seeds planted in that season
- Top three reasons for low quality rating were:
  - Low/zero germination rate (20-40% farmers)
  - Poor plant growth (15-27% farmers)
  - Prone to disease (15-40% farmers)
- 20-47% of farmers received seed less than one week before or after the planting date

But…there is always room for improvement (cont'd)

- 70% farmers in Nicaragua and 46% in Guatemala received seeds in less than ideal packaging and with inadequate information
  - For e.g., 2% of beneficiaries in Nicaragua, 10% in Guatemala and 20% in Honduras did not know the name of the variety of seed planted.

4. Implications and lessons for broader applicability to other countries

We return to the five principles of sustainability to ask:

What does the experience and evidence from the three countries suggest?

Quality: can the system supply quality seeds to farmers?

- Between 46% (GUA)-65% (NIC) of beneficiary HH reported the quality was superior to other seeds planted in that season
- Low quality due to susceptibility to diseases (GUA) or poor germination (HND, NIC)
- All key informants indicated that farmers were satisfied with the quality of the seed they received and that good quality of the seed was a strength of the project

YES, the system can supply quality seeds, but there is room for improvement!

Quantity: can the system supply enough quantity of quality seed to meet the needs?

- 14% of farmers in Honduras, 23% in Guatemala and 44% in Nicaragua wanted more seed from the project
- Only 43% of CSBs reported that they could satisfy local demand for seed
- 20% (GUA)-36% (HND) of extension workers mentioned that farmers wanted more seed
- Key informants (HND) mentioned that the country has limited capacity to respond to this type of initiatives or that higher volumes would require improved facilities, plus all informants (GUA, HND) mentioned limited resources for distributing seed as a weakness and a constraint

MAYBE… many farmers wanted more seed and actors in the supply chain may not have the capacity to satisfy the demand--additional resources would be needed

Diversity: can the system provide adequate quantities and qualities of enough varieties?

- This was not identified as an issue in Guatemala.
- But inadequate capacity to meet the seed needs of the community in terms of diversity of varieties demanded was identified as a disadvantage of CSBs by 28% of respondents in Nicaragua and 19% of farmers in Honduras

Mixed results… Decentralized models like CSBs and CIALs need capacity and resources to meet diversity needs.

Accessibility: can the system deliver the seed in the right place?

- HH survey suggest that most farmers (56% in GUA, 79% in HND, 62% in NIC) received the seed in their communities
- Among farmers who traveled to get the seed, they traveled 21 km (HND)-44 km (GUA)
- Key informants reported that the seed was delivered in many places (some requiring both the supplier and the farmer to travel) and that all depended on the partners' resources

Not entirely, which is not surprising or a concern… while most farmers received the seed in their communities, in some cases this was not possible (no accessibility, no resources, no time)--Finding key partners with good resources will be key

Accessibility: can the system deliver the seed at the right time?

- HH survey suggest that while most farmers received the seed well in advance, 10% in NIC, 14% in HND, and 38% in GUA received the seed late
- Between 45% (HND)-47% (GUA) of informants reported late seed deliveries (at least to some farmers) in 2012, a commonly reported weakness across countries

Mostly YES, but there is still room for improvement so the seed reaches the farmer on time

Price: can the system supply these seeds at affordable price?

- HH survey shows that >80% of farmers who paid lb. x lb. were willing to pay this 'price'
- While this was also the case in HND and NIC for farmers who paid 2lb. x lb., 67% of farmers in GUA considered this above the amount they were willing to pay
- Key informants reported that most farmers were satisfied with the most common payment agreement (lb. x lb.), but seed producers in HND said production cost was too high and wanted a better price (from DICTA)

YES, most farmers were satisfied with the amount they agreed to pay; however, only a small share of farmers have honored this agreement—no resources available to follow up with farmers to 'convince' them to honor the agreement

Cost-recovery: can the system recover the cost of production, multiplication and distribution?

- This depends on the commitment of the partners involved
- Partners based in the community (e.g., CIALs, CSBs) could be better positioned to recover the seed cost.
- Other partners above the supply chain may need more resources and infrastructure to enforce an in-kind payment

Further Lessons and Recommendations

- Flexibility in payment method and proximity/presence of seed production/distribution closer to the community are identified as the strength of the models used…***Future seed system development efforts should integrate these features***

- Despite favorable quality rating, the average yield and seed to grain ratio reported by farmers were not very impressive…***Integrating seed distribution efforts with technical support (or vice versa) may be a better strategy to realize the full potential of the quality seeds in farmers' fields***

Lessons and Recommendations (cont'd)

- Bean 'seed' competes with bean 'grain' as planting material. Sealed package with a label that describes the product is the gold standard…***Future efforts must adhere to this 'gold standard' if the aim is to differentiate the product and create a demand for seed***

- There exists willingness to pay for seed with a premium over the grain price. However, in some communities meeting the seed needs based on 100% cost-recovery principle may not be possible…***Scaling up efforts must be based on a two-pronged approach of subsidies and cost recovery. Model based on seed production closer to the end users may have better chance of recovering the cost of seed production in the form of in-kind payment***

Special thanks…

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- BTD Management Team
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- All national partners who collaborated in the BTD project in Guatemala, Honduras and Nicaragua
- All participants in the key informant interviews
- National M&E teams
- Enumerators (NITLAPAN)