Eastern Indonesia-Agribusiness Development Opportunities

Stakeholder Consultation Workshop - Tomato

Surabaya, Indonesia
26th September, 2013

Australian Government
Australian Centre for International Agricultural Research

Australian Aid

Collins Higgins Consulting

Eastern Indonesia Agribusiness Development Opportunities (EI-ADO)

- Research commissioned by ACIAR, implemented by Collins Higgins Consulting and Indonesian partners
- EI-ADO project objectives:
  - Identify five commodity value chains linked to NTB, NTT and East Java with most potential to increase income of poor farmers
  - Identify opportunities and interventions with most potential for improving the efficiency, competitiveness and income of poor farmers
- Information and recommendations from EI-ADO study to inform DFAT in the design of the Australia Indonesia Partnership for Decentralisation – Rural Economic Development Program (AIPD-Rural).
  - $112 million DFAT funded development program targeting Eastern Indonesian

AIPD-Rural

- **Goal:** Increase the net income of 1 million poor male and female farmers by at least 30% by 2022 (300,000 of which should be reached by 2017)
- **Objective**: to increase the competitiveness of poor male and female farmers
- **Strategy:** To address the “systematic” constraints of the agricultural sectors that are important to the poor in selected districts
- **Outcomes**:
  - Improved farm practices
  - Increased access to input and markets
  - An improved sub-national business enabling environment
- Approach: Market Development or M4P

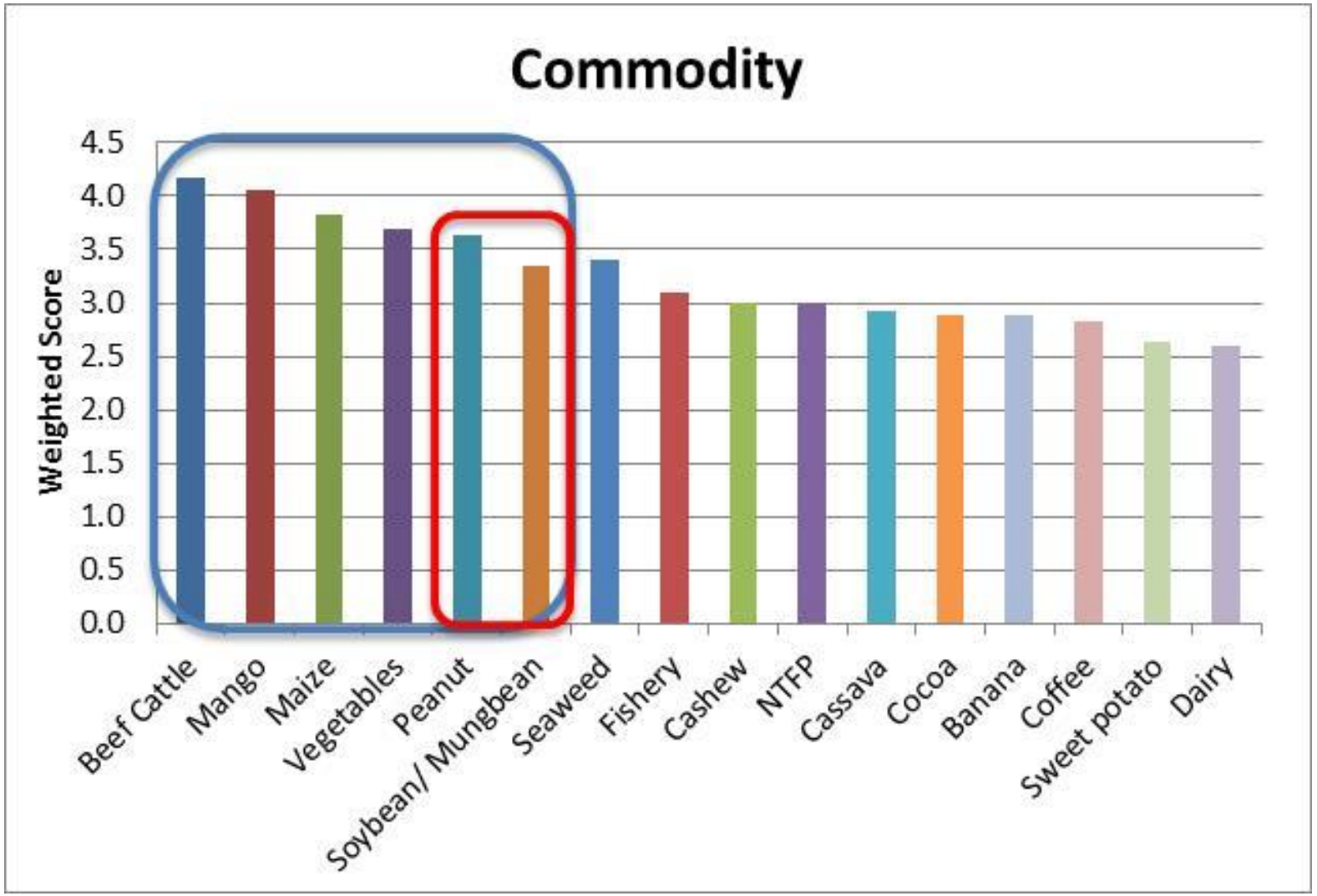
EI-ADO Methodology

- Initial identification of 32 commodities
- Reference Group selected down to 16 commodities
- 16 commodity literature reviews preformed
- Provincial and Reference Group consultation for commodity prioritization
- Identification of 5 priority commodities for detailed value chain studies.

1. Beef	
2. Legumes	Soybean, mungbean, peanut
3. Mango	
4. Maize	
5. Vegetables	Chilli, shallot, **tomato** & potato

Commodity Prioritisation

Commodities with most potential to increase income of the poor



Tomato Value Chain Study

Australian Government
Australian Centre for International Agricultural Research

Australian Aid

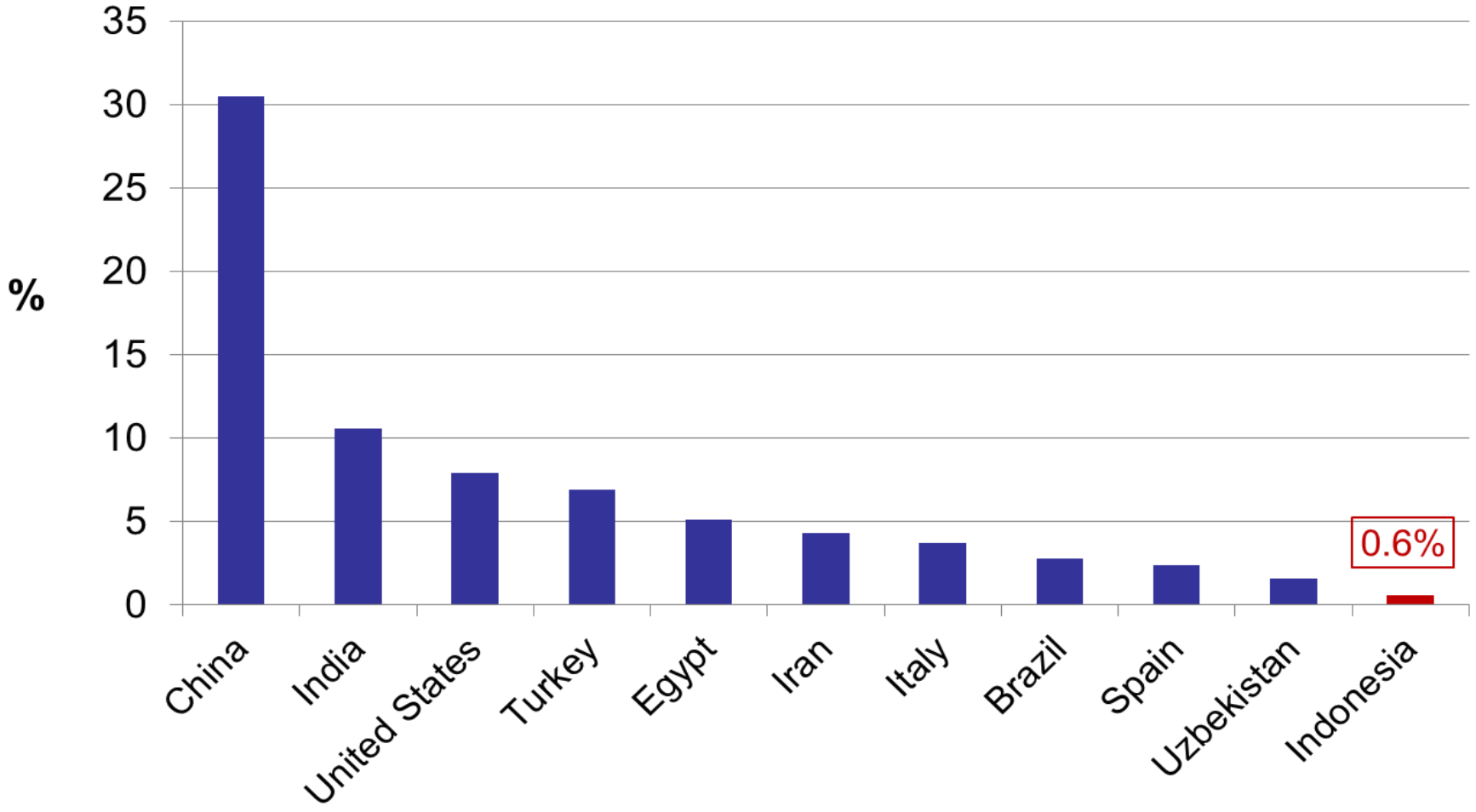
Study Team

- Tiago Wandschneider, Team Leader / International Value Chain Specialist
- Paul Gniffke, International Vegetable Specialist
- Kuntoro Boga, National Value Chain Specialist
- Teddy Kristedi, Assistant Researcher
- Yohannes Krisnady, Field Coordinator East Java and Assistant Researcher

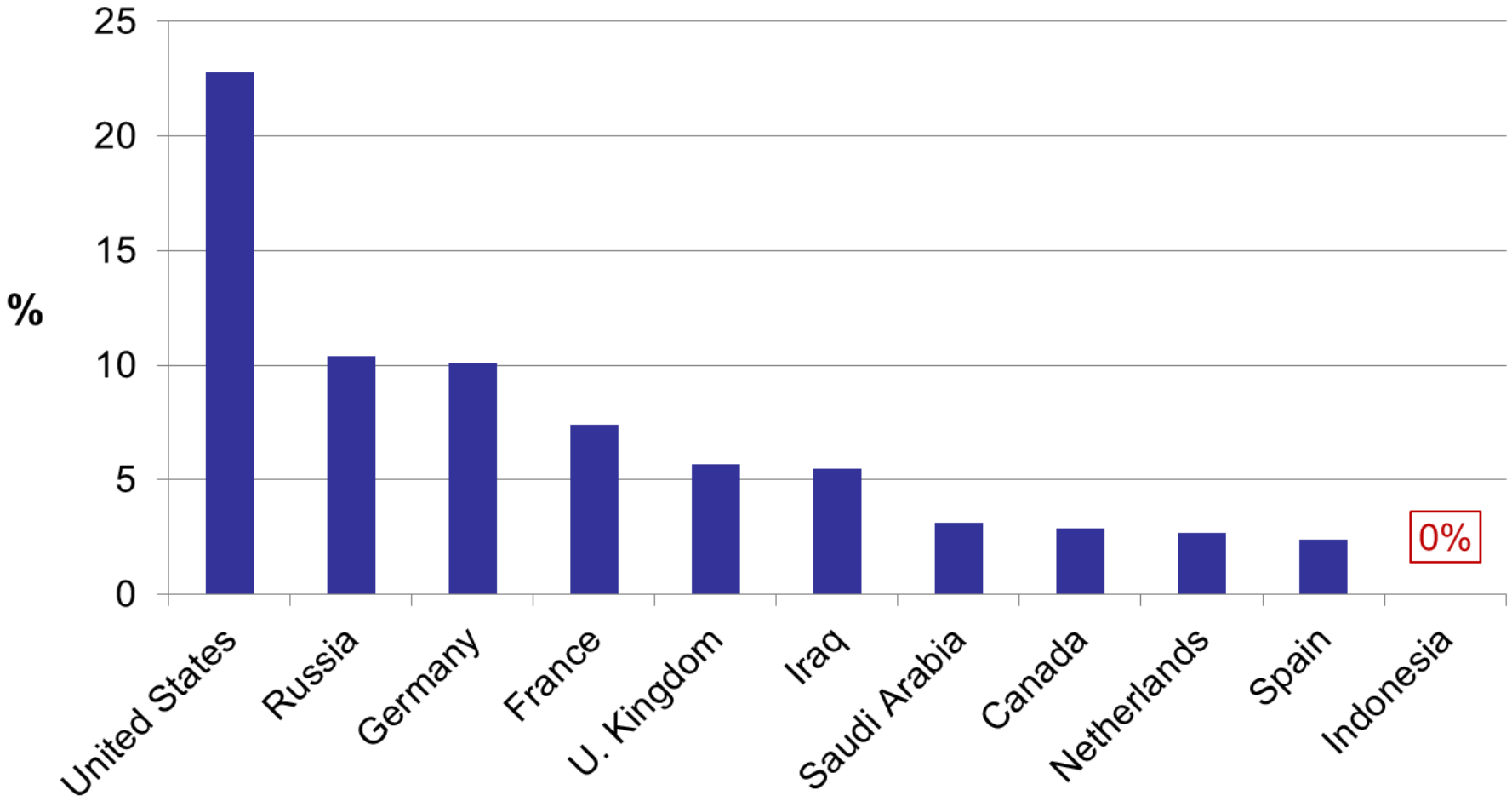
Areas Visited

- Malang: selected for value chain research
- Batu: interview government officers, commercial farms, farmer groups, and traders
- Kediri: visit nurseries and seed companies
- Sidoarjo: visit markets
- Surabaya*:* visit markets and supermarkets

Indonesia's Position in Global Production (2011)



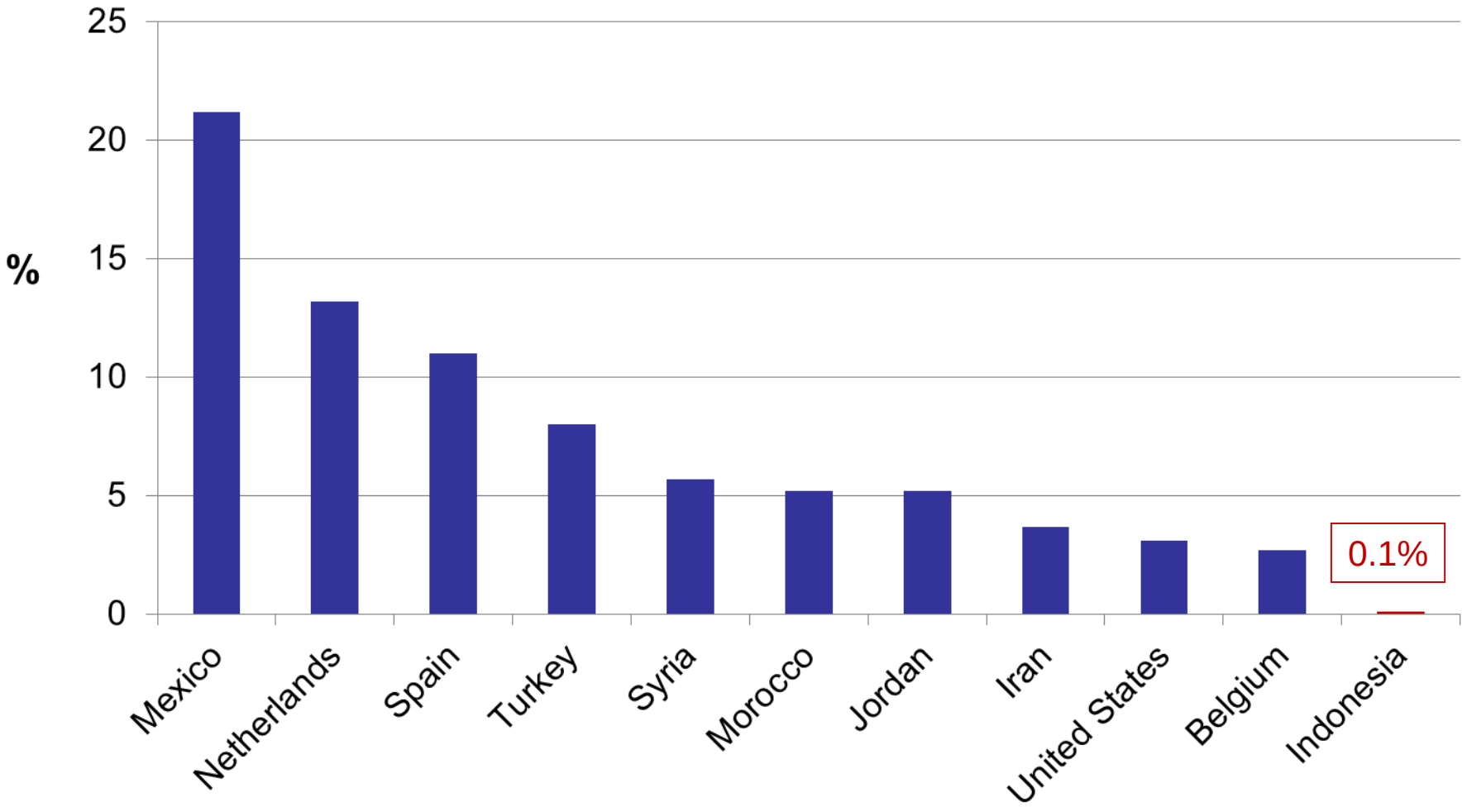
Leading Tomato Importers (2010)



Australian Government
Australian Centre for International Agricultural Research

Australian Aid

Leading Tomato Exporters (2010)



Australian Government
Australian Centre for International Agricultural Research

Australian Aid

International Trade

- Indonesia **exports** only 0.1-0.3% of its production
- **Imports** account for less than 0.1% of domestic supply

	2005	2006	2007	2008	2009	2010	Average 2005-10
Exports (tonnes)	1,169	179	1,851	874	565	618	876
Imports (tonnes)	125	227	208	142	47	57	146

Production Statistics

- In Indonesia, tomato cultivation is spread across many islands and provinces

	2007	2008	2009	2010	2011	Share (%) 2011	Change (%) 2007-11
Harvested area (ha)	51,523	53,128	55,881	61,154	53,088	100	3
of which:							
West Java	10,926	10,211	10,127	12,635	9,444	17.8	-13.6
Central Java	3,412	3,594	4,236	4,857	5,064	9.5	48.4
East Java	3,300	3,758	4,044	4,439	4,349	8.2	31.8
North Sumatra	4,056	3,672	4,662	4,121	4,142	7.8	2.1
West Sumatra	1,514	1,693	1,569	2,005	2,036	3.8	34.5
(…)							
NTB	1,002	1,076	1,212	1,335	1,516	2.9	51.3
NTT	633	853	768	870	1,027	1.9	62.2

Production Statistics

- There are significant yield differences across provinces

	Average 2007-11	Change (%) 2007-11
National yield (t/ha)	14.8	46.3
West Java	28	41.2
West Sumatra	21.5	53.3
North Sumatra	19.6	12.2
NTB	18.3	103
Central Java	14.2	12.5
East Java	12.6	37.6
NTT	9.5	-14.9

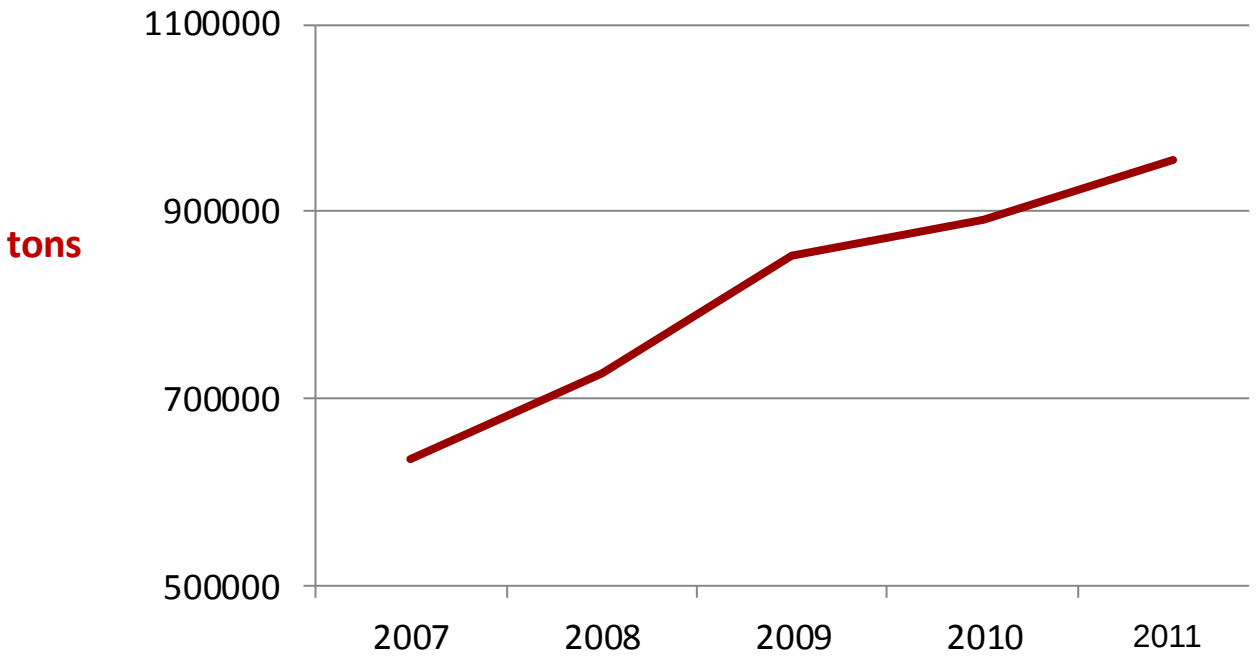
Production Statistics

- West Java is the main production centre

	2007	2008	2009	2010	2011	Share (%) 2011	Change (%) 2007-11
Production (tons)	635,474	725,973	853,061	891,616	954,046	100	50.14
of which:							
West Java	267,220	269,404	309,653	304,774	354,832	37.2	32.8
North Sumatra	76,699	69,134	90,147	84,353	93,386	9.8	21.8
Central Java	40,794	55,475	61,303	76,462	73,009	7.7	79
East Java	33,237	46,046	56,626	56,342	67,646	7.1	103.5
West Sumatra	25,577	30,793	33,842	49,712	58,078	6.1	127.1
(…)							
NTB	10,040	19,420	28,781	25,639	33,864	3.6	237.3
NTT	7,233	8,174	7,394	6,151	10,476	1.1	44.8

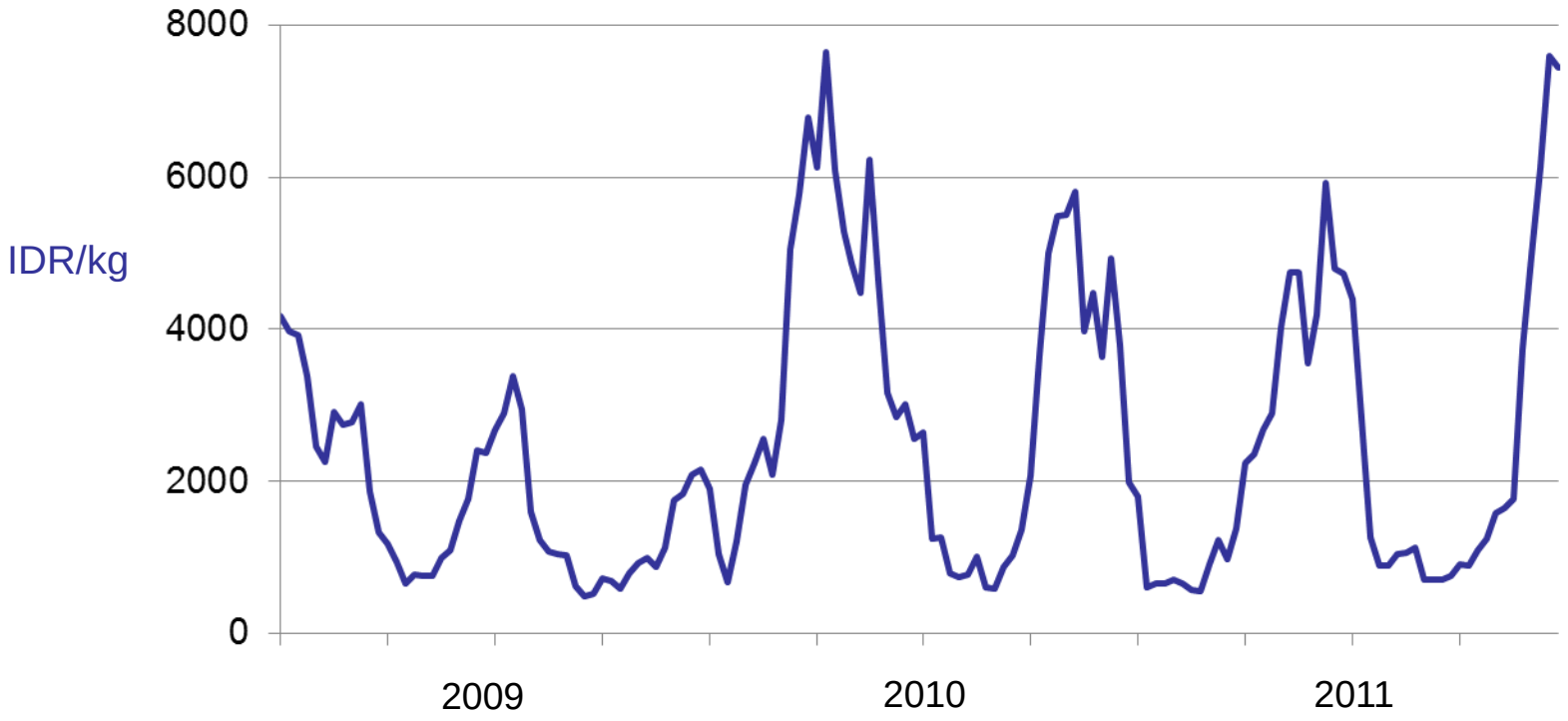
Production Trends

- Tomato production is growing
  - Strong growth in farm productivity
  - Growing domestic demand



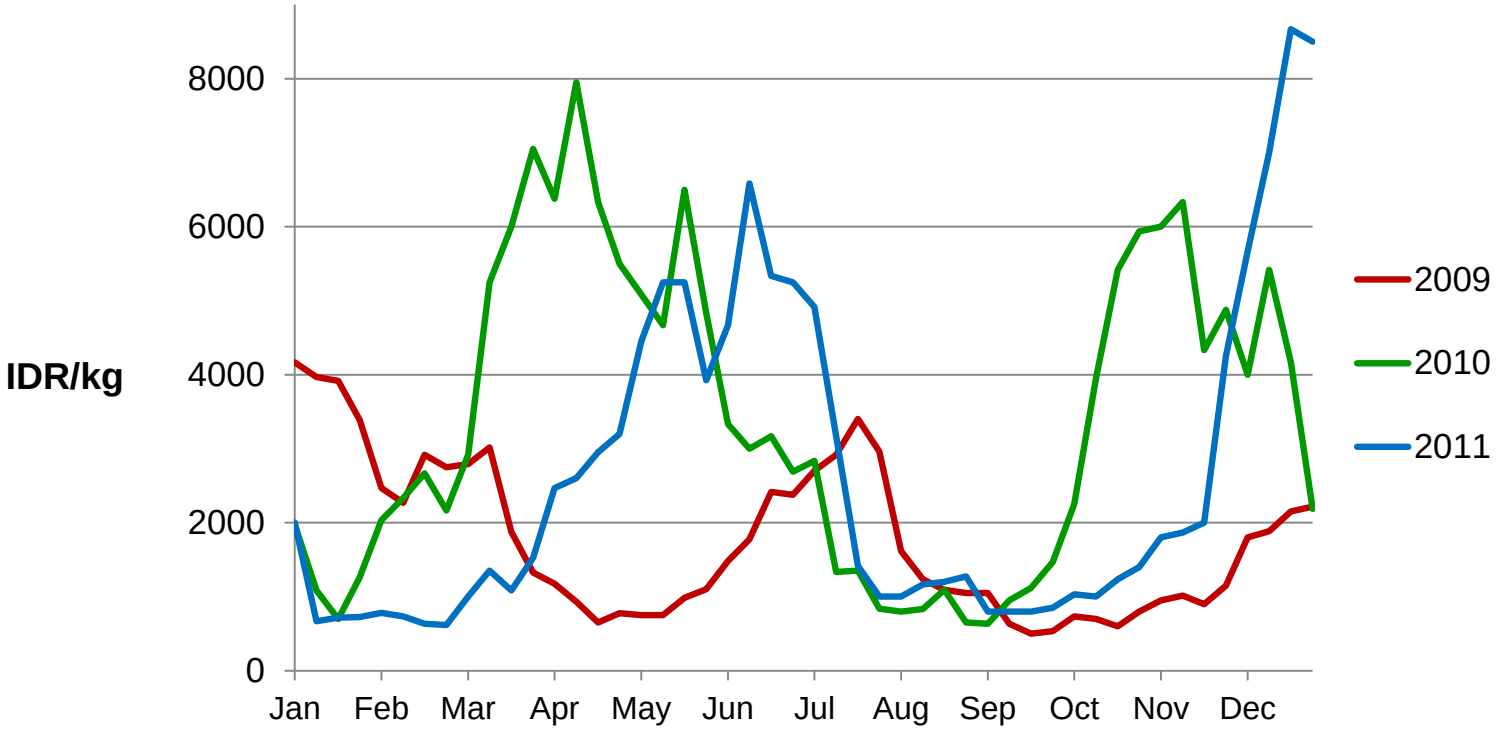
Real Price Trends

- Stable trend (but huge volatility around the trend)
- Price volatility is due to:
  - Weather ⇔ supply; lack of price stabilisers (imports, storage)



Price Seasonality

- Unstable seasonal patterns
  - Impact of weather conditions on domestic supply
  - Farmers seem to be over-reacting to prices



Consumer Demand

- "Vegetable tomato" accounts for the bulk of consumption
- It is mainly consumed at home in cooked sauces, raw sliced, and other direct applications
- Consumers like sweet and medium-size vegetable tomatoes, with bright red colour and no marks
- Consumption of large fruit tomato and small cherry tomato is very small

Tomato Cultivation in Malang

	Production area (ha)			
	2011	2012	Share 2011 %	Share 2012 %
Malang	1,307	1,219	100	100
Poncokosumo	463	423	35	35
Pujon	231	221	18	18
Wajak	116	74	9	6
Karangploso	44	69	3	6
Tumpang	112	25	9	2
Other	341	407	26	33

- Third most important vegetable in terms of area (after chilli and cabbage)
- Malang is the leading supplier of tomato in East Java during the rainy season
- Poncokosumo and Pujon have the largest tomato area in Malang

Yields

	t/ha	
	2011	2012
Malang	7.9	6.3
Poncokosumo	8.1	8
Pujon	13.4	2.9
Karangploso	1.7	2.6
Wajak	14.5	17.9
Tumpang	1.5	2.9

- Huge intra-district yield variations
- Huge inter-annual variations

Profile of Tomato Farmers

- Diversified vegetable crop portfolio (diversification of production and marketing risk)
- Most tomato farms are very small (0.05 – 0.5 ha)
  - Limited landholdings
  - Mixed vegetable farms

Varieties

Varieties	Company
Betavila	East West
Saviro	Syngenta
Tymoti	East West
Marta	East West
Permata	East West
Other: Menara, Lentana, Belavista, Tatiana, Ken Dedes	

Varieties

- Different varieties are grown in different villages
  - Altitude
  - Season
  - Different rotation systems (crop duration!)

⇒ Critical criteria for farmers

  - Yield potential
  - Tolerance to rain
  - Tolerance to pests and diseases
  - Crop duration
  - Marketability (fruit size, colour, skin)

Production costs ('000 IDR /ha)

- Tomato is a high-input (high-investment) crop

	A	B	C	D	Average	Share of total cost %
Seed	3,133	1,250	2,400	1,800	2,146	5
Fertilizer	5,783	3,750	14,530	10,630	8,673	22
Pesticides	5,273	2,876	9,700	9,550	4,425	11
Hired labour	10,100	3,780	15,768	15,718	11,342	23
Other	12,853	5,636	13,610	11,783	10,971	27
Total cost	37,143	17,292	56,338	49,480	40,063	100

Labour Use

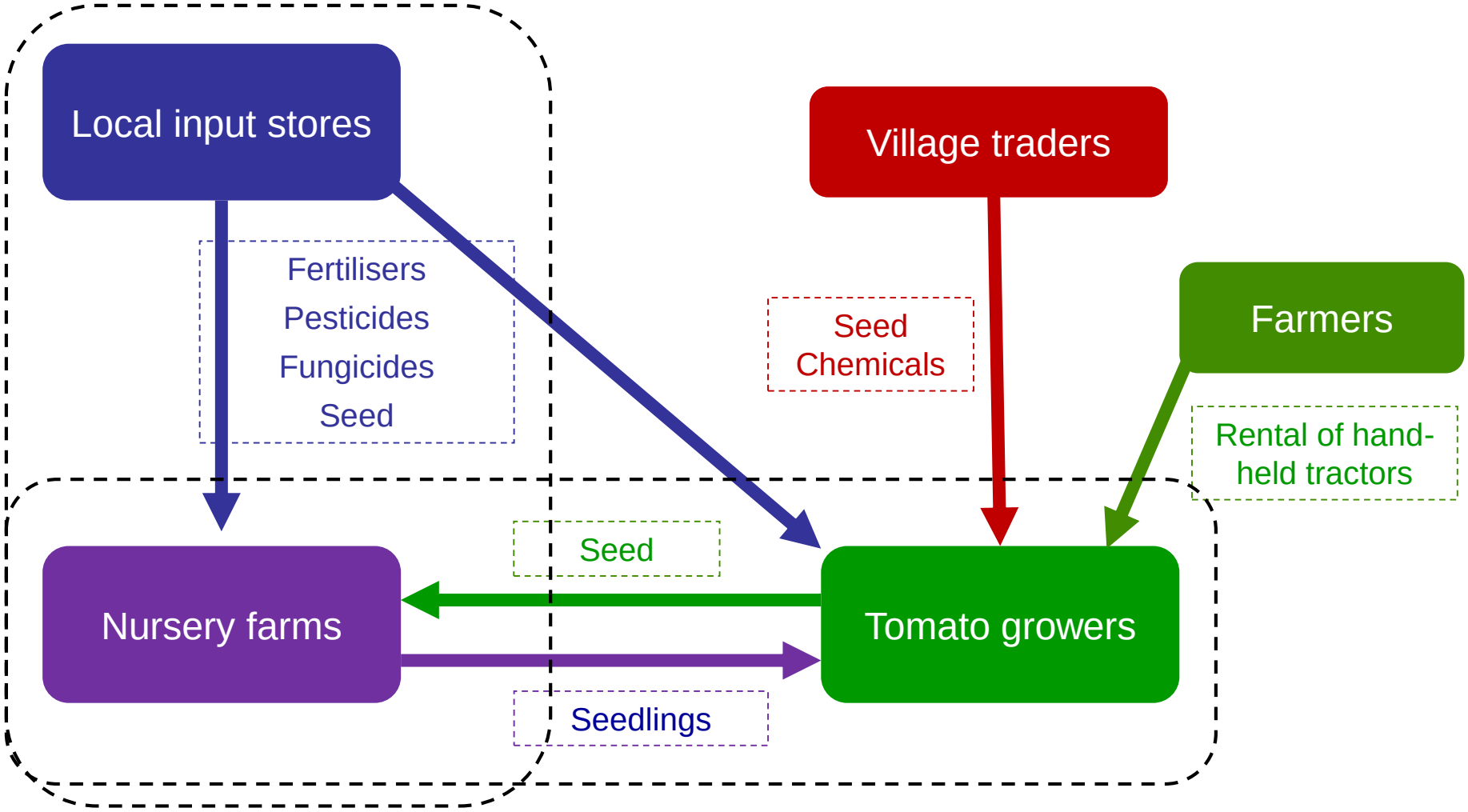
- Men earn 15-25 % higher farm wages than women

	A	B	C	D	Average
Farm employment (person-days / ha)	357	158	632	438	396
Hired farm labour / total farm labour (%)	66	75	90	100	83
Hired female labour / total hired labour (%)	88	54	71	25	60
Female employment / total employment (%)	42	41	64	25	43

Pests and Diseases

- High-impact diseases: bacterial wilt, anthracnose and fusarium during the wet season
- Thrips are the main pest
- High crop losses due to pests and diseases
- Reported yields: 6 – 60 tons / ha

Local Input Chain



Seedlings

- 50-70% of growers buy seedlings
- Reasons for purchasing seedlings:
  - save time
  - quality
  - poor access to water
  - replace some own seedlings
- Reasons for not purchasing seedlings:
  - Save cost
  - Unsure about quality of nursery seedlings
  - Farms are distant from the village

Nursery Profile

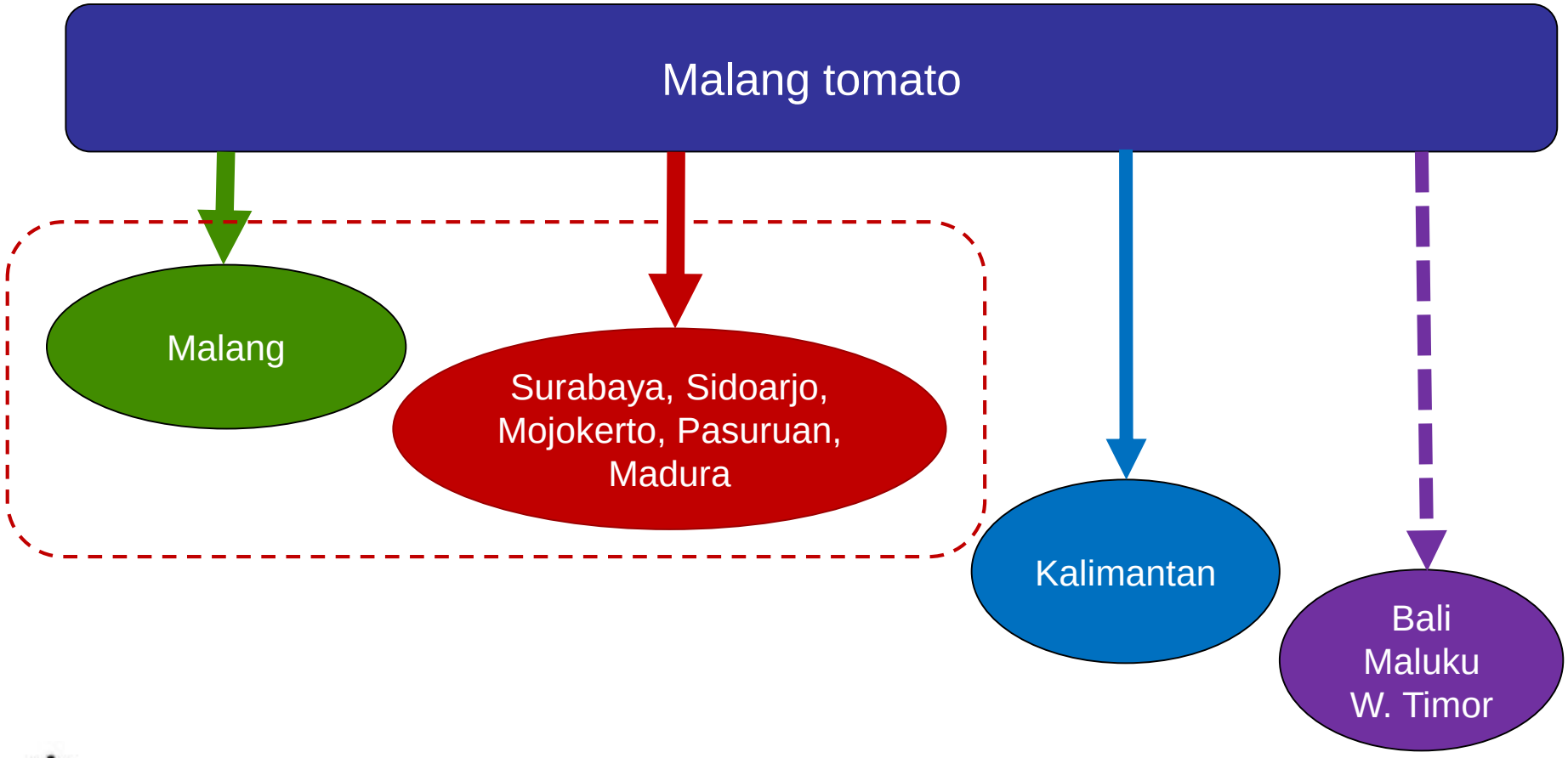
	Small size	Medium size
Product portfolio	many vegetables	many vegetables
Technologies, practices	polybags, plastic roof, high chemical use	polybags, UV plastic roof, high chemical use
Labour	own and casual	Own casual and full-time hired labour
Production	12 months 20 - 100,000 seedlings / month	12 months 200-400,000 seedlings / month
Clients	small farmers	Small, large farmers
Outreach	sub-district	sub-district, other sub-districts

Nursery Business Models

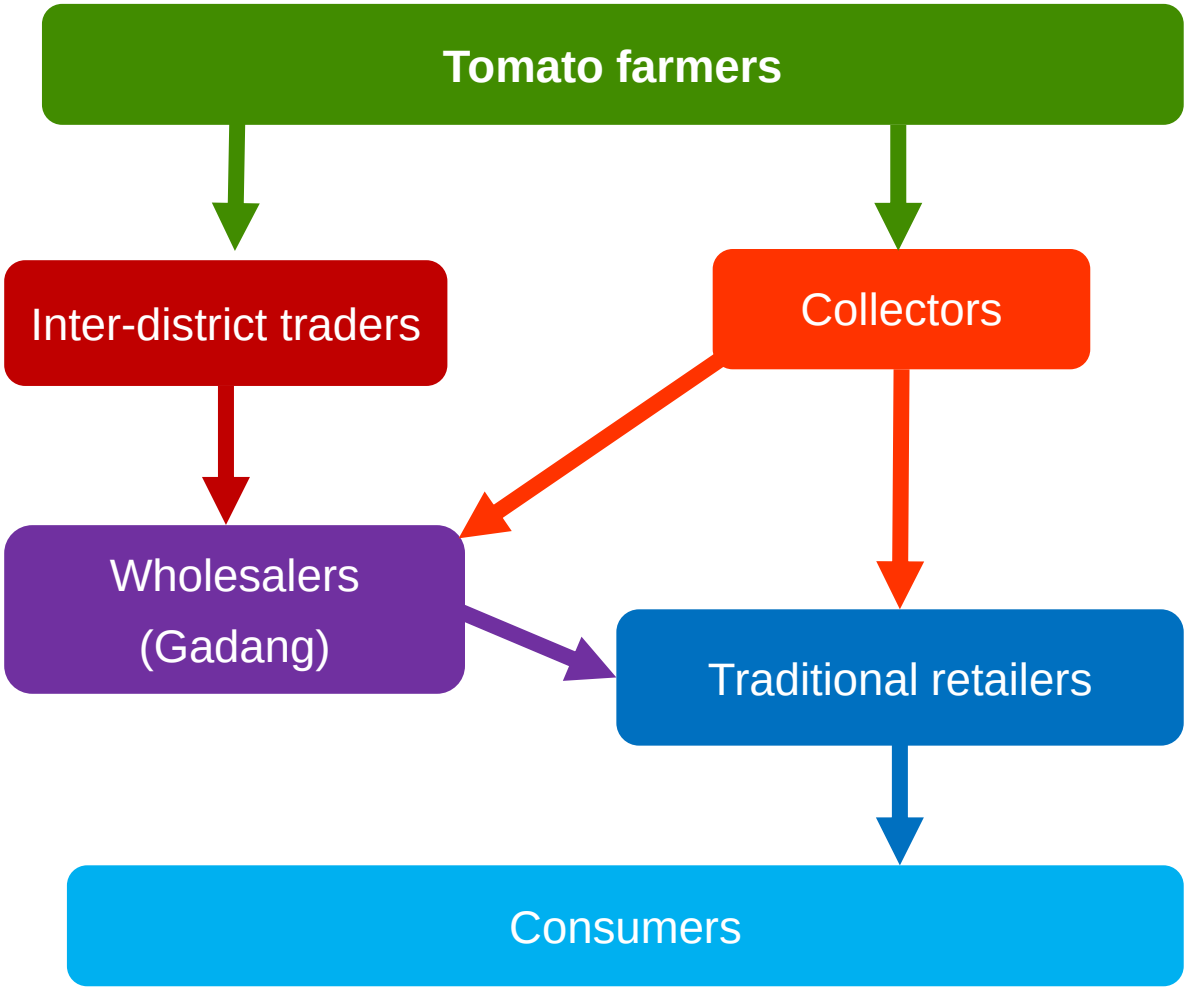
- Nursery business models:
  - Production on order (may involve partial advance payment)
  - Reliance on spot market sales
  - Production on a “service” basis
- Nursery operators often follow different combinations of these three strategies
- Business strategies are influenced by scale of the nursery and ability to take risk

Product Flows

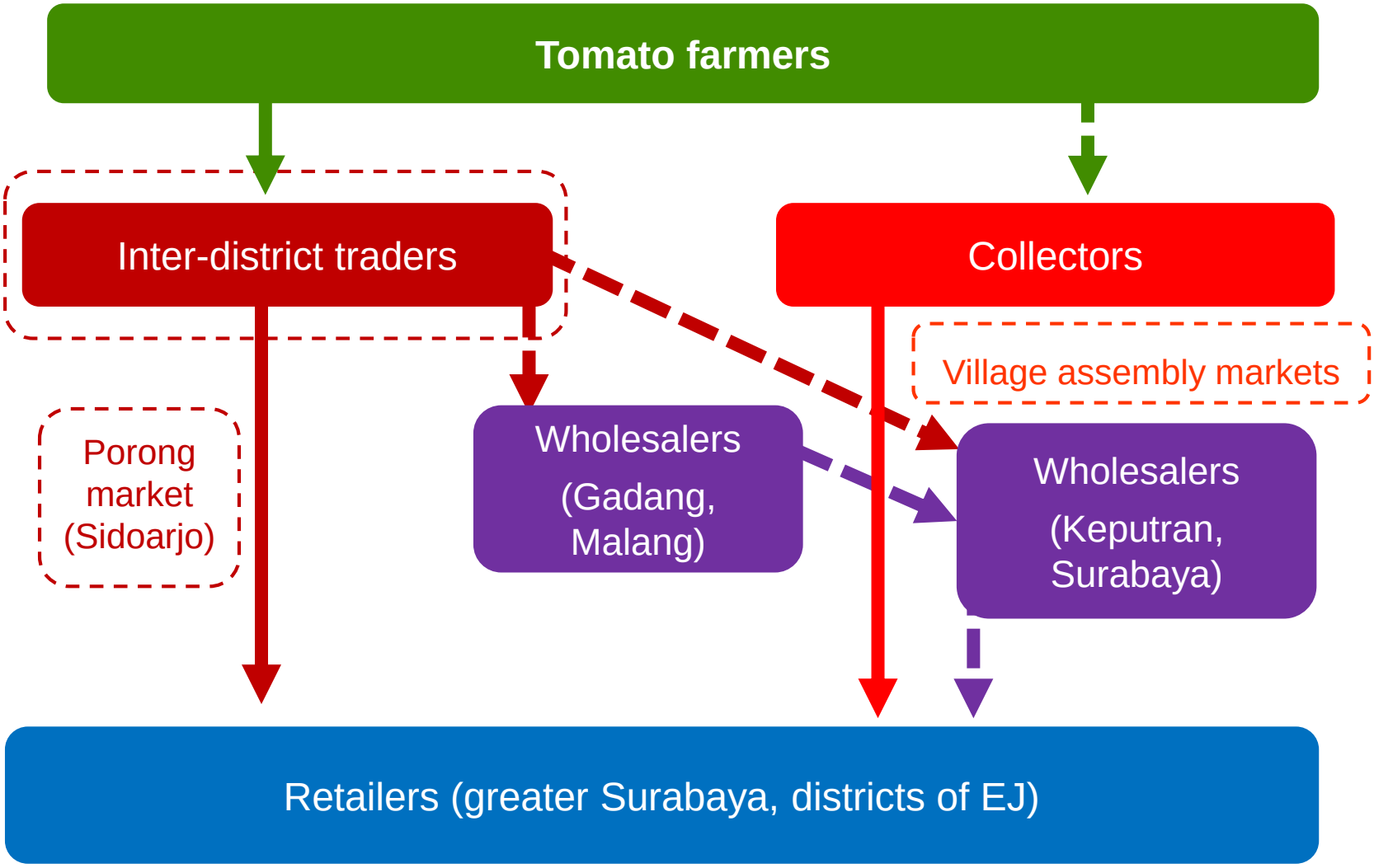
- Most tomato from Malang is consumed within the district and province



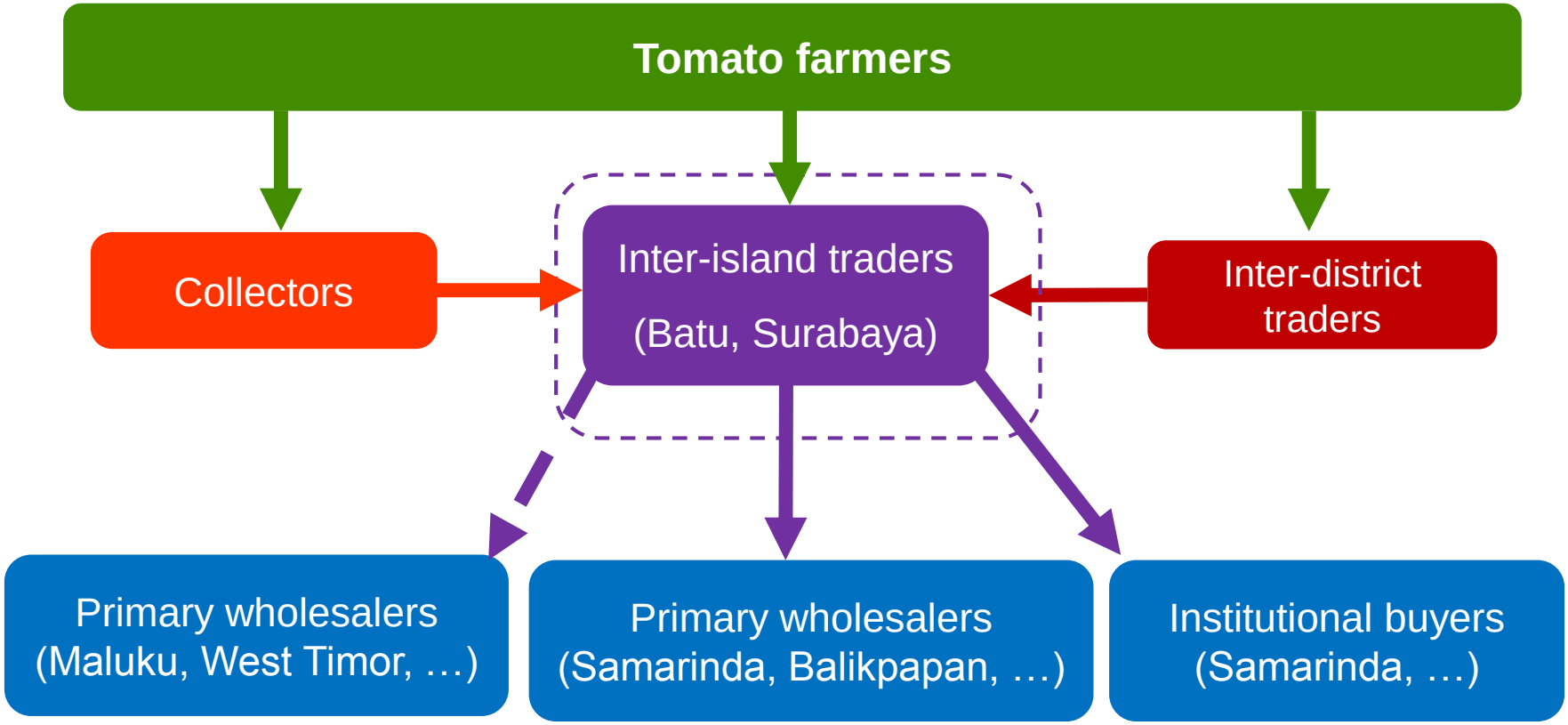
Intra-District Chain



Intra-Provincial Chain



Inter-Island Chain



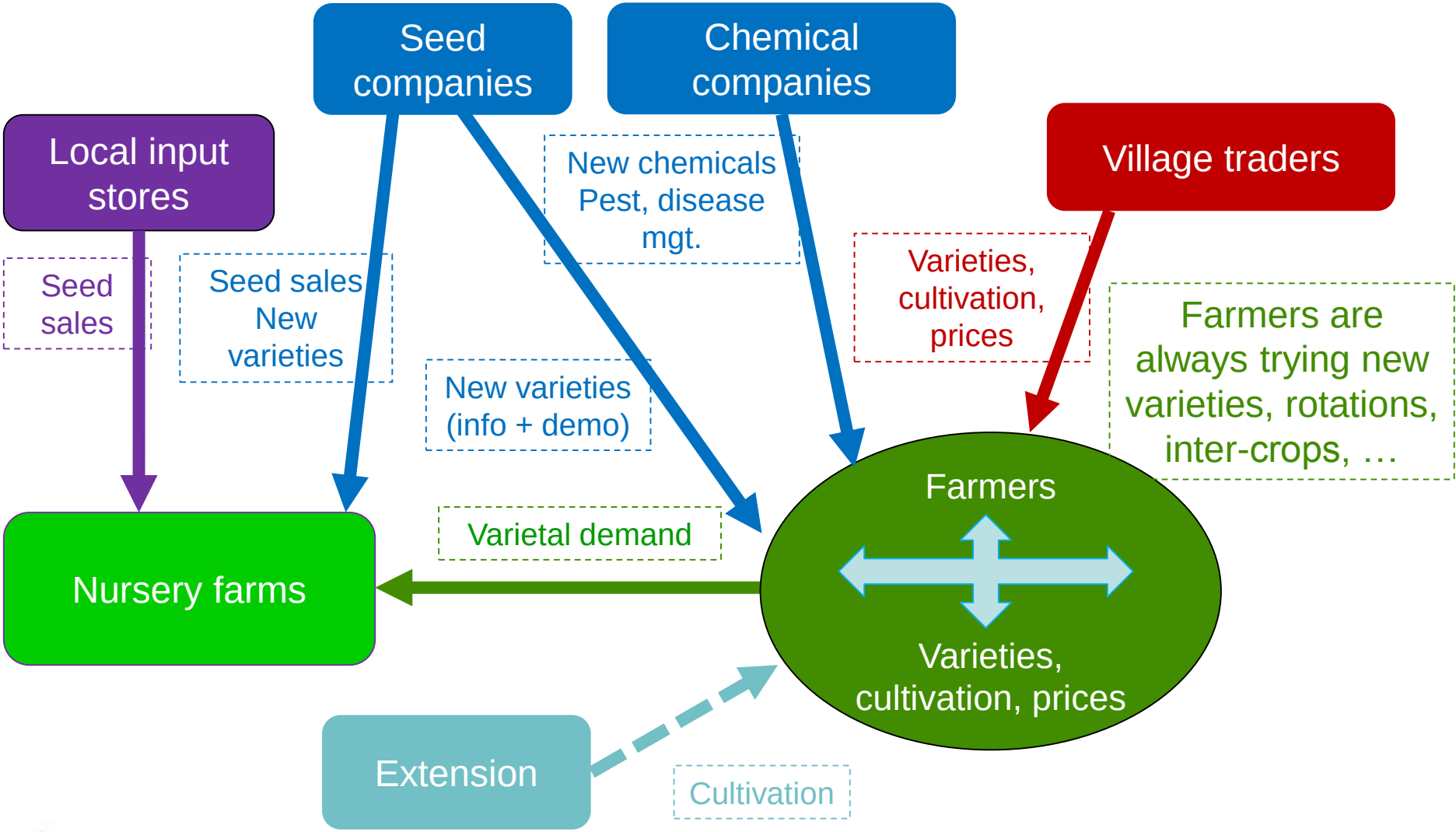
Key Points

- Strong competition at all levels of the chain
- Prompt payment along the chain is the norm
- Traditional channels are clearly dominant (in Java, supermarkets account for less than 1.5% of the tomato retail trade)
- No linkages to the processing industry (import tomato paste)

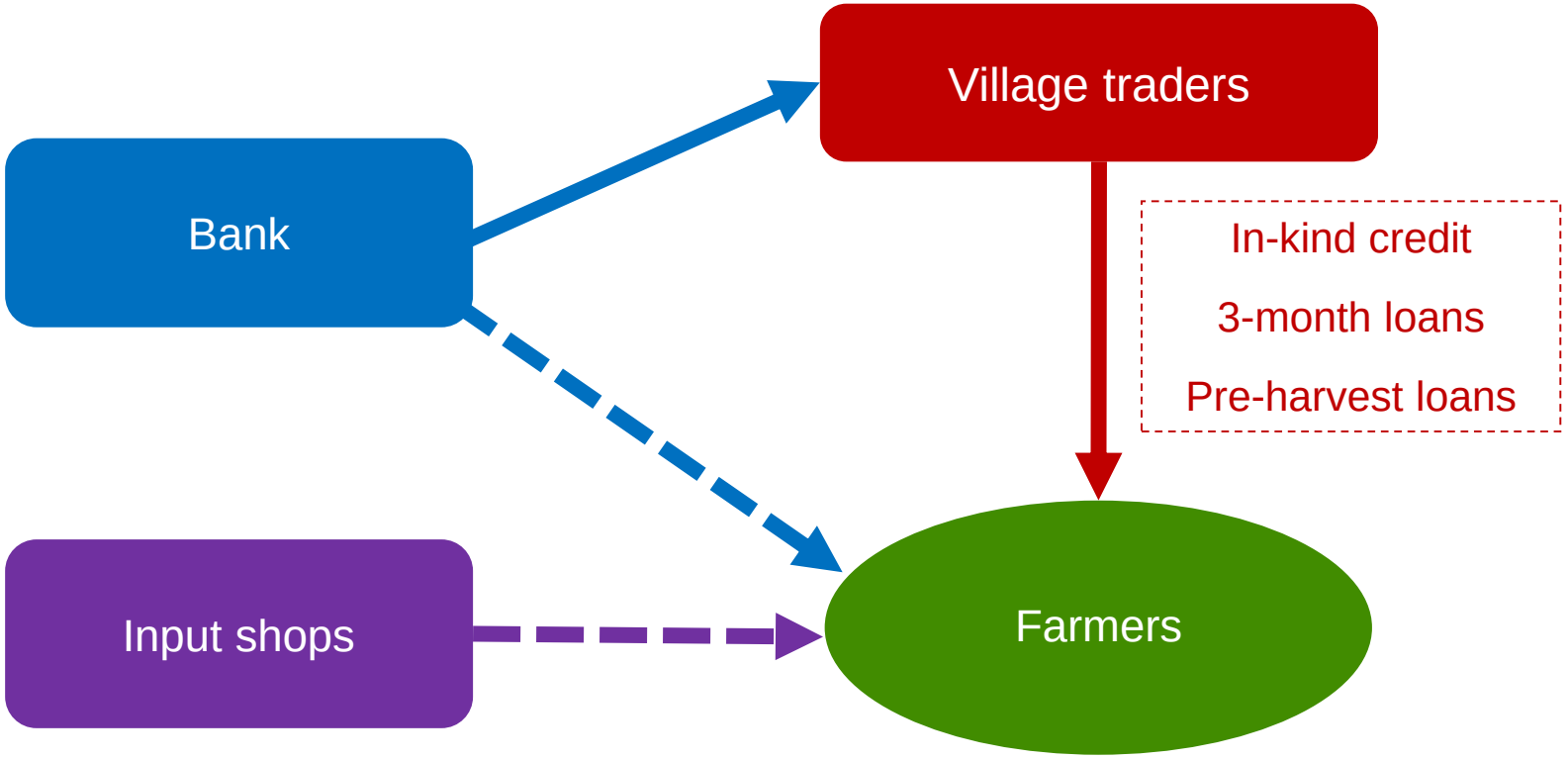
Key Points

- Few, generally small examples of:
  - Collective action at farmer level
  - Contract farming
  - Sales to modern outlets and institutional buyers
  - Formal contracts
- With limited scalability potential…

Knowledge and Information Flows



Credit Flows



Traders' Lending Criteria

- Area planted!
- Productivity of the farmer
- Personal relation ⇔ trust
- History of selling to the trader
- Repayment history ⇔ trust
- Reputation in the community ⇔ trust

Grades and Standards

	Main criterion (size)	Other favoured product attributes
Grade A	12 pieces per kg	Hard fruit Red, bright colour Clean skin, no defects
Grade B	14 pieces per kg	
Grade C	16 pieces per kg	

Farm-Gate Price Differentials

	Karanganyar 19/12/2012	Codo village Dec 2012
Grade A	1,000	1,000 - 2,000
Grade B	700	700 - 1,500
Grade C	500	500 - 1,000

Product Quality

- Malang tomato has good reputation in the market: better than Bandung's (colour, size, taste)
- But a relatively short shelf-life…
- Implications
  - Strong competitive position in East Java
  - Bandung tomato is preferred for the inter-island trade

Quality Management Systems

- Harvest of different maturities for different markets
- Traders sort, grade and pack the crop on the farm
- Traders buy and sell within the same day
- 60-65 kg wooden crate boxes (not ideal for long-distance transportation!)
- Stricter buyer standards during periods of excess supply

Product Losses

	Physical losses	Discount sales
Malang - Porong	< 5%	Occasionally, small (late in the day)
Wholesaler Keputran	1-10%	n.a.
Retailers Kediri, Surabaya, Sidoarjo	5-10%	~ 10%
Malang - Kalimantan	???	???

Margins (Example)

	Farmer	Inter-district trader Malang	Large retailer Surabya	Small retailer Sidoarjo
Selling price (IDR/kg)	9,000 (69% of retail price)	9,750	10,500	13,000
Marketing Cost (IDR/kg)		9,410	10,023	12,311
Purchasing price		9,000	9,750	10,500
Labour		32	16	0
Packaging		108	110	37
Transportation		164	38	500
Product losses		0	98	1,050
Other		106	11	224
Net Marketing Margin (IDR/kg)		340 (3.5%)	477 (4.5%)	689 (5.3%)

Margins

- The net margins earned by inter-district traders are highly volatile
- Some traders have risk-sharing agreements with farmers

Key Problems

1. High crop losses from pests and diseases (e.g. bacterial wilt)
2. Highly volatile, often very low prices
3. Short product shelf-life ⇔ long-distance trade

Presentation of Key Interventions - Tomato

Australian Government
Australian Centre for International Agricultural Research

Australian Aid

Key Interventions: Malang Tomato Value Chain

1. Commercial development of grafted tomato seedling production
2. Improved packaging for long-distance trade
3. Marketing extension for improved farm business planning

1: Grafted Seedling Production and Marketing

- Transfer of know-how to larger nurseries

  AVRDC? BPTP? Nurseries in Kediri?

- Development of commercial eggplant seed production for rootstock

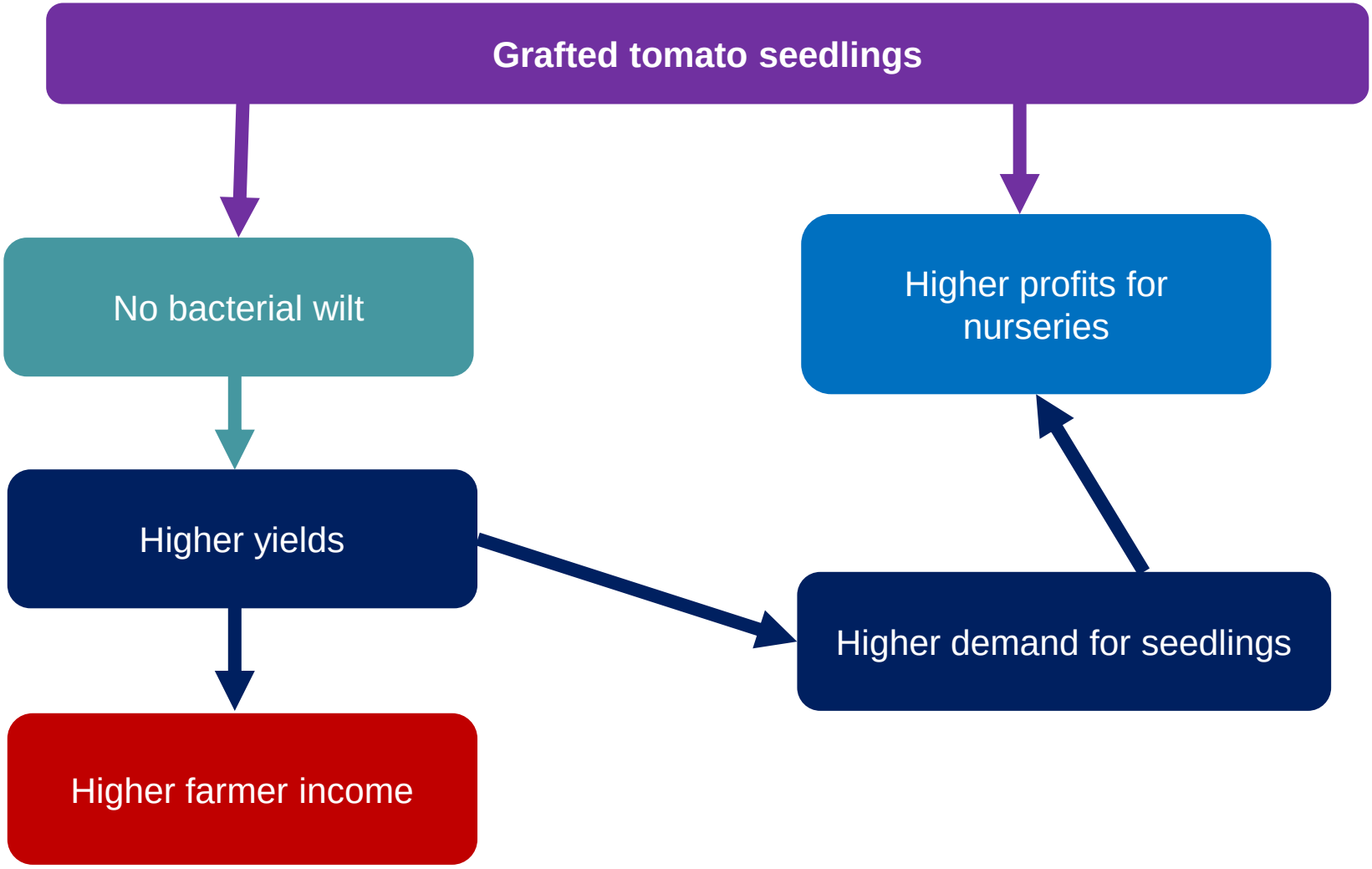
  Business models? Contract production? Nurseries as contracting enterprises? Seed group production under contract?

- Promotion of demand for grafted tomato seedlings

  Demo trials

- Timeframe: 3/4 years

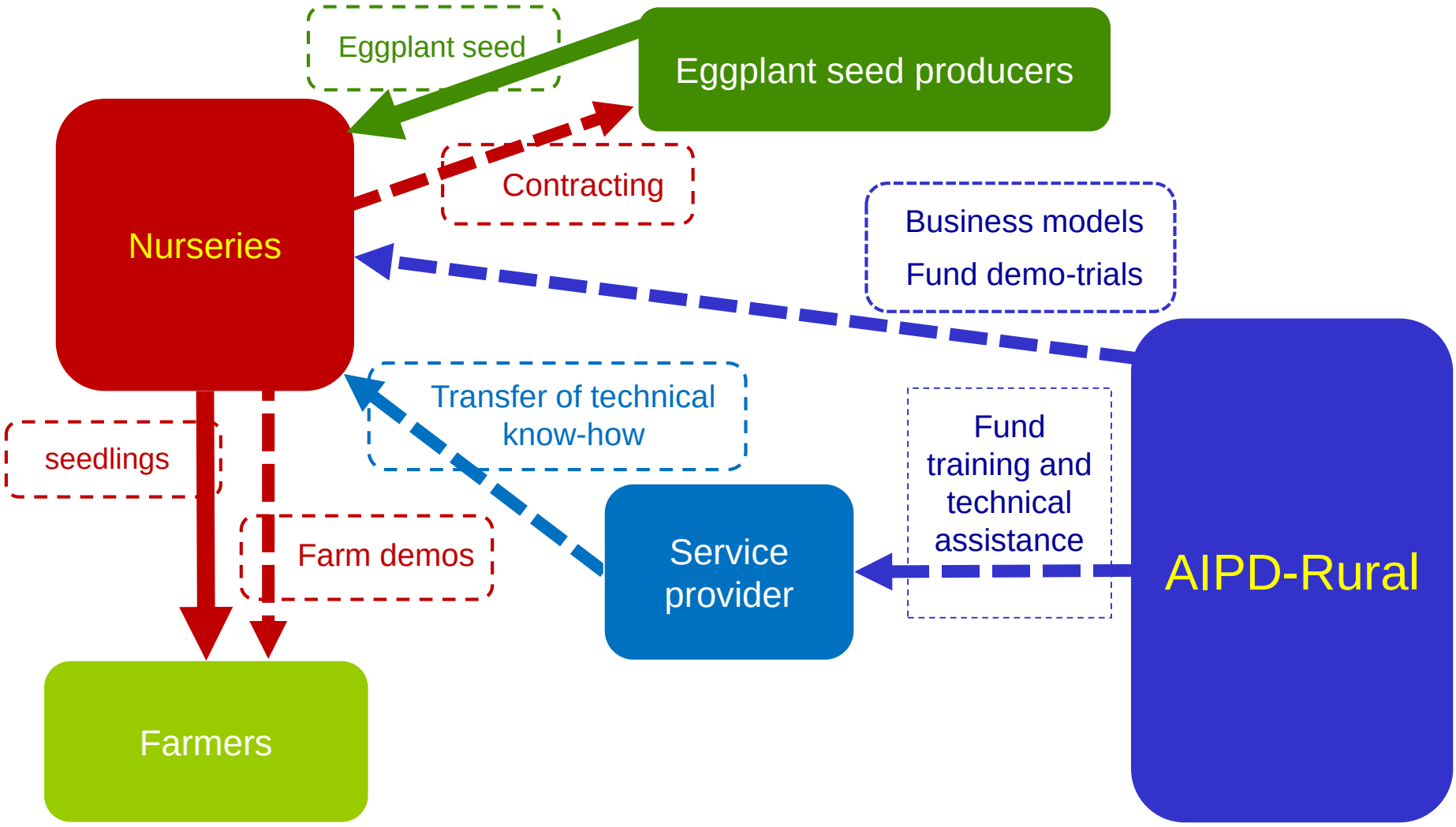
Potential impacts



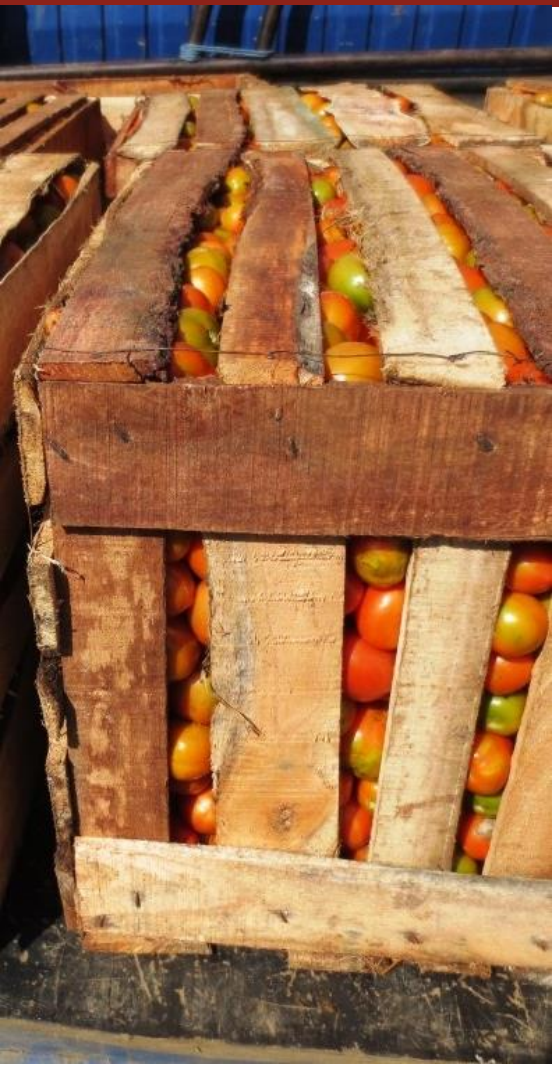
Risks / Weaknesses

- Little interest from seed companies (eggplant OPV seed)
- Complex innovation ⇔ development of new eggplant rootstock production and marketing systems
- Cost of grafted seedlings ⇔ farmer demand

Potential Solution Providers

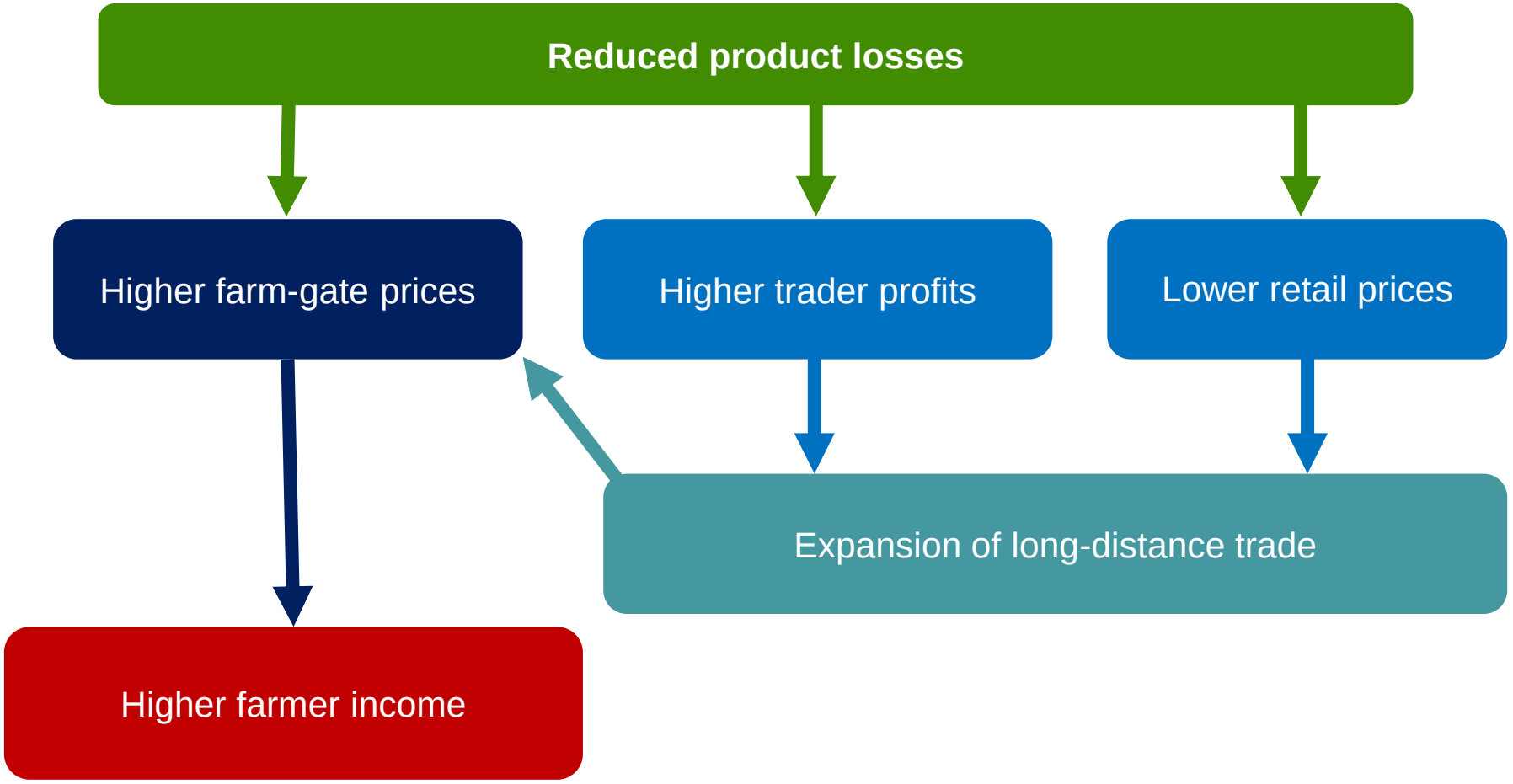


2: Improved Packaging for Long-Distance Trade

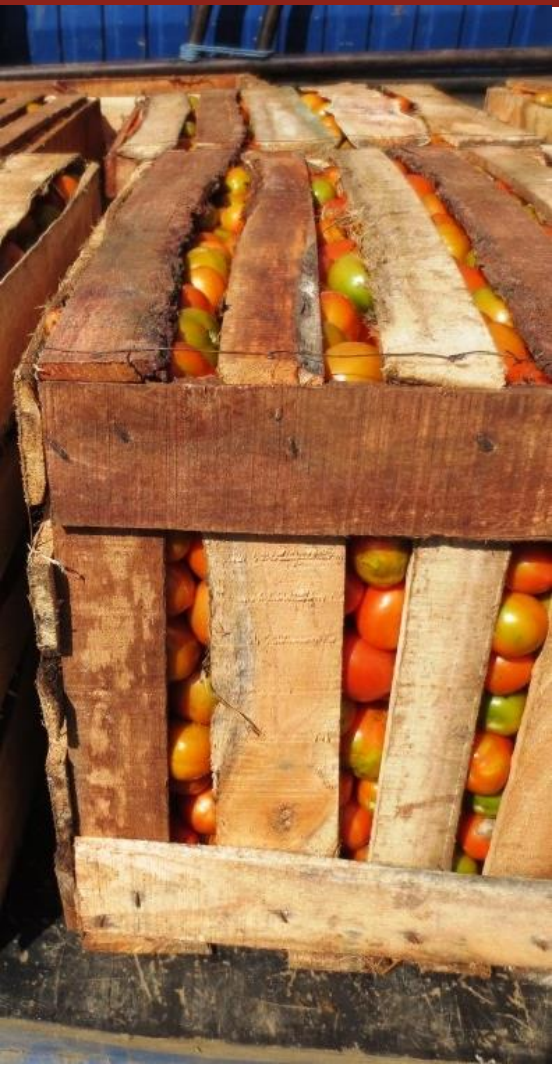


- Assessment of current packaging practices and losses in long-distance trade
- Participatory development of improved packaging for tomatoes
- Market testing
- Target markets: Jakarta, Kalimantan, West Timor
- Timeframe: 2 years

Potential Impacts

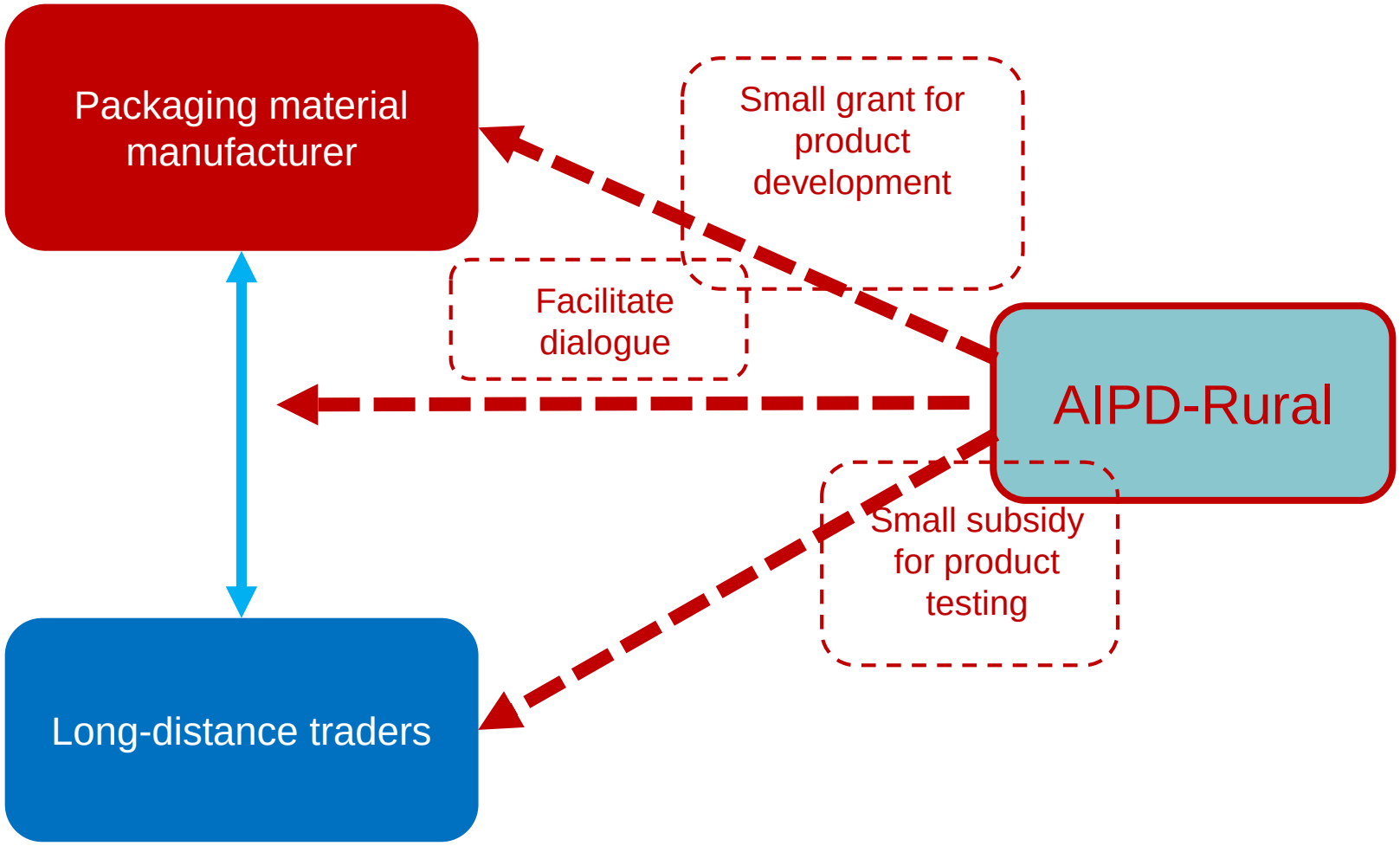


Risks / Weaknesses



- Need to develop a much better understanding of the scale and growth potential of long-distance tomato trade from Malang
- Some scale is needed for direct and indirect price impacts
- Scope for replication in other vegetable chains?

Potential Solution Providers



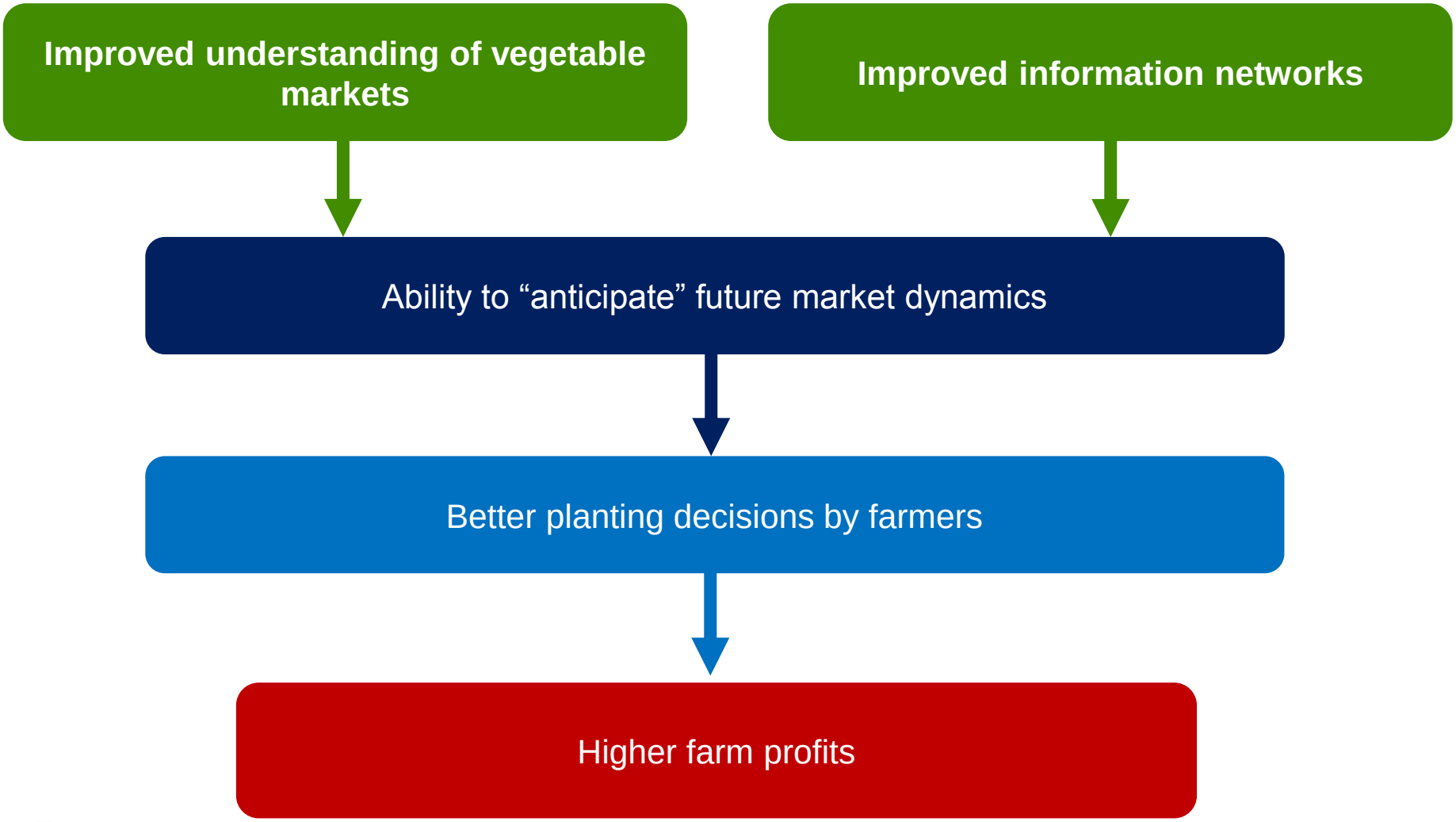
3: Marketing Extension Services

- Develop the capacity of selected service providers to transfer strategic market knowledge (about tomato and other key vegetable crops) to farmers and link them to strategic information networks for specific crops

  BPTP? University?

- Develop Farmer Business Schools for better farm business planning
- Timeframe: 2/3 years

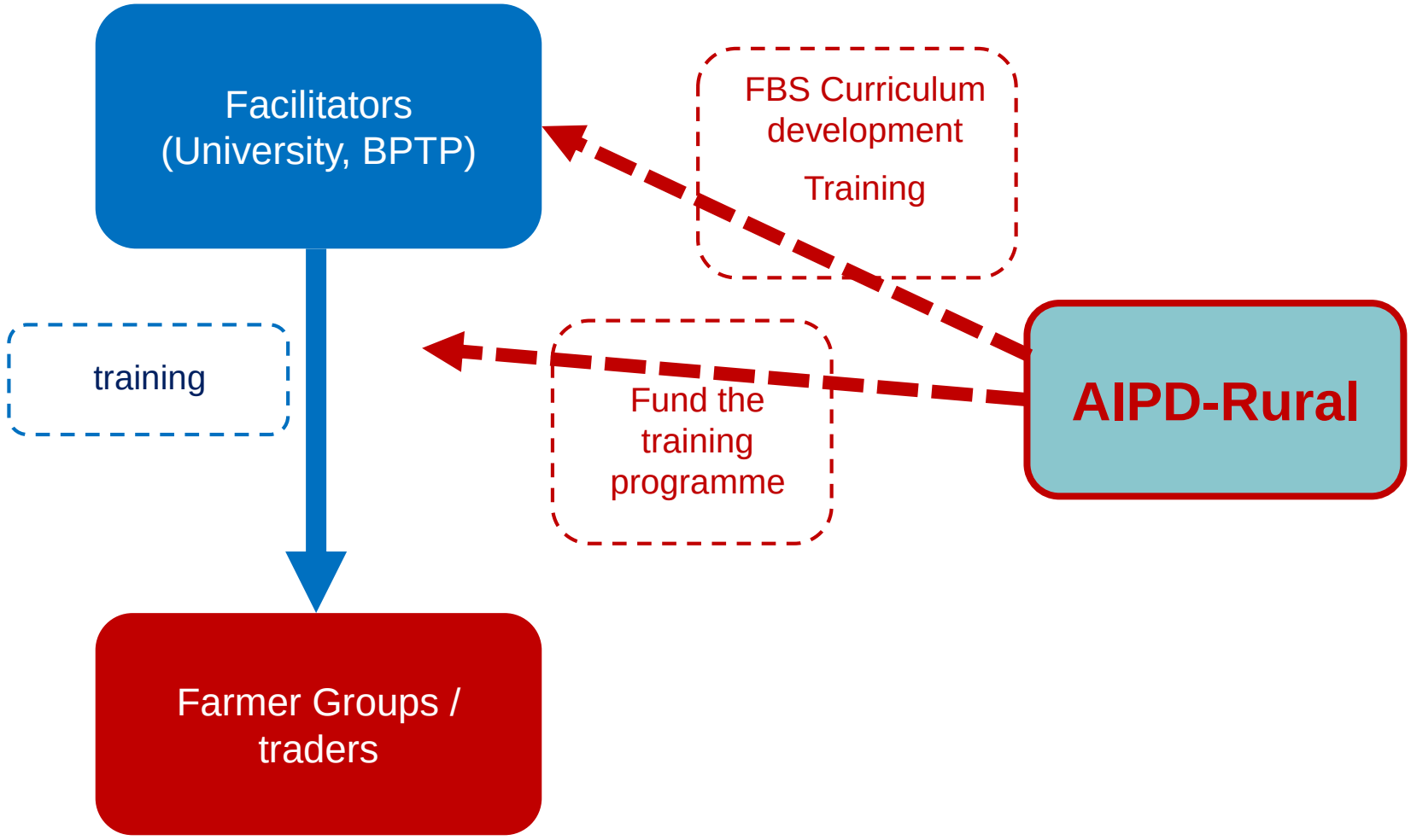
Potential Impacts



Risks / Weaknesses

- Further market research is needed for development of FBS curriculum
- Service is unlikely to be sustainable and scalable, but the impacts can be both sustainable and scalable
- Very difficult to quantify impacts

Potential Solution Providers



Key Interventions: Malang Tomato Value Chain

1. Commercial development of grafted tomato seedling production
2. Improved packaging for long-distance trade
3. Marketing extension for improved farm business planning

Research Gaps

- Production risks and causes
- Inter-island trade (incl. product losses)
- Export development opportunities and constraints
- Lead firms in premium markets (export, organic, safe, supermarkets)
  - Business models
  - Contract farming
  - Collective action
  - Scalability