

ANALYSIS OF THE VALUE CHAINS FOR ROOT AND TUBER CROPS IN MALAWI: THE CASE OF IRISH POTATOES

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Introduction

Irish potato (*Solanum tuberosum*) is one of the globally important staple crops. In Malawi, Irish potato is the fourth most important crop by volume of production of the major food crops after maize, sweet potato and cassava (Demo et al., 2015). Despite its important role in the Malawi food value chain, potato faces significant challenges including low productivity, poor storage, and limited access to clean seed. The challenges need to be addressed if its production and utilization is to be optimised. Therefore, a value chain analysis study for the crop was conducted in 11 districts of Malawi across all the three regions to identify and analyze the roles of key players across the value chain and identify inherent opportunities for possible investments and factors impinging on its growth. The study was conducted against the backdrop of the Government of Malawi's approval in September 2016 of the National Agriculture Policy (NAP), which is the overarching policy for the agriculture sector of Malawi. The policy aims "to achieve sustainable agricultural transformation that will result in significant growth of the agricultural sector, expanding incomes for farm households, improved food and nutrition security for all Malawians, and increased agricultural exports." In order to achieve this goal, the sector will have to make strategic investments in various value chains that have the potential for sustainable and inclusive economic growth. One of such value chains is Irish potato.

Objectives of the Study

- To analyse the structure of the potato value chain in Malawi
- To investigate value changes along the potato value chain
- To quantify the demand for potato early generation seed in Malawi
- To identify areas of possible investment in the potato subsector in Malawi

Methodology

The study applied both quantitative and qualitative methods to collect primary data from 105 farmers, 38 traders, 44 processors, and 13 transporters using Focus Group Discussions (FGDs) and Key Informant Interviews. Other players along the value chain were also contacted; such as researchers and NGOs. Applying the value chain approach, the study used several analytical techniques that include Strengths, Weaknesses, Opportunities and Threat (SWOT) analysis, profitability analysis at various stages along the chain, and demand analysis of its early generation seed.

Study Findings

Productivity of potatoes has been growing over the years, though still below potential. Yields of Irish potato have grown by 36 percent since 2002. However, the current national average potato yield of 18.4 mt/ha is way low compared to the potential yield of 40 mt/ha. National average yields for South Africa and Egypt are 30.0 and 24.8 mt/ha, respectively (FAOSTAT, 2008). National Irish potato production in Malawi is also below market demand (Demo et al. 2007). As a consequence, South Africa exports table potatoes into Malawi.

Figure 1 shows national trend for Irish potato yields in Malawi. The yields have generally been increasing over the years but are still way below the potential.

Production and Productivity Trend

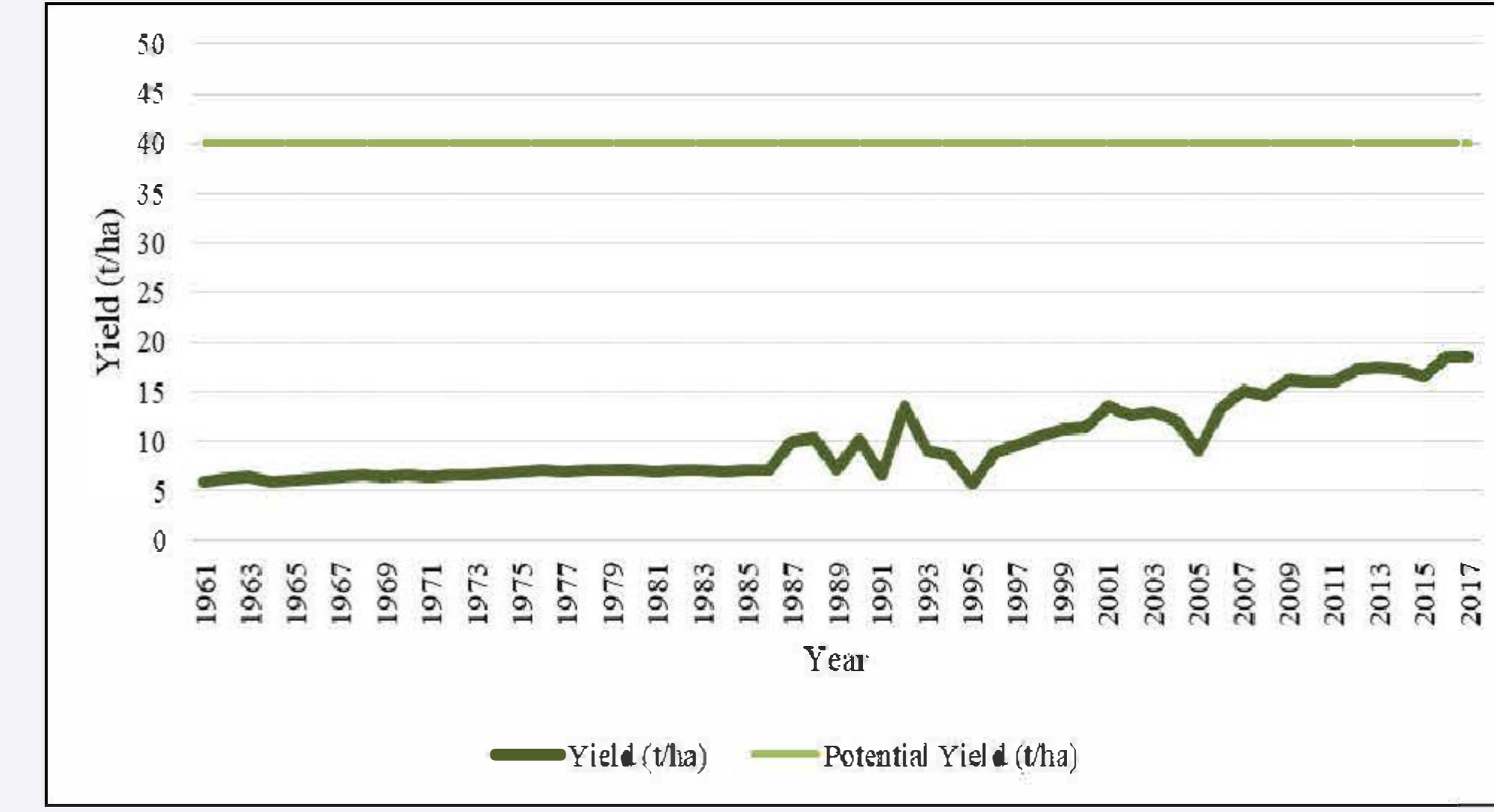


Figure 1: Irish potato yield trends (t/ha) in Malawi, 1961 to 2017

Value Chain Map for Potatoes

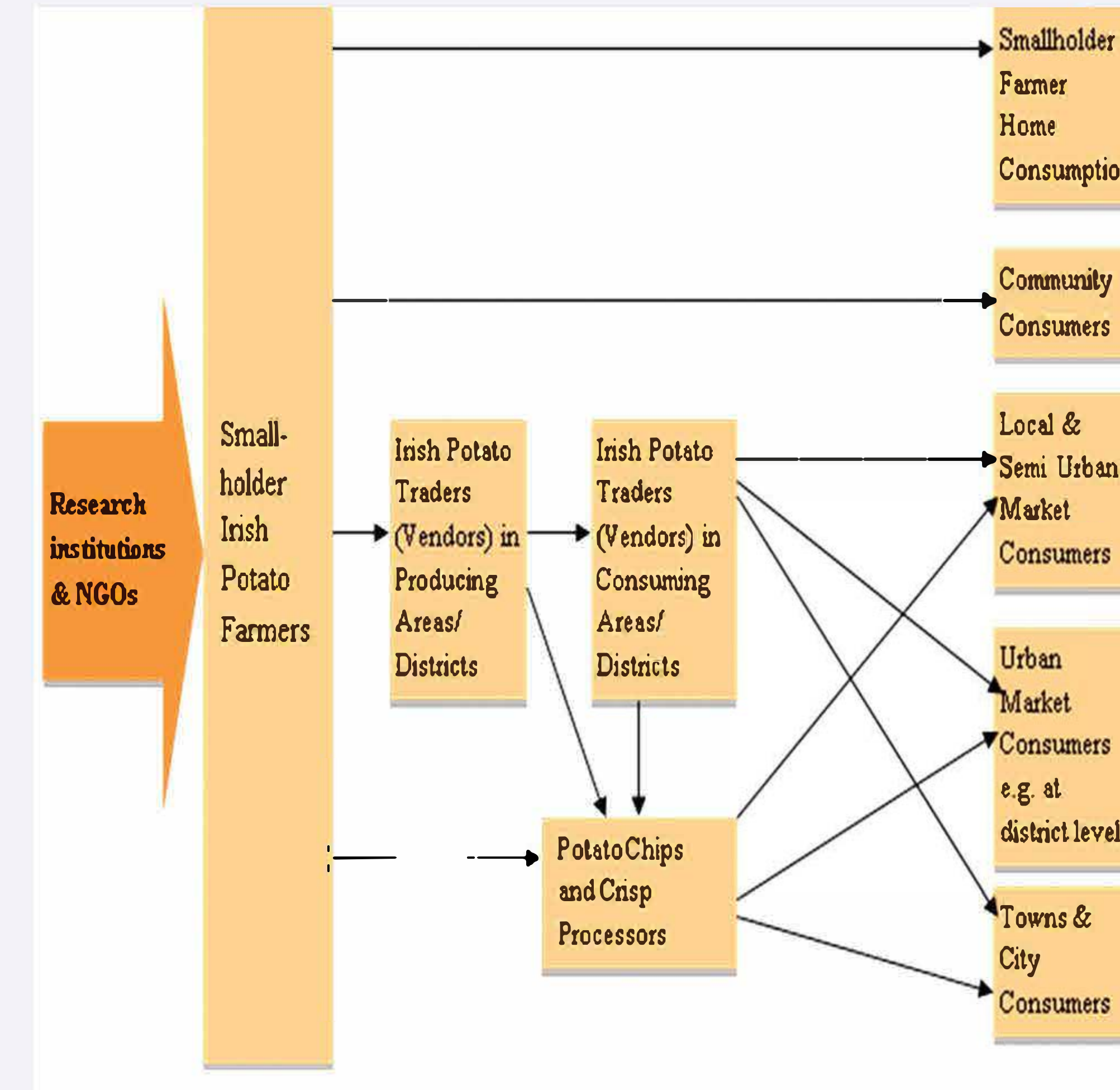


Figure 2: Irish Potato Value Chain Map

Key Players

The potato value chain in Malawi involves many stakeholders and they include smallholder farmers, traders, retailers, processors and consumers. Research institutions and NGOs also play key roles along the chain.

When Irish potato is traded from supply areas, they follow a two or three tier trading system to reach the market. The target market for these potatoes is consumers in the major cities of Lilongwe, Blantyre, and Mzuzu as well as other trading centres. The potatoes exchange hands from farmers to itinerant traders, retailers to final consumers.

Profitability and Value Changes

Profitability analyses were done for Irish potato producers, traders, and processors for one growing season. Potato farmers were contacted in Blantyre, Zomba, Dedza, and Ntchisi districts. The overall mean for the profitability index for farmers was 49 percent. Zomba registered the highest margin, estimated at 69 percent and the lowest was in Dedza District at 9%. The disparity in profitability levels is attributed to the differences in yields per kg, different cost structures across the districts and different mean prices

Table 1: Irish potato producers – gross margins per acre, Malawi Kwacha (n=105) ('000)

	Blantyre	Zomba	Dedza	Ntchisi	Mean
Income	140	240	144	1,356	470
Total costs	51	74	131	609	216
Gross margins	88	165	12	746	253
Gross margins (% of income)	63	69	9	55	49

Source: Authors' analysis of NAPAS' Irish Potato Value Chain Study Survey Data

Table 2: Irish potato traders – gross margins per acre, Malawi Kwacha (n=38) ('000)

	Blantyre	Zomba	Ntcheu	Lilongwe	Nkhota-kota	Ntchisi	Mzuzu	Mean
Income	936	100	1,200	875	749	215	54	590
Total costs	704	83	551	597	516	191	39	383
Gross margins	231	16	648	277	233	24	14	206
Gross margins (% of income)	25	17	54	32	31	11	27	28

Source: Authors' analysis of NAPAS' Irish Potato Value Chain Study Survey Data

For traders Table 2, Ntcheu registered the highest margin, estimated at 54 percent and Ntchisi was the lowest at 11 percent. Ntcheu is one of the key potato growing districts and the location of its trading centres along the main M1 road that stretches between main cities of Blantyre and Lilongwe. Ntchisi is located remotely – away from the main trading routes, hence potato trading is not as well developed as those of the other districts.

Profitability and Value Changes

Table 3 shows results of the profitability analysis for potato processors per normal growing season. The processors were mainly those producing fried potato chips in towns and trading centres. They also included restaurants buying fresh potato to process into fried chips.

Table 3: Irish potato processors – Mean Annual Gross Margins, Malawi Kwacha (n=44) ('000)

Potato Chip Processors	Income	Total costs	Gross margins	Gross margins as percentage of income
Mulanje (12)	1,600	666	933	58%
Blantyre (4)	1,120	544	576	51%
Zomba (5)	640	279	360	56%
Ntcheu (11)	1,353	337	1,016	75%
Dedza (2)	1,500	820	680	45%
Lilongwe (2)	3,333	810	2,522	76%
Nkhota-kota (4)	45,360	36,296	9,063	20%
Ntchisi (4)	554	469	84	15%
Mean				50%

US\$=725MK

Source: Authors' analysis of NAPAS' Irish Potato Value Chain Study Survey Data

Price Transmission along the Potato Value Chain

The trader's mean price for potato was 65 percent higher than that of the farmer. The processors price was 153 percent higher than that of the trader. When compared between the potato value at farmers' level and that of the processor, the processors price was 317 percent higher. These processors include both small scale potato chips producers who buy raw Irish potatoes to process into chips and relatively medium-scale processors, like restaurants in towns.

Table 4: Price transmission across the Irish potato value chain

	Farmer	Trader	Processor
Irish potato price, MK	158.25	260.43	659.42
Value change, percent (farmer to processor)		65	153
US\$=725MK			

Source: Authors' analysis of NAPAS' Irish Potato Value Chain Study Survey Data



Figure 3: Fresh Irish Potatoes and Irish Potato Chips in Malawi

Value Changes along the Chain

Distribution of value changes along the Irish potato value chain was also analyzed. Processors, especially potato chips processors, take the lead in the realization of profits (54%), seconded by producers (49%) and the traders earned 28%. Profitability of large processors producing potato crisps was not done.

Demand for EGS for Potatoes

The analysis was based on key model variables that include: adoption and non-adoption rates of improved varieties, seed rate, seed replacement rates and seed yield, among others. These were modeled and developed as follows:

Current EGS supply: Current level of supply in market, based on current market conditions.

Potential EGS demand - base case: All EGS specific recommendations are implemented, with other market impediments assumed to remain in place.

Potential EGS demand - best case: All EGS specific recommendations are implemented, other value chain and policy constraints addressed (e.g., downstream value chain improvements, non-EGS policy changes and agronomic best practices).

In the EGS demand analysis for the crop, an assumption was made that 60 percent of the 64,000 ha of land allocated to Irish potato in the 2016 growing season in Malawi was planted with improved varieties. This represents the current supply. The base case and best demand cases were estimated at 80 percent and 95 percent adoption rate for improved varieties, respectively.

EGS Demand Analysis Results

Using a seed rate of 2,222 kg per ha and improved seed replacement rates of four years, the base case and best demand case for breeder, basic, and commercial seed were computed. The results show that the current potential demand for commercial seed for potato is estimated at 12,700 mt annually. The base and best demand case are estimated at 42,464 mt and 114,298 mt, respectively. From the current supply to the best demand potential, demand for EGS of Irish potato increases almost nine times (Figure 4).

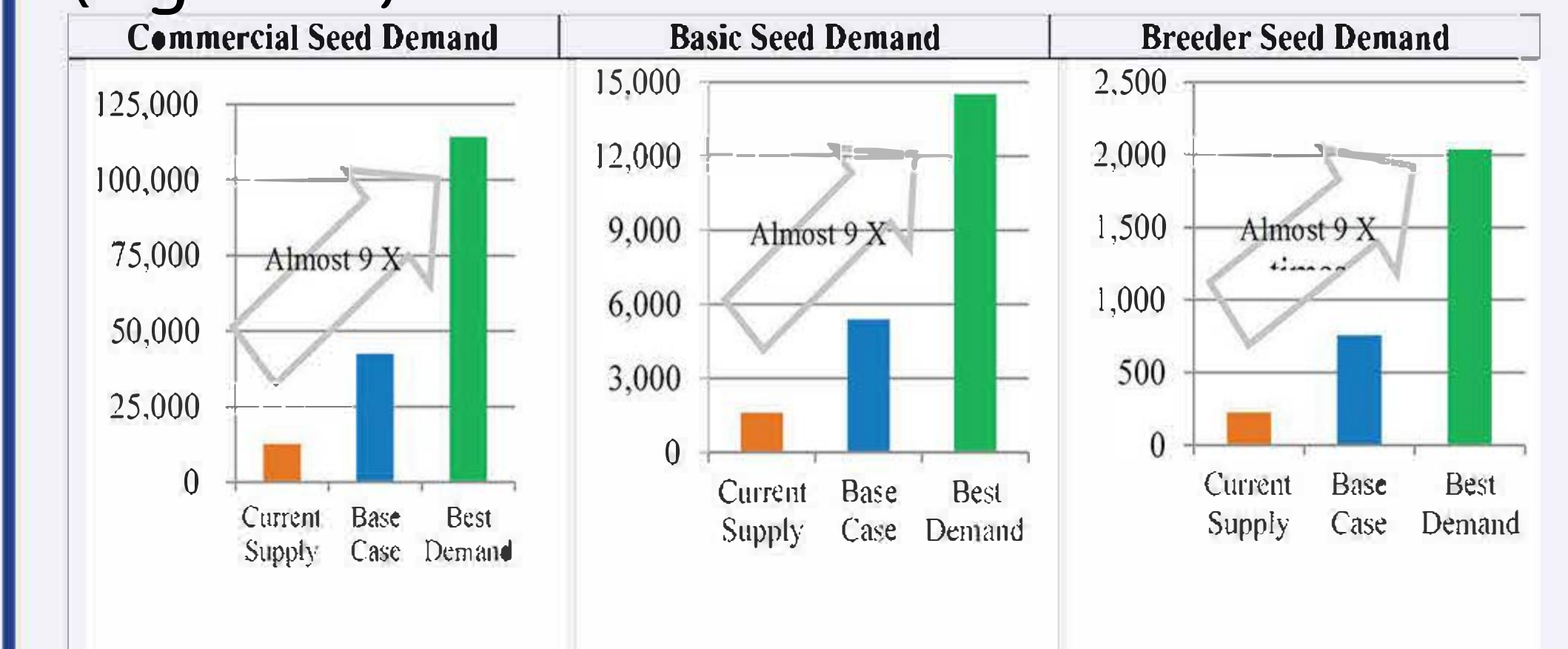


Figure 4: Demand analysis for early generation seed (tuber) of Irish potato in Malawi

Source: Authors' analysis

Recommendations / Investment Priorities

In view of the various constraints and opportunities that have been identified, a number of policy recommendations for investment priorities have been drawn as follows:

- Increase the effective demand for improved varieties among potato producers
- Significantly invest in the seed system e.g through public-private partnerships to improve the supply of clean potato seed, improve seed quality inspection and certification and strengthen capacity of farmers in seed selection. Decentralising seed multiplication should be encouraged
- Improve access to financial services, contract farming and commodity market exchanges
- Increased investments in research and extension to improve adoption of best agronomic practices including pest and diseases prevention and control
- Promote use of irrigation technologies to counter frequent drought spells, increase productivity and maintain consistent supply on the market
- Promote value addition technologies / agro-processing of Irish potatoes
- Strengthen farmer organisations (e.g. through increased contract farming, training of various players along the value chain especially on quality management and market access

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Acknowledgements

The research team is grateful for the financial support that made this study possible which was provided by the Malawi mission of the United States Agency for International Development (USAID) through the New Alliance Policy Acceleration Support Project: Malawi (NAPAS:Malawi), that is implemented by Feed the Future Innovation Lab for Food Security Policy.