Production Potentials and Technology Practices for Potato and Tomato Cultivation in Arsi Zone, Ethiopia

DIRIBA-SHIFERAW GELETA[1*], SISAY YIFRU[2], ZEGEYE TIRFE[2], SAMUEL MEZEMER[3], BEZAWIT SEIFU[3], DEKEBA MOGES[3], SAMUEL W/YOHANES[4], ANIS DZANKOVIC[5], BERND MÜLLER[5]

[1] Department of Horticulture and Plant Sciences, College of Agriculture and Environmental Science, Arsi University, P.O. Box 193 Asella, Ethiopia.
2 Department of Agricultural Economics, College of Agriculture and Environmental Science, Arsi University, P.O. Box 193 Asella, Ethiopia.
3 Department of Food Science and Postharvest Technology, College of Agriculture and Environmental Science, Arsi University, P.O. Box 193 Asella, Ethiopia.
4 Department of Agribusiness and Value Chain Management, College of Agriculture and Environmental Science, Arsi University, P.O. Box 193 Asella, Ethiopia.
5 Weihenstephan-Triesdorf University of Applied Sciences (HSWT); International School. Markgrafenstraße 16 | 91746 Weidenbach | Germany

INTRODUCTION

Horticultural crops especially vegetables and fruits can contribute to food and nutritional security demands in Ethiopia by providing healthy and sustainable foods for consumers due to their rich source of vitamins, minerals and antioxidants (Emana *et al*., 2015; Wubet *et al*., 2022).

However, farmers growing vegetable crops are facing challenges of production inputs, skills and technologies, high economic and quality losses, because there have been no methods of such improved production potentials and practices suitable in increasing the shelf life and quality of these crops and market access to generate income from vegetable crops.

Objective

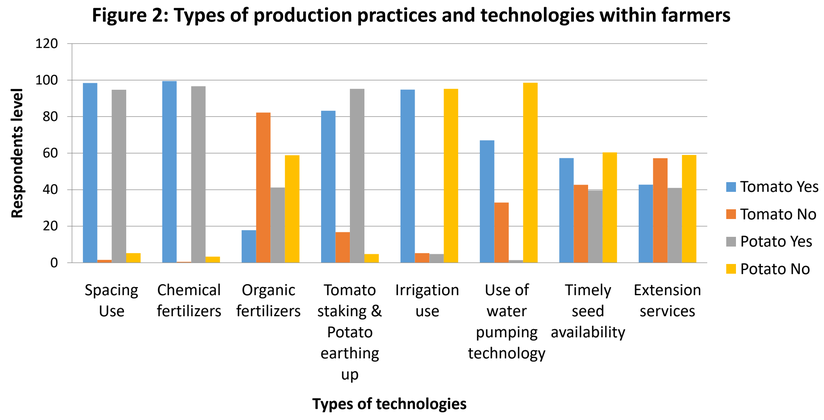
The study was aimed to determine production potentials and practices of technologies used for potato and tomato vegetables productivity improvement in Tiyo and Ziway-Dugda Districts of the country.

Tomato production practices and harvesting by local community in 2022

Use of production technologies:

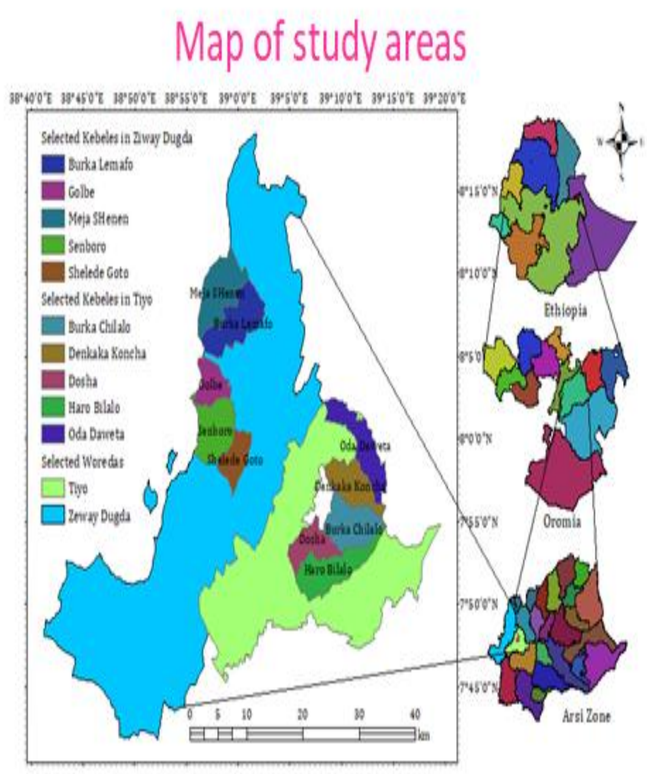
- ❖ Farmers have used various production technologies; but still other farmers are not using these various technlogies.
- ❖Planting spacing, fertilizers use, staking, erthing up, irrigation, seeds, water pumping and extension services were used by majority farmers.

Figure 2: Types of production practices and technologies within farmers



METHODOLOGIES

- ➢This study was conducted in 10 kebeles from two Districts (Tiyo & Ziway-Dugda) of Arsi Zone, Oromia Region, Ethiopia in two potential vegetables producing districts.
- ➢A multistage sampling technique was used to select representative producers.
- ➢Primary data were collected from producers using semi-structured interview guided questionnaires developed in KOBO Software using tablet computer.
- •Statistical package for social science (SPSS) version 22 was used for computing data. Percentages, means, Standard deviation, and tabulated in the process of examining and describing production potentials, resources, inputs, services and technologies practices in the study areas.



Types of production technologies:

❖ Farmers have used various production technologies; but still other farmers are not using these various technlogies; which lowered their productivity.

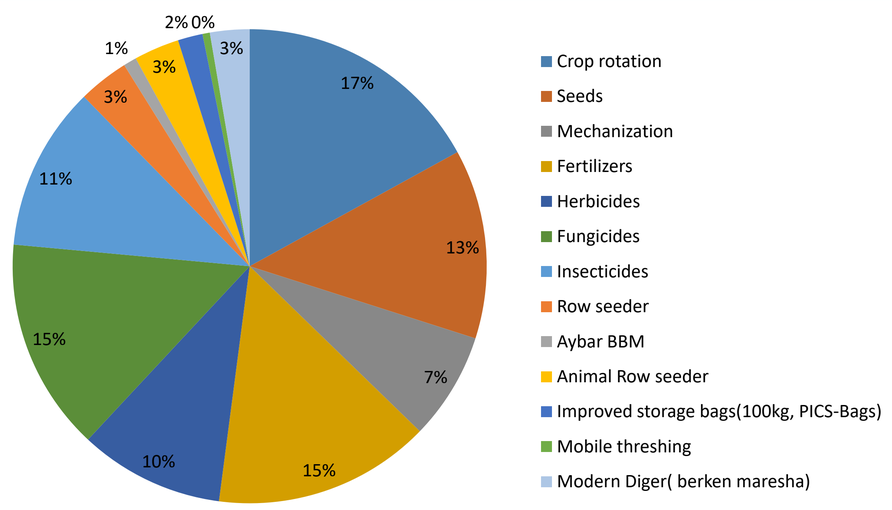


Figure 4: Production technologies used by farmers (%)

RESULTS

Land resources and production experiences:

❖There was a significant difference between farmers in Ziway-Dagda (Tomato) and in Tiyo (Potato) in the two crops cultivation, land use and cost incurred in the study areas which has impact on productivity of crops.

Table 1: Years of experience and land allocated to potato (Tiyo) and tomato (Ziway-Dugda) production in the last cropping season of 2020/21 (Descriptive Statistics)

Factors	Crops		N	Min.	Max.	Mean	Std. Deviation
- Experience in production (Years)	- Tomato		191	1.00	40.00	7.0	6.92
	- Potato		209	1.00	60.00	14.0	9.88
	- Total respondent		400				
- Land amount rented to cultivate (ha)	- Tomato		52(191)	0.125	5.50	1.37	1.32
	- Potato		69(209)	0.063	4.00	0.53	0.73
	- Total respondent		121(400)				
- Total area used during 2020/21 cropping season (ha)	- Tomato		191	0.125	20.00	2.07	2.04
	- Potato		209	0.250	6.00	1.78	2.05
	- Total respondent		400				
- Money paid for rented land (Birr)	- Tomato		52(191)	2500	140800	31640.38	31528.22
	- Potato		69(209)	0.00	50000	12750.73	12490.41
	- Total respondent		121(400)				

Services needed by farmers:

❖ Services, training and skills required by Farmers to improve production of tomato and potato were significantly varied across farmers.

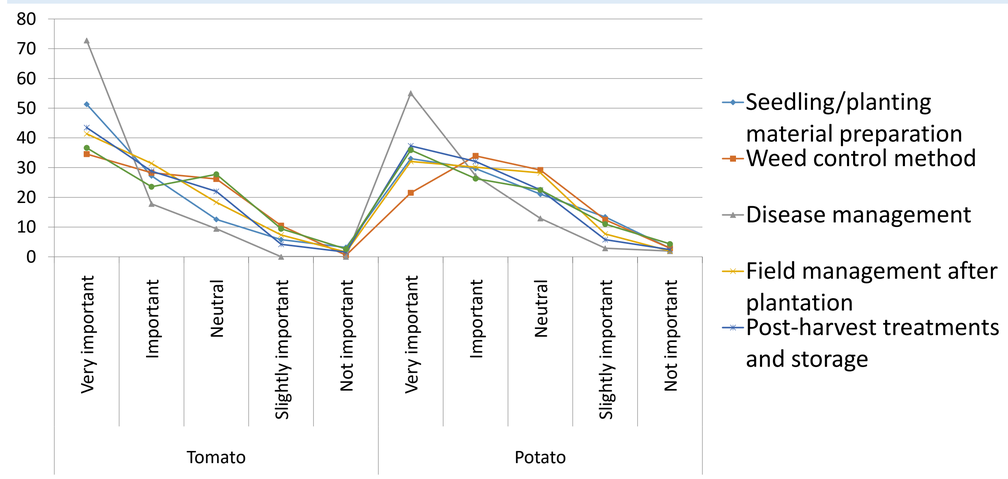


Figure 5: Skills needed by farmers for tomato and potato vegetables production and management

Production practices:

❖ Majority farmers have used various production practices; but still other farmers are not using the various production practices for potato and tomato.

Potato production practices and harvesting by local farmer in 2022

CONCLUSION

There were many production potentials, inputs, services and practices used by farmers to produce better vegetables for both consumption and marketing to have improved livelihoods in the study areas even though some farmers are not within these ranges and need future capacitating.

RECOMMENDATIONS

There are various constraints identified like absence of resources, lands, livestock, inputs, services, and lack of production and absence of practice and demonstration based skills and knowledge on cultivation of vegetables which need interventions in future by different actors.

BIBLIOGRAPHY

•Emana, B., Ketema, M., Mutimba, J.K. and Yousuf, J. 2015. Factors affecting market outlet choice of potato producers in Eastern Hararghe Zone, Ethiopia. *Journal of Economics and Sustainable Development*, *6*(15): 159-172.
•Wubet, G.K., Zemedu, L. and Tegegne, B. 2022. Value chain analysis of potato in Farta District of South Gondar Zone, Amhara National Regional State of Ethiopia. *Heliyon*, 8(3): 09142.

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***Contact Address:** Diriba-Shiferaw Geleta (PhD); **Email**: dsphd2010@gmail.com or diribashiferawgeleta@yahoo.com or diriba.shiferaw@arsiun.edu.et