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Ghana's tomato industry: demand-led plant breeding in practice

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Tomatoes are an important component of our diet in Ghana. We are the second largest consumers of tomato paste in the world. Ghana produces 510,000 metric tons (mt) of fresh tomatoes each year, and imports up to 7,000 mt per month from Burkina Faso and other neighbouring countries. 27,000 mt of processed tomato arrives from Europe¹ and even more from China. In spite of modest yield improvements being made in recent years demand continues to far outstrip supply leaving Ghana highly import dependent.

The tomato sector was chosen by the demand-led plant breeding educators' group as a good example of a real time challenge, giving solid and practical experience to breeders in a genuine market environment. A revival of local fresh tomato production and processing will continue to be impossible if the problems that led to the industry's decline are not overcome and resolved with creative thinking, new policies and innovative technologies. The challenge is also creating a superlative learning model for students and educators, enhancing variety selection and application, and improving economic development in this sensitive sector, and not least in generating first hand experience of applying demand-led approaches in a critical programme that is also a national economic priority.

Agyemang Danquah is leading the revival project with the knowledge that success will not just benefit the tomato industry but will also prove to plant breeders around the whole region that demand-led plant breeding is capable of resolving many similar problems around Africa.

Danquah has his job cut out for him, as the overall task is complex and multi-factorial. Government and major stakeholders in the tomato industry must act together to encourage and sustain the effort. A well resourced and permanent new tomato breeding programme is needed to develop and promote disease resistant, high yielding varieties capable of meeting the demands of the fresh markets as well as the Ghanaian tomato paste industry. No tomato variety has been released in the past 12 years. Until recently Ghana had no dedicated tomato plant breeders. Tomato seeds are freely available from imports, and there has been no consistent support to the vegetable sector. The national programme has not had the benefit of a single specialist PhD level tomato breeder up to now. The demand-led breeding programme has helped to focus attention on this constraint and there are now

¹ Baba, I.I., Yirzagla, J. and Mawunya, M. (2013) The tomato industry in Ghana – fundamental challenges, surmounting strategies and perspectives – A Review. *International Journal of Current Research*, 5 (12), 4102-4107.

three students working towards their PhD in tomato breeding. These students are benefitting from knowledge, experience, and expertise in both the private and public sectors. Differentiated varieties that deliver the needs of both the fresh and processed markets can contribute as part of the solution. Above all, a consensus needs to be established amongst the whole value chain and government officials on the remedial measures necessary to re-establish domestic tomato production.

Danquah is optimistic: *“The conditions are conducive, and the north of Ghana has the same agricultural conditions and climate as in Burkina Faso, which is currently supplying Ghanaian markets. However, our varieties need improvement and replacement: the need for demand-led plant breeding here is overwhelming. We just have to show that it works”*.

WACCI organised an early exploratory meeting of the tomato value chain last year in 2015 that involved all the key players. This was the first step in applying demand led principles and seeking engagement, contacts and expertise for Ghana’s tomato research and development programme.

If the value chain collaborates with the government and other stakeholders to revive the tomato production sector along the lines of new approaches to demand-led plant breeding, then the initiative can begin.

Fundamentally, and in line with the new principles of market direction, the markets will decide the long term future for tomato production. A key ingredient to achieve a booming tomato production and processing industry is the development of new and improved varieties. This takes time. Nevertheless, researchers are already benefiting from using demand-led approaches and having a much closer engagement with the value chain to align their work. This is building relationships and a strong legacy of experience and best practice. There are other constraints to face in this sector but the successful application of demand-led breeding is providing encouragement to plant breeders, educators and investors everywhere in the continent.