

Wastage of agricultural yield is almost 40 % due to lack of field monitoring, non-identified like disease. To optimize agricultural production, it is important to early detect plants diseases and apply adequate treatment to them. The question of precision agriculture should start with the most used agricultural products. Tomato (*Solanum lycopersicum*) is one of the most consumed vegetable in the world. In Benin, it is one of the most economically important vegetable crops and its production represents more than 51% of the total production of vegetable crops. For my PhD research, I am working on optimizing Deep Learning methods to improve tomato yield through early detection of its diseases. For this purpose, I will:

- 1) Perform a systematic and critical analysis of the use of Deep Learning in Agriculture focusing on the sources of stress on fruits and vegetables especially tomato plants.
- 2) Make an empirical comparison of the performance of the main Deep Learning techniques used to detect tomatoes stress.
- 3) Submit tomato plants to huge artificial climatic environments and build a scalable Deep Learning model focusing on its potential to detect climate-based stress on tomato plants.
- 4) Submit tomato plants to huge artificial infected environments and build a scalable Deep Learning model focusing on its potential to detect disease based-stress on tomato plants.