

# Maize-Beans Intensification as Climate Smart Cropping: A means of Nutrition and Income Diversification



N2Africa - Putting nitrogen fixation to work for smallholder farmers in Africa

## Challenges

- ❑ Mono cropping is the main challenges in terms of nutrition security and income diversification
- ❑ Soil depletion and crop productivity
- ❑ Small land size per households
- ❑ Risks due to variable climate changes

## Beans as means of inter/double/ relay cropping

- ❑ The practice enhances soil fertility and moisture holding capacity.
- ❑ Secure diverse biomass harvest multiple times in a year.
- ❑ Green biomass and empty pods can be used for animal feeds.

## N2Africa approaches to deliver & disseminate the best fit practices

- N2Africa provided hands-on training for smallholder farmers and encouraged them to try out improved legume varieties and technologies, including i.e. phosphorus fertilizers and rhizobium inoculants.
- N2Africa received feedbacks from farmers ensuring wider promotion of preferred best-fit practices.
- N2Africa mapped, established and functionalized the Public Private-Partnerships (PPPs), promoted effective legume value chain platforms.
- N2Africa linked scientific knowledge with capacity building, women empowerment, and access to input supply and output markets through the PPPs.



# Main Achievements

- ❑ This best practice enhances land productivity by 30-45% compared to sole maize.
- ❑ Not less than 7.5 t ha<sup>-1</sup> (BH661) and 7.2 t ha<sup>-1</sup> (BH546) yield of maize could be harvested in intercropping.
- ❑ About 0.8 and 1.2 t ha<sup>-1</sup> of additional yield of climbing bean intercropped in BH661 and BH546 varieties of maize could be harvested,, respectively.
- ❑ The additional yield could be obtained without significant yield reduction of maize when the bean intercropped after 15-20 days after maize planting.
- ❑ More than 2 t ha<sup>-1</sup> of bush bean yield could be harvested after maize harvest.
- ❑ Sole climbing bean supported by dry stake could be yielded up to 2.4 t ha<sup>-1</sup>.
- ❑ Farmers could sell shelled green pods locally up to 6-8 Birr per kg bean.
- ❑ Green biomass and empty pods can be used for animal feeds.
- ❑ Climbing bean is good opportunity for urban farming. The green pod is used for soup preparation and local stew (wat), which contribute for better household nutrition.



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