



# Published peer-reviewed research from major agricultural and land-grant universities consistently show EW of Basalt as used in **TephraMax<sup>®</sup>** increases crop yields

- **20% increase** in sorghum yields without any addition of P- and K- fertilizer (Kelland et al., 2020).
- **20% increase** radish yields over traditional NKP fertilizer for 4 ton/acre (Watchoka et al., 2011).
- **30% increase** in sugar cane yields for  $\geq 4$  ton/acre (de Villiers, 1964).
- **100% increase** in quinoa grain productivity in depleted tropical soil (Burbano et al., 2022).
- **10-30% increase** in corn and soybean yields in the US upper Midwest (Kantola et al. 2023; Beerling et al., 2023).
- **10-30% increase** in potato yields; **30-70% increase** with the addition of NKP fertilizer for 1-4 ton/acre (Zakharikhina et al., 2016).
- **20% increase** in grass shot mass and increase in K, P, Ca nutrient content for 1 to 3.5 tons/acre (Korchagin et al., 2022).
- **50% increase** in coco plant height compared to control plants for 2.2 tons/acre (Anda et al., 2013).
- **200% taller with 400% greater biomass** in tree seedlings (Goreau et al., 2011).

# Scientific studies prove basalt removes atmospheric CO<sub>2</sub> and reduces N<sub>2</sub>O emissions in agricultural settings.



- Vienne et al. 's (2022) plot experiments show that 200-400 kg of CO<sub>2</sub> is removed per ton of basalt.
- Lewis et al. (2021) experiments show about 200 kg of CO<sub>2</sub> removed per ton of flood basalt (minimum values because of the coarse grain size).
- Kelland et al. (2020) mesocosm plots and models show about 300 kg of CO<sub>2</sub> removed per ton of flood basalt.
- ten Berge et al. (2012) calculate that olivine (a component of basalt) consumes about 1000 kg of CO<sub>2</sub> per ton.
- Holzer et al. (2023) show direct evidence of CDR from basalt and olivine in field experiments at UC Davis.
- Kantola et al. (2023) show direct evidence for significant CDR in maize, soybean and miscanthus fields at the University of Illinois using metabasalt.
- Blanc-Betes et al. (2020) show a 16% reduction in N<sub>2</sub>O emission from maize croplands with applications of basalt.
- Chiaravalloti et al. (2023) report maize mesocosm experiments that show a 30% decrease in N<sub>2</sub>O emission with basalt applications.