Creating farmer participatory monitoring of on farm soil saline intrusion in the Mekong River Delta, Vietnam

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Rising sea levels, land subsidence, drought and upstream damming are contributing to inland dry-season saline intrusion throughout the Mekong River Delta (MRD), Vietnam. Government agencies monitor salinity of irrigation water via monitoring stations along major water courses. However, actual changes in soil salinity on farms remains unknown. There is a need to measure salinity on farm via direct measurement. Department of Agriculture and Rural Development (DARD) staff and farmers require training to identify salinity and manage crop production influenced by it.

Participatory training was designed in partnership with multidisciplinary teams of soil, plant, agricultural and spatial data science researchers. Training was delivered across target areas of the MRD where farmers and DARD staff were taught soil salinity principles; measurement soil salinity and gravimetric soil moisture; and georeferenced data recorded via a phone app. The data were spatially analysed to show area trends through time.

The 4 workshops trained 145 people; only 34% of participants had access to an EC meter and only 2% had measured soil salinity using an EC meter prior to the training. Following the training, participants indicated that they were now confident in identifying signs of salinity (99% of participants) and measuring salinity (100%). Post-training problems encountered include confusion of salinity units on meters, and the interchangeability of commas and decimal points between Vietnam and Australia. The workshops have now led to the development of a second series of workshops that cover other soil constraints.

Farmer participatory research works well for recording on farm data and capacity building. Intensity of collected data varied depending on location due to engagement of stakeholders which was linked to severity of salinity. Maps of temporal saline intrusion will be used in future modelling to forecast intrusion and determine locations for crops suitable for the changing environment.