

and to look at the role of PCV2. Data were also collected on the gross lesions in the lung (lung score), the antimicrobial sensitivity of the isolated bacteria, farm management, farm vaccination programs and farm health status to help to identify risk factors for this major problem.

### **[P096] A more systems driven approach to monitoring, evaluation and learning in agricultural research for development projects**

*Theme: 3. Market Driven Solutions*

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Monitoring and evaluation (M&E) systems are a critical component of effective management of agricultural research and agricultural development interventions. However all too often M&E systems are inappropriately designed, poorly implemented and fail to adequately balance accountability, learning or intervention management. Agricultural research for development (AR4D) projects seek to catalyse change at different scales, and at different places along the supply chain, from farm to policy. Many of the changes that occur are unpredictable and not easily accommodated using traditional, mostly quantitative, M&E systems. We worked with a number of Innovation Platforms (IPs) in a large scale AR4D program in multiple countries in central and west Africa. The originally designed M&E system was unable to adequately account for many of the observed changes and provided little opportunity for learning by the IP members, the project teams, the research institutions involved or the donor organisation. The new framework used six key domains of system change, directly linked to impact. It also provided a protocol for collecting, sharing, reflecting and reporting upon most significant change stories. The approach holds much promise and provided a rich vein of information from which to synthesise program outcomes. It is not without challenges however. Documenting reflections in meaningful ways requires more than simply writing a narrative and donors need to agree from the outset that traditional quantitative evaluation statistics do not always provide outcome information relevant to a systemic change agenda.

### **[P097] Expanding supply of improved seed to farmers in northern Ghana to increase food security**

*Theme: 3. Market Driven Solutions*

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The global problem of food security is particularly acute in many parts of west Africa, where food production needs to increase to meet growing demand. The 'Green Revolution', where improved

crop varieties are matched with improved management practices (particularly fertilisers), has been very successful in increasing food production in many parts of the world. However, in much of west Africa farmers have not adopted improved crop varieties. There are many reasons behind this lack of implementation, such as access to finance, access to improved varieties, access to market and government policy constraints. One major roadblock to adoption of improved varieties identified in Savelugu, northern Ghana, was a lack of sufficient improved cowpea seed (an important cash crop). In northern Ghana there are very few certified seed producers, mainly due to the highly regulated certification process. More than 90% of seed is traded between farmers in an 'informal' seed market. In trials conducted in the Savelugu region improved, certified, cowpea varieties consistently outperformed farmer varieties and at field days farmers showed a strong preference for improved varieties. In the Savelugu region we worked with an Innovation Platform on a pilot system where one seed producer contracted 'out-growers' to produce certified seed, while the seed producer performed the certification processes and provide the required inputs and technical support. These out-growers were situated in villages around Savelugu, where they were able to use the informal supply chain to deliver 20 additional tonnes of certified seed to farmers in the first year of operation.

### **[P098] Reduction of dietary sodium by substituting NaCl with monosodium glutamate (MSG) maintains the hedonic value in a rice soup application**

*Theme: 3. Market Driven Solutions*

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Cardiovascular disease is the leading cause of death in Australia with dietary sodium (NaCl) being a main risk factor. Thus, Na<sup>+</sup> reduction in the food is important for public health, but is often associated with a loss of taste intensity, even more for hypertensive (than normotensive) people, who have a reduced sensitivity to NaCl. Monosodium glutamate (MSG) offers an umami taste, believed to maintain hedonic value of salt reduced food and inosine monophosphate (IMP) is reported to enhance this effect. The current study explored the relationship between blood pressure (BP) and taste thresholds and studied the effect of substituting NaCl by MSG or MSG + IMP on food hedonics. The threshold for NaCl, MSG and MSG + IMP in water and a rice soup matrix were assessed with 25 panellists. For both water and rice soup samples, detection thresholds were significantly lower ( $p < 0.001$ ) for MSG and MSG + IMP than for NaCl, irrespective of the BP. Hedonic pleasantness for MSG + IMP flavoured samples were significantly decreased ( $p = 0.046$ ) compared to NaCl. However, MSG alone did not result in a significant difference in pleasantness rates compared to NaCl showing high potential in meeting consumer hedonic acceptance and helping maintain dietary Na low. Future research will investigate different NaCl substitution levels by MSG and will assess the reward brain responses by functional magnetic resonance imaging (fMRI).