


designed to resolve a specific question or on observations on farmers' commercial operations, generates information familiar to farmers which they can easily convert to practical and readily understandable farm practices.

The remaining question is how to practically integrate OFE into the agricultural development process, including that for improved crop nutrition? Most agricultural scientists continue to regard on-farm experimentation as a marginal activity. However, OFE fits well into the concept of adaptive management—an ongoing process of developing improved practices for efficient production and resource conservation by use of participatory learning through continuous systematic assessment (IPNI, 2013). Few farmers receive the support that is critical for its success. We suggest that a review of farmer experimentation should be organized with a principle focus to promote sharing of experiences between farmers themselves, with emphasis on farmers groups or associations, and between farmers and researchers. In order to better share experiences we will need social and organizational change together with standardized means of describing experiences, systems to compile multiple experiences and to accommodate a wide range of data from multiple sources. Adequate statistical analysis and interpretation of the data needs to be developed, to present information to farmers in a format that they can readily understand and incorporate in decisions.

We suggest two immediate areas for consideration that have specific significance for improved nutrient management, and where ideas can be developed and piloted: (1) OFE can reduce dramatically the uncertainties of fertilizer use efficiency and thereby supports the development of intensive yet sustainable farming systems. It can therefore enable responsible nutrient stewardship for targeted increase of fertilizer applications that increase production; (2) OFE can facilitate the development

of supply chains for specialty fertilizer products by supporting the extension of diversified production systems into ecological niches. We suggest that if agronomists wish to support adaptive management they should see OFE as a valuable ally rather than a process 'for demonstration purposes only'. OFE provides farmers with the analytical power to adapt broadly-based solutions to their operations with greater certainty. This could convert site variability from an obstacle to agricultural development to one of its greatest assets—where ecological niches are sought for high value product. 

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