

## **Research Needs and Priorities**

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### **Background**

The Working Group on Research Needs and Priorities agreed that future research on natural farming systems should be directed primarily toward the reduction in the use of agricultural chemicals, i.e., chemical fertilizers and pesticides. The working group has recommended a thorough evaluation of non-chemical technologies, including effective microorganisms (EM), to enhance the productivity, stability and sustainability of natural farming systems. The working group emphasized that the research must result in technologies that are (a) economically-viable, (b) socially-just, (c) environmentally-sound, and (d) culturally-acceptable to both farmers and consumers.

### **Recommendation**

To determine the most effective technologies and to develop practical and reliable management practices, statistically-valid field and laboratory experiments must be conducted by national and regional universities, experiment stations, non-government organizations, and regional networks like APNAN. Efforts should be directed toward on-farm research that utilize a farmer's available resources and abilities. The research should focus on comparative studies to determine the effect of different technologies on both the productivity and stability of the farming system. Suggested research topics include:

- 1) Determine the most effective methods for using organic amendments to improve the tilth, fertility and productivity of soils, including the mode/method, time, rate, and frequency of application.
- 2) Determine the effect of microorganisms, including EM, on soil fertility and plant growth.
- 3) Determine the effect of microorganisms, including EM, on the rate of composting of organic wastes and their potential value as biofertilizers and soil conditioners.
- 4) Determine how the integration of non-chemical technologies, particularly the natural biological cycles, can reduce the need for chemical fertilizers and pesticides.
- 5) Determine the effect of non-chemical technologies, particularly organic amendments, on the yield, quality and health of crops, and on the attributes of soil quality.
- 6) Determine how non-chemical technologies can enhance and improve the integration of crops and livestock in the farming system.
- 7) Determine the most effective use of non-chemical technologies for the control of harmful insects, plant diseases, and weeds.
- 8) Determine the most practical and feasible means of shifting from chemical-based, conventional farming systems to non-chemical, natural farming systems. Determine whether EM technology can enhance the transition/conversion process.

Regional networks are needed to establish linkages between scientists in various countries to conduct common experiments that would help to resolve many of the problems and constraints to natural farming as a sustainable system. The founding of a Latin American Natural Agriculture Network (LANAN) or South American Natural Agriculture Network (SANAN) would facilitate the exchange of research results, and the transfer of technology on natural farming systems and alternative agricultural methods. Sources of funding will have to be secured to implement and maintain the network's activities. The member countries and organizations that comprise the network must be willing to contribute resources (e.g., funds, time, and technicians) to substantiate their participation.