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MULTILOCATION TESTING

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In multilocation testing, cropping patterns found promising during the testing phase are evaluated at many sites representative of the land type for which the patterns were designed. The specification of the land type is an important aspect of multilocation testing, because it allows researchers to provide extension or production agencies with a clear delineation of the domain of adaptation of the recommended cropping patterns. The following procedures are suggested for multilocation testing.

1. Identify an extrapoloation area by using rainfall classifications or rainfall records and soil, irrigation, or land-use classification maps where they exist. The extrapolation area is generally a sufficiently large region to merit future production programs. Where extrapolation appears possible over large areas, it is wise to break the area up into regions (preferably coinciding with existing governmental divisions) not greater than 5,000 ha and to treat these regions as separate expansion areas for extrapolation of research results. For an example of identification of extrapolation areas see Morris and Rumbaoa (1979) and Magbanua and Morris (1980), which is distributed at this meeting.

2. Within the selected extrapolation area, identify the location and approximate frequency of occurrence of the land types that were identified at the research site.

3. Locate cropping pattern trials in a clustered distribution throughout the desired land type or types in the extrapolation areas (Fig. 1). Because the extrapolation areas are composed of several land types, it is important to ensure an experimental design for the multilocation tests that allows comparison of the patterns' performance between extrapolation areas, even if researchers are convinced of the similarity of the land types in different extrapolation areas (Table 1).

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4. Establish and manage trials. The multilocation tests are usually researcher managed. Farmers should be involved in land preparation, crop maintenance, and weeding, but extension or applied research staff should ensure timely application of chemicals for fertilization and pest and disease control. It is important to adhere strictly to the specified cropping pattern management:

   - Do not irrigate a rainfed trial, even if the crop dries up
   - Do not apply a prophylactic pest or disease control unless specified
   - Apply pest control only when the specified economic threshold has been reached
   - Use only the land preparation equipment specified
   - Adhere strictly to the range of seeding dates and planting methods specified
   - Do not shift fields between crops if the pattern tests a crop sequence.

   Crop cut yield samples should be used for yield estimation and, in rainfed land types, a record of weekly rainfall should be collected.

5. Evaluate cropping pattern performance from yield data, assuming labor and input costs to be those obtained in the cropping pattern trials.

6. Plot the results of the trials on a map of the area and attempts to associate poor performance of crops in the pattern with soil or land factors.

7. Describe conditions for which the pattern is suitable and formulate these in terms of a recommendation. This means that the domain of adaptation has to be mapped or associated with existing geographical boundaries, or be described in site-differentiating terms -- such as soil texture or drainage characteristics -- that are easily identified by extension agents on the basis of simple field observation.

Multilocation testing should be done by extension or production agencies or in close collaboration with them. This ensures their familiarity of the recommended pattern or patterns and encourages feedback of problems that they may foresee during the extension phase.

Haws and Dilag, Jr. (1980) also emphasized the use of multilocation testing results for the formulation of pilot production proposals and for generating interest and support of local and regional administrators.

Multilocation tests of cropping pattern trials present a final chance for evaluation of superimposed treatments. With them, varieties or seeding rates, plant spacing, or weed control intensities can be compared if so desired. It is important to ensure that superimposed treatments do not interfere with the timing of planting of succeeding crops, so that the varieties used in such trials should be of similar growth duration. The sections on superimposed trials in the design and testing chapters provide details.

Cropping patterns that present attractive alternatives to existing production methods form the bases for pilot production programs. It is obvious that such programs are easiest to structure around low-cost recommendations that do not require the creation of markets for new products. Multilocation testing should, however, continue for 2 or 3 years after the start of a pilot production program to monitor the pattern performance and allow a comparison with yields obtained by farmers in the pilot production program.

Issues for consideration by the Working Group

1. As Freeman (1980) correctly points out, the complete cropping systems research activities should not be repeated in extrapolation sites. Once the characteristics of the new sites have been identified to resemble closely those prevailing in the cropping systems research site, pre-production evaluation by multilocation tests can be a first step.

   Because new crop species, varieties and management methods will arise, we need, however to ensure a continuation of the on-farm research at the original site. This research can also help solve some of the problems encountered in multilocation testing or at the pilot production phase.

   As multilocation testing and pilot production programs are often executed by other agencies than those involved in research what mechanism can be developed to ensure:

   a) integrity of intial recommendations tested and extended;

   b) updating of recommendation;

   c) feedback of problems encountered.

2. Should multilocation testing continue in the pilot production area to provide a comparison of performance of the researcher specified recommendation to the farmer modified recommendation.

3. What has been the participation of national (or regional) level cropping systems researchers and site level researchers in multilocation testing.

4. How can cropping systems program help identify extrapolation areas. What institutional linkages are required for that purpose? IRRI's activities in this area are methodological. How they be improved to provide better support to the network.

5. What yield loss can we expect when we move from cropping pattern testing (or multilocation) results to pilot production program yields? How can this be incorporated into the design of pilot projects and the definition of reasonable expectations of benefits.

6. In addition to work on extrapolation area determination, what aspects of multilocation testing should IRRI's cropping systems program consider in its activities?

REFERENCES

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Table 1. Design of multilocation testing of patterns A, B, and C developed at the DARA cropping systems research site. The numbers in the table represent the number of fields of that land type in which the pattern is tested for each of the expansion areas described in the previous example. Notice that pattern B was not tested its Land Type II, expansion area 3, because not enough land was in that class to justify the effort.

	Pattern	Expansion Area				
		1		2	3	
		Land type I	Land type III	Land type II	Land type I	Land type III
A	DSR-TPR	6	-	-	6	-
B	Maize-rice-mungbean	6	-	6	6	-
C	DSR-rice ratoon-soybean	-		6	-	-

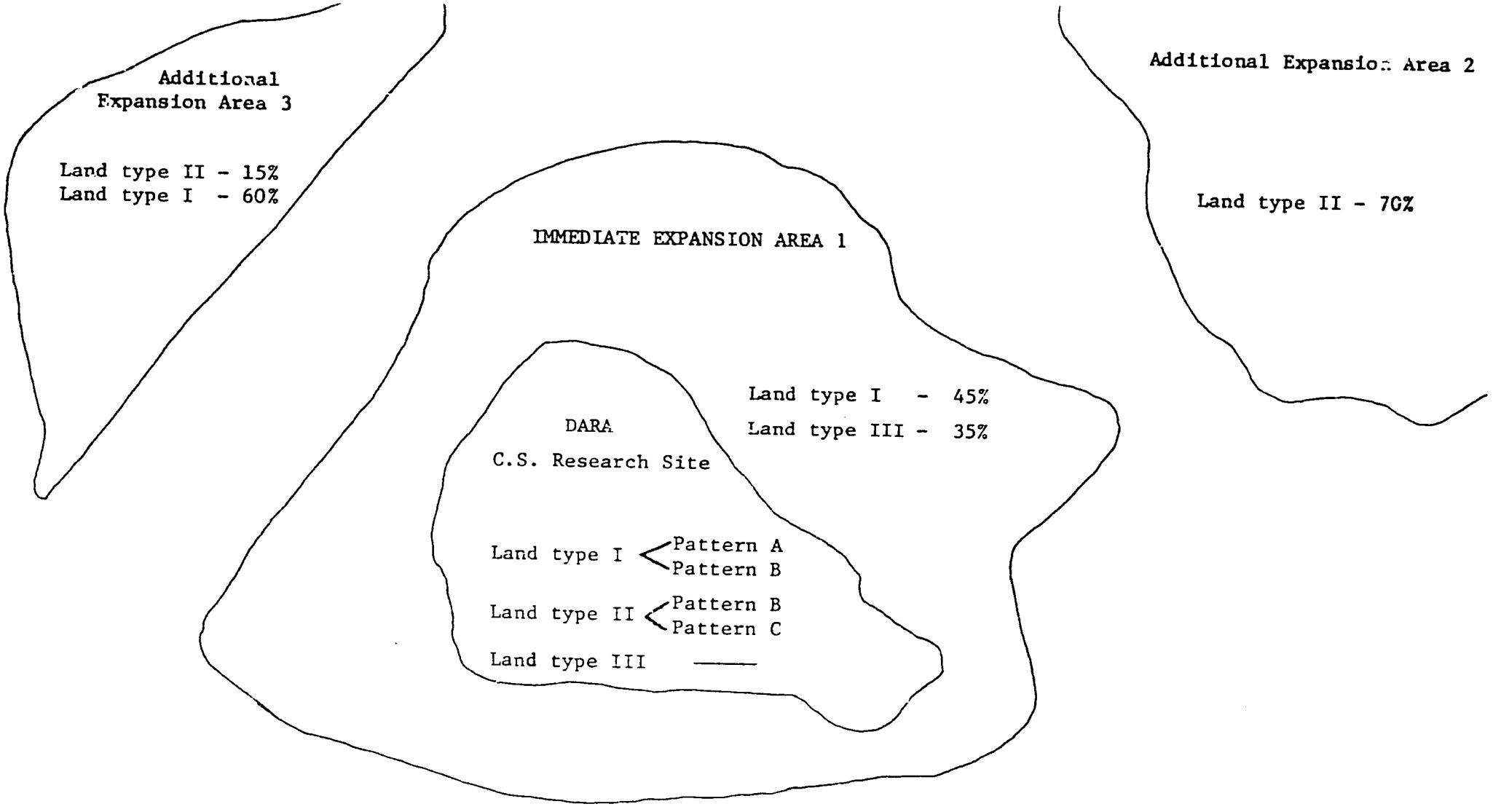

Fig. 1. An example of identification of expansion areas and their land types for the assignment of multilocation test plots.

Cropping patterns were developed at the DARA site for Land types I to III. Only for Land type I and II were experimental patterns A, B and C sufficiently attractive to be recommended for wider evaluation. Multilocation testing was designed to evaluate these three patterns in the area immediately surrounding the site and in two areas elsewhere. It is important to limit the size of an expansion area.