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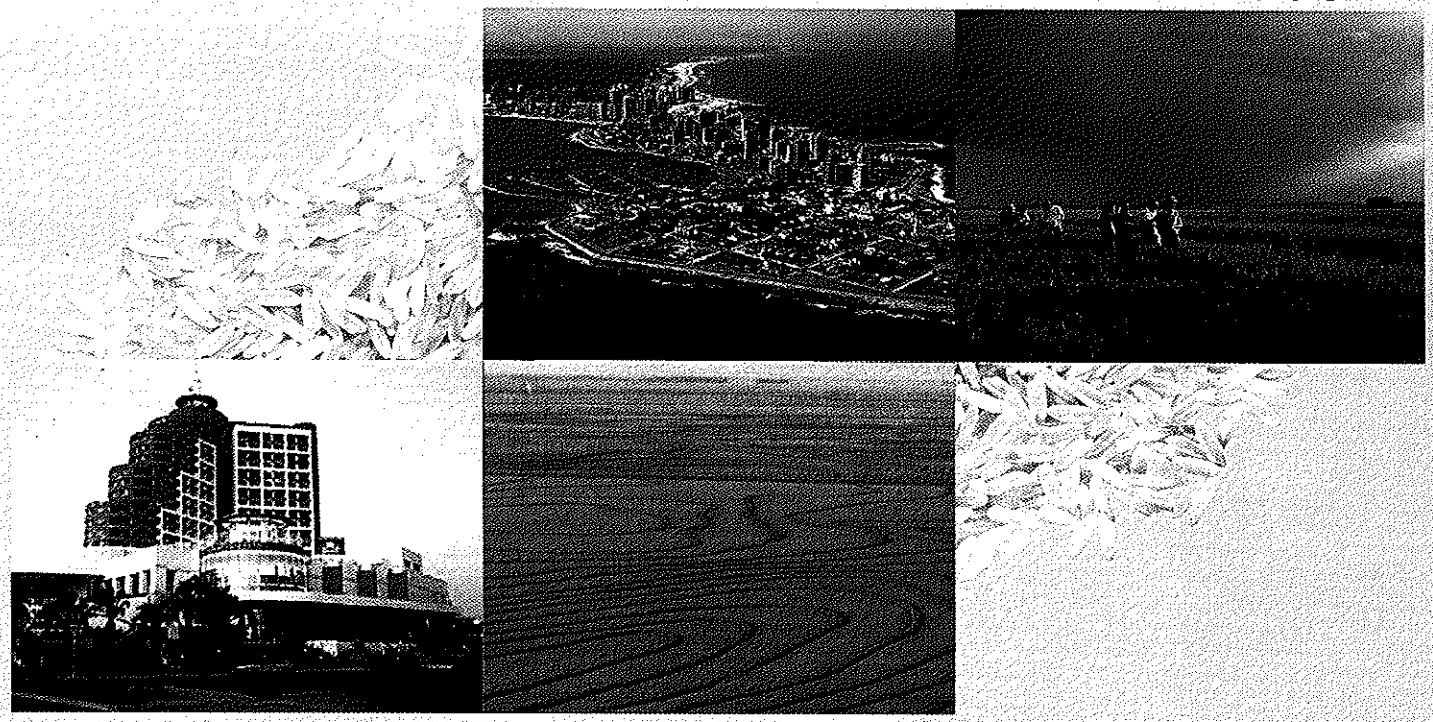

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RESUMENES ABSTRACTS

Instituto Nacional de Investigación Agropecuaria - Uruguay
National Agricultural Research Institute - Uruguay

Asociación Cultivadores de Arroz - Uruguay
Rice Growers Association - Uruguay

Gremial de Molinos Arroceros - Uruguay
Rice Millers Association - Uruguay

Fondo Latinoamericano de Arroz de Riego - (FLAR)
Latin American Fund for Irrigated Rice - (FLAR)

BASF

011
SPATIAL NITROGEN MANAGEMENT IN AUSTRALIAN RICE FIELDS
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It is common knowledge that rice yields within land formed paddocks can vary considerably. Australian rice growers are aware of this variation, but many have under estimated the range in yield within a single paddock. The advent of precision agriculture and yield monitors has allowed yield variation to be quantified. In the past, farmers have attempted to even up yields via remedial action over cut areas of teh paddock. This has resulted in additional applications of phosphorus, zinc, nitrogen or manures. Treatment of cut areas has been complicated by the dificulty in locating such areas, the requirment of extra passes with machinery and the varied results obtained. As a result, Australian rice growers have not been able to maximise yields in highly vaiable paddocks using a uniform management strategy.
This paper examines the variable nature of soil nitrogen supply in landformed rice fields and current attempts to manage this variability to better match the nitrogen requirements of the crop. New technologies that allow nitrogen to be applied in zones by ground and airborne equipment are outlined, along with the results of some of the variable rate applications, their sucesses, failures and the lessons learned. The management strategies derived from the trialing of these new technologies will become valuable tools for Australian rice growers in their struggle against increasing input costs and the demands of future environmental regulations.

035
SPATIAL AND TEMPORAL ANALYSIS OF RICE YIELD VARIABILITY IN CALIFORNIA
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Most farmers recognize that spatial variability in yield exists when they harvest. However, this knowledge is generally of an informal, anecdotal nature, which must be made more precise if it is to be used effectively in precision agriculture. Currently, we know little about the spatial structure neither of these yields patterns, nor of the consistency of these patterns from year to year. The consistency of the spatial and temporal structure of crop yield across the field needs to be investigated before implementing any management strategy. The stability of the spatial structure over time will indicate whether the same physical and ecological processes are controlling yield from year to year. In this project we describe yield spatial and temporal structure of two rice fields in California. Yield spatial structure is assumed to consist of a large-scale deterministic structure or trend and a small-scale stochastic structure. Large-scale deterministic structure was determined for each year using median polish. Trend surface spatial behaviors were different each year, indicating a lack of temporal stability in this structure. The small-scale stochastic spatial structure was determined by computing variograms of the yield residuals after subtracting the trends. Variograms showed strong spatial structure of yield residuals. Temporal variability was determined by two different approaches: 1) computing the variance among years; and 2) by using cluster analysis of the standardized trend yield values. Cluster analysis reduced the considerable complexity in a sequence of yields maps of these fields to a few general patterns of among year's variations with a given spatial distribution.
Keywords: Precision Farming, Yield Spatial and Temporal Variability, Variograms, Median Polishing, Cluster Analysis.

036
INTERPRETING YIELD PATTERNS FOR CALIFORNIA RICE PRECISION FARM MANAGEMENT
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The introduction of yield monitors, yield mapping software, global positioning systems, and geographic information systems has made it possible to measure and analyze rice grain yield within a field at a spatial resolution of about 3 to 5 m. The technology can precisely determine low yielding areas, and if the cause of the reduced yield can be identified then corrective action may be possible to bring the low yielding areas up to their yield potential. The objective of this research project is to evaluate recently introduced precision agriculture technology to determine whether it is advantageous for California rice production. This poster describes initial results of this research effort. Yield data from two rice fields are analyzed in conjunction with data from infrared aerial photography and grid based soil sampling. Preliminary results indicate that a program of directed soil sampling based on yield monitor and remote sensing data may provide an inexpensive method for identifying and mapping yield-limiting factors.
-When spatial aspects of yield data were taken into account the field showed two major distinguishable areas of consistent (stable) low or high yields with small patches of variable behavior.
-The cost analysis study showed that the field presented a positive net margin in most of the area, with small islands where the net margin was negative. The develop of cost maps like the one presented in this poster can be of significant importance for the evaluation of the suitability of the adoption of new technologies like Precision Farming.
Keywords: Precision farming, Inter-annual variability, Intra-annual variability, Cost Analysis.

037
AGRONOMIC CHALLENGES OF PRODUCING PREMIUM QUALITY RICE
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Quality is based on a combination of subjective and objective factors. California growers are interested in producing high quality varieties of rice for export and domestic specialty rice markets that have rigorous quality standards. To meet this challenge, the impact of on-farm practices on grain quality must be understood. The objectives were to study the effects of agronomic practices on the physicochemical properties of rice. The paper is a case study highlighting critical on-farm practices required to meet the quality standards for the Japanese market. A series of experiments were conducted. The Japanese variety, Akitakomachi, was grown at N rates ranging from 0 to 100 kg/h applied as a preplant or split application at different growth stages. Productivity and chemical properties related to quality were evaluated. Akitakomachi was harvested at different moisture contents (MC; 20%, 22% and 24%) and dried with combinations of heated and ambient air (24 C, 32 C, and 45 C) to evaluate surface fissuring. Incubation studies to simulate the time from harvester to dryer (1 to 24 hours) were conducted to evaluate off-odor development. The 90 kg/ha treatment applied at preplant produced the highest yields, while the 60 kg/ha as a split application produced the highest taste scores. Yield was highest when tissue N levels were 2.8% at PI. MC above 24% resulted in undesirable protein levels and below produced high rates of fissuring. Periods of longer than 8 hours between harvest and aeration resulted in increased fissuring and off-odors. Results indicate that rice quality is affected by production practices at several points in the growing season. Modifications to conventional practices are needed to produce rice with the desired quality characteristics for the Japanese market.
Keywords: nitrogen, quality, specialty rice