

RESEARCH NOTE

A Study of Plaster Binding to Prevent Cracking which Favours Triatomine Infestation

MTA García-Zapata⁺, DM Guedes, D das Virgens, PD Marsden

Núcleo de Medicina Tropical e Nutrição, Faculdade de Ciências da Saúde, Universidade de Brasília, Caixa Postal 04475-UnB, 70919-970 Brasília, DF, Brasil

Key words: plaster binding - triatomine colonization - Chagas disease control

Poor housing has always favoured domiciliary Triatominae (R Briceño-León 1990, *La casa enferma*. Editorial Acta Científica Venezolana, Caracas, Venezuela, 149 p.). In the past, house improvement has been a feature of Brazilian National Control Programmes (RS De Brito 1968, *As realizações do Departamento Nacional de Endemias Rurais no campo da profilaxia da doença de Chagas*, p. 560-574. In JR Cançado, *Doença de Chagas*, Imprensa do Estado, Belo Horizonte, MG). In our study area of Mambaí, Goiás where residual insecticide spraying was initiated in 1980 (MTA García-Zapata & PD Marsden 1992, *Am J Trop Med Hyg* 46: 440-443), we have only reported one house with persistent *Triatoma infestans* infestation which was plastered (MTA García-Zapata et al. 1992 *J Trop Med Hyg* 95: 420-423).

House plastering to produce smooth walls is an ancient technique for rural dwellings. For example mutton fat and sheeps wool were common binding agents for plastering rural cottages in England. In Brazil many colonial buildings have molasses or whale oil as binding agents. Poor hygiene is a major factor in the persistence of triatomines in the homes of Mambaí (MTA García-Zapata & PD Marsden 1994 *Bol Of San Panam* 116: 97-110). House improvement restores pride in the home and better hygiene.

To establish for Mambaí municipality the best binding agents to be used in wall plastering we constructed six experimental walls (Fig.) of field brick of 1 m² covered with roofing tiles to mimic the field situation. A control wall was plastered with a mixture of two parts earth, two parts sand and one part cement. On the other five walls an addition of one part of the following binding agents was made to the plaster namely chopped dried manioc stem, maize husk, rice straw, ground urucum fruit and cow faeces, all materials readily available to the subsistence farmer in Mambaí.

Mean yearly rainfall and temperature variation for the area during the observation time was as follows: *temperature* (°C): Max. 28.6, Min. 19.5, Mean: 23.4; *humidity* (%): Max. 79, Min. 48, Mean: 66.6.

Thirty months after construction inspection showed that the wall with most cracking was the control wall in which no binding agent had been used. However the cracks were so fine as to only permit egg laying and not bug entry. The only two walls without cracking were those where maize husk and rice straw had been used. These will be the formulations we will recommend to householders in Mambaí planning replastering.

It must be pointed out that the three basic ingredients of soil, sand and cement will vary from one area to another. Mambaí on the high plateau of Central Brazil has red laterite arenaceous soil, cement made from incinerating local rock and a characteristic sand deposit. In areas where house improvement of the type mentioned here is contemplated these experiments will have to be repeated to establish the best mixture in that geological area to produce effective plastering.

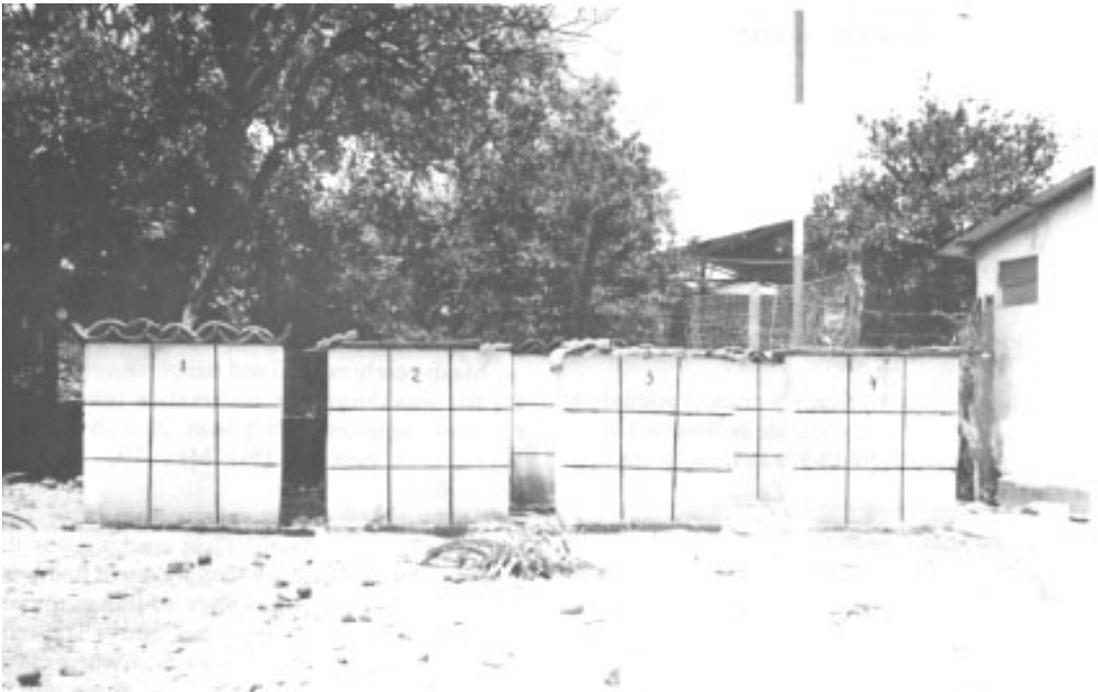
It is probable that the "Incas", one of the most important and oldest indian cultures in South America, used maize formulations and other binding agents in such building construction. As the basic layer of domestic wall plastering the Japanese used mud and chopped rice straw in traditional homes -shita-nuri- (ES Morse 1961, *Japanese homes and their surroundings*, Dover Publications, New York, 372 pp.).

Acknowledgements: to the DEPLAN, Ministério do Meio Ambiente and Instituto Nacional de Meteorologia (INMET), Divisão de Meteorologia Aplicada, Banco de Dados Meteorológicos, Brasília - DF, for temperature and humidity data for the Mambaí region.

⁺Corresponding author. Fax: 55-61-273.0105

Received 12 September 1995

Accepted 11 March 1996



The six walls referred to in the text; two walls can be only glimpsed behind on the right.