



Agrovivienda – A Housing Project for Small Farmers in Masaya, Nicaragua

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BUILDING A PROTOTYPE STRAW BALE HOUSE

Following successful completion of the water cisterns projects last year, we have been planning the start of the housing project, looking for the most cost effective method of building a basic house, given that we now are likely to have to work only with the funds we already have (applications for grants from the European Union and a foundation in Spain have been unsuccessful). This month we will complete a prototype house, funded by Newlon Housing Association.

The housing project has become a tri-country partnership (Britain, Nicaragua and now the Netherlands) because a Dutch carpenter who lives and works in Masaya, Robert Reinders, is also working voluntarily on the project. In November he designed a prototype house with walls made of straw bales, and since mid-December we have been building it. The advantages of straw bales are that they:

- are a cheap, locally-available material (rice straw)
- don't need skilled labour so are good for self-build schemes
- are earthquake resistant
- provide good insulation against the heat.

The main disadvantage is that straw is vulnerable if it gets wet, so building must take place in dry weather and the straw bale walls must be rendered with a cement/lime mix.

Another important issue is that people locally aren't familiar with straw bale construction, and need to be convinced that it will work. Fortunately Robert has also been working on a much bigger project (an old peoples' home) in the capital, which has straw bale walls. We organised two trips for the farmers in our project to visit this bigger scheme and see the finished construction, to reassure them that straw bales are effective.



The photographs show stages in the construction of the prototype. First, we built the floor and foundations for the walls. The floor is a locally made tile and the bases for the walls are local volcanic stone. This combination prevents water seepage from the ground into the straw bales, and provides an economic but good quality floor.

The next stage involved the communal work of building layers of straw bales to form the walls, putting the first course on plastic sheeting laid on top of a double row of timber struts nailed to the stone



base. The bales themselves are strengthened and knitted together by covering them with chicken wire and sewing the bales together with plastic twine (the sewing pattern is the same stitch as used in making leather shoes, which are a local product so the stitch is familiar). The walls are crowned by a further parallel set of timber struts, to which the roof supports can be fixed. The straw is compressed by tightly pulling loops of twine, running from top to bottom of the walls, through holes in these struts.

Finally, the roof is being installed – a timber frame holding up corrugated iron sheets, known locally as 'zinc'. This is not an ideal material but is lightweight and popular – the search goes on for a better alternative for later houses.

Many of the families who want their own houses are taking part in building the prototype and we are now planning the start of the project proper, with five houses to be built over the next few weeks before the rainy season starts in May. Each family is able to decide its own size and – within limits – shape of house, with some opting for an extended roof to give them a covered porch area.



Given experience with the prototype, we feel confident that we can meet our aim of making the houses affordable – probably costing less than 1,500 US dollars each. The families will pay the costs of materials and hired labour over eight years, and there is general agreement that this is feasible within their limited budgets.



More water cisterns being built

Repayments from the families who built water cisterns last year have been high enough to allow a further six cisterns to be built this year. This means the money donated by the British embassy and by the many people who made personal contributions is now being used twice! Some of the families who built cisterns in the original project are on the list to build new houses this year.

Agrovivienda is a project supported by the Chartered Institute of Housing and the Leicester Masaya Link Group, to improve housing and living conditions amongst subsistence farmers in the region of Masaya, Nicaragua. For more information, visit www.cih.org/nicaragua/index.htm or contact John Perry, project co-ordinator (jperry@ibw.com.ni). For information on how to make a financial contribution, contact Claire Plumb at 0116 223 2272 or email (leicester@masaya.fsworld.co.uk).