no shortcutting, but harvesting strip by strip. This needs approximately 30% more time. Putting the crop residue in the contour line is additional work. In chemical farming the farmer would let animals graze the field or simply burn the crop residue. This is impossible in contour farms!

Harvesting of vegetables does not make much difference. The farmer who practises chemical farming has the advantage that he can harvest on *pakjaw* basis (fixed amount for hired labour for a fixed job). This would destroy a contour farm.

(Dis)advantages

Although the system of organic contour farming is now generally accepted by the farmers, only few farmers are implementing it to the full extent. The main complaint is the labour-intensiveness of establishing and maintaining the system. Farmers who implement organic contour farming are either very young - because they have no family yet, or older couples - because their children have already left the house and sustain their own living. Farmers with a family cannot afford to have a dip in their income as is the case in the transition period from chemical farming to organic farming, no matter how bright the organic future may look. The daily expenses, food, school-fees, health, etc, cannot be cut more. In our estimate (see figure 1) the dip at this moment is about 66% for the first year. Present monthly income is about P 3,000 (US$ 120), about P 1,500 from crops and P 1,500 from livestock for a 1 ha farm. The transition period is approximately 3 to 5 years.

Income gap during transition

The "gap" in income for the projected transition period is approximately P 60,000 (US$ 2,400) per farming family. The income left in the first period mainly comes from livestock activities (P 1,000/month). In the transition period, alternative income, ie. not soil related income-generating activities, has to be found. In ALAB we are experimenting with small domestic animals, intensively kept. Especially broilers and layers are promising. 250 layers will make up for the income loss. Initial investment is high (P 25,000 or US$ 1,000), but this money will be recovered after 40 weeks from the start. If cooperatively organised, with revolving funds, it is possible. It would however mean an additional workload for the women (or another member of the family) of about 2 hours each day. The ordinary way of augmenting the income from work outside the farm, will not be possible during the transition period, since the farmer has no spare time, especially not the first year.

Comparable income

Chemical farming on a 1 ha farm, cropping pattern maize-vegetables-maize needs 266 to 232 mandays a year. The overall extra labour demand for organic contour farming ranges from 150 to 116 mandays after the first 2-3 years. On average a family can, with the same amount of labour, obtain from a 1 ha organic contour farm about the same income as a family from a 1 ha chemical farm (P 36,000 or US$ 1,440). However, part of the income from a chemical farmer has to come from outside jobs; these jobs are not always available. An organic farmer has no time to do outside jobs. His labour is capitalized on his own farm. An organic contour farm has a higher net profit per ha mainly due to lower production costs as chemical inputs are not needed. An organic farmer saves in this way about P 25,700 yearly. Therefore there is less need to borrow money, which is rampant in chemical farming.

Less risks

In a well-functioning organic contour farm there are less risks involved. The soil is less susceptible to dry periods. The water retaining capacity of the soil is much better than of the soils in chemical farming and organic farms are hardly ever seriously damaged by pests. There is less chance of total crop failure. In chemical farming, often poisoning of the farmer due to pesticides occurs. This risk is absent in organic farming. And last but not least, the soil is protected from erosion! ■

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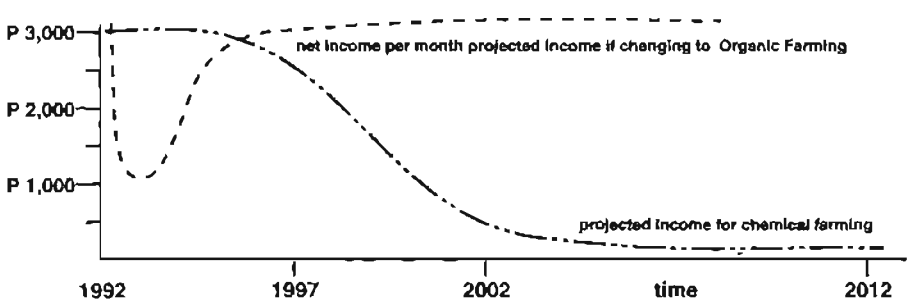

Figure 1
Note: In 2012 it is expected that the soil in chemical farming is so depleted, that farming has to be stopped

Labour needs

On the demonstration farm of the training centre of Mindanao Baptist Rural Life Center (MBRLC) long-year comparative evaluation of the Sloping Agricultural Land Technology (SALT) with local farmers' practices is being conducted. After 6 years of cropping the results are very promising: production and income increased, erosion nearly stopped and labour demands seem to be acceptable. In this article Jeff Palmer specifically focusses on labour aspects.

Jeff Palmer

The SALT model grew out of problems that farmers expressed to MBRLC staff, low and declining yields being the most serious ones. In 1978, a 1 ha test site was selected at the MBRLC premises to serve as a 'testing ground' for the new technology. Just like on surrounding farms, the slope was more than 15 degrees and had been farmed for at least 5 years. Contour lines were planted with Ipil-ipil (*Leucaena leucocephala*) 4 to 6 m apart. Corn was sown in between the contour hedges. The model had worked for about 1 year before first comparisons were made. Table 1 illustrates these results.

The comparison showed that SALT requires more labour than conventional farm methods in the first year, but that the increase in yields compensates for this. Now, after another 6 years of testing (12 crops of maize) on another test site, in terms of production per unit area, SALT is consistently superior to the farmer's treatment. SALT treatment remains highly productive, whereas the production on the 'Farmer's Farm' is steadily declining. Annual net income from the SALT treatment was less than that from the farmer's treatment for the first 2 years of the test. However, the overall trend for the farmer treatment decreased, while net income from SALT increased or remained constant.

Labour needs surprisingly low

One of the surprising results of the test SALT study was in the area of labour inputs. It had been thought that SALT farming would be more laborious due to the establishing and maintenance of contour hedgerows. However, from figure 1 it can be seen that, although labour requirements in the first year were higher, less labour was needed in the succeeding 4

cs in the SALT test farm

years. The relatively low labour requirements of SALT from 1986 to 1989 can be explained by the smaller area under annual crops and the low intensities of labour use in land under perennial crops and hedgerows. By contrast, in 1990, the labour requirement in the SALT system was once again greater, due to the production of permanent crops (primarily citrus). It should be noted that this extra labour is harvest labour, which is readily accepted by the farmer as it provides direct income.

In both treatments, the largest allocation of labour was to the weeding of annual crops. On the whole, mean annual labour input for SALT was slightly lower than that of the farm treatment over 6 years.

Common problems

Some farmers did not apply the recommended techniques for SALT farming. The result has been substandard or ineffective work in some areas and problems that would not have occurred had standard SALT guidelines been observed. Among the more common mistakes made are:

- Establishing single-line instead of double-line contour hedgerows. Some farmers feel that double lines of trees take up too much space and so plant only one row in the hedgerow. The Center's experience is that a single row cannot adequately hold the soil. Also, the biomass production used for fertiliser is reduced by about 50% under this modification.
- Spacing hedgerows more than 6 meters apart. Some farmers space hedgerows 10 to 20 meters apart, creating wider alleys. To overcome this problem, the extension agent must visit the farmer and re-convince him of the need for closely spaced hedgerows. The closer the hedgerows, the better the soil holding capabilities and the greater the amount of biomass production per hectare available for use as fertiliser.
- Planting hedgerows in straight lines across the hill with uniform alley widths, instead of along contours. This often results in weak and erosion susceptible alleys.
- Not planting the trees densely enough in the hedgerows. Again this defeats the purpose of the system.
- Failing to weed and clean the contour hedgerows when the tree seedlings are small.

Other constraints

Several weaknesses observed in SALT farms are not of the farmers' making. Education is sometimes faulty. Sometimes technicians do not fully understand the SALT system before teaching farmers or laying out demonstration projects. This results in poorly constructed SALT projects and, consequently, unfavourable reaction to the new technology. Also, some farmers expect the SALT system to do miracles - creating little work but high income. In fact the SALT system requires considerable discipline on the part of farmers, although once established it demands little or no further work or development beyond the increased harvesting activities. Other problems beyond the farmers' control are as follows:

- lack of tree seeds to create dense hedgerows.
- Stray animals eating the young trees. One solution for this is to have several farmers begin SALT projects in a cluster rather than on isolated sites. Arrangements can then be made to prevent farmers' animals feeding on their neighbour's plants.

No agricultural system can bring depleted, eroded soils back into production in a few short years. The price of soil loss is poverty. Nevertheless, the staff of the Rural Life Center have seen land restored to a reasonable level of productivity by using the SALT system. ■

Reference

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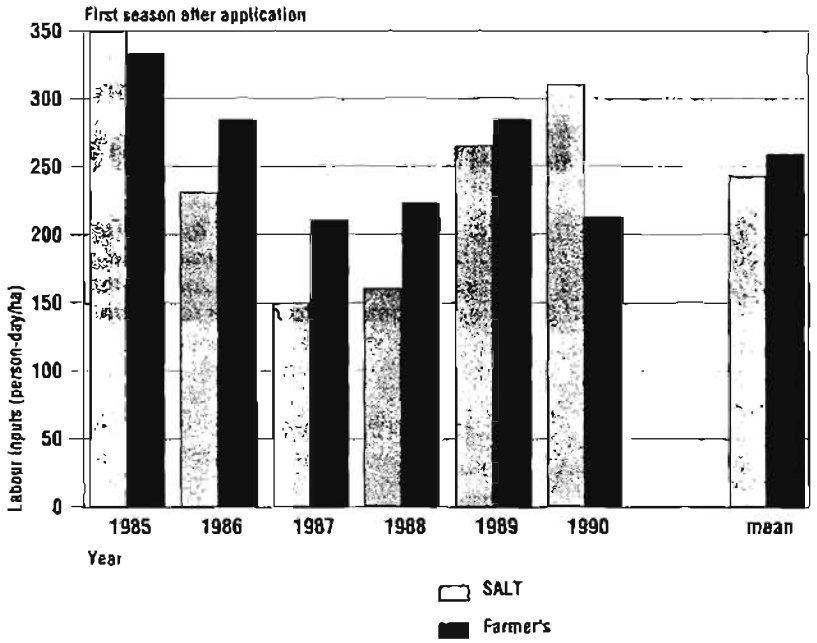

Fig 1 Comparison of labour inputs to SALT and farmer's treatments.

Table 1. Initial comparisons between SALT farm and local farmers' "un-SALTED" farm for one hectare.

	SALT	LOCAL FARMER
Labour (first year)	100% of work hours	50% of work hours
Maize yields* (2 crops/years)	2 T/ha/crop	0.5 T/ha/crop
Tools needed	Same tools used by both	
Soil loss	Slight	Severe

* Leucaena in hedgerows was used for fertiliser in SALT. The local farmer used no fertiliser and no Leucaena.