



sation, and confidence in the future. If they are to continue farming in these areas they must certainly expect that shelterbelt planting and maintenance will become a permanent part of their lives.

These considerations of scale and time-scale remind us why we considered “participation” essential to the “sustainability” of the work. In turn, the participatory approach is not only essential for “sustainability” but also has implications for technical aspects of design. The adoption of a participatory approach leads to a partial abandonment of the concept of an overall sand dune stabilisation “design”, in the sense of a master plan for a given area to be completed over a given time-scale. Such a plan will never work if it ignores the economic and social realities of material and labour constraints, tenure, social divisions and organisation, local priorities, needs, and perceptions.

The SOS Sahel projects build upon local skills, experience and technology, the communities’ own perceptions of tenure issues and priorities, and the determination of the most motivated individuals, groups, and villages. Instead of progressive work from the sand source towards the mobile front, comprehensive mechanical fixation and revegetation, farmers in the Ed Debba area adopt practices which are

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feasible under constraints of labour, materials, and irrigation. Typically these involve working from the mobile front towards the source of sand, minimising the amount of mechanical fixation and planting strategically placed belts of deep rooting trees.

The Benefits of Tree Planting

The farming communities of the Nile Valley regard tree-planting not as a futile gesture, but as essential to the sustainability of their way of life. They are enthusiastic about the benefits. Agricultural land is saved from burial by dune or sheet sand. Farmers feel more confident about investing in farming and long-term crops such as date palms. Canals, wells, and pumps are also protected from sand deposition; canal maintenance work is reduced and the operating life of pumps is improved.

Just as important as the protection of land and infrastructure is the improvement in crop conditions. A shelterbelt at the windward side of a crop field (often combined with a wall of sand) can reduce wind speeds for up to 20 times its own height downwind. In some cases, windbreaks within the agricultural land extend the sheltered zone. Relative humidity in sheltered zones is much higher than in more exposed sites. Evapotranspiration rates and irrigation requirements are reduced, and crop performance greatly improves. Abrasion by wind-borne sand - a major cause of crop failure - is almost eliminated downwind of the shelterbelt.

The shelterbelts provide ideal sites for livestock. Cattle, camels, goats, and sheep are tethered within their shade throughout the heat of the day, feeding on the Mesquite pods. Shelterbelts around villages on open desert sites cut off incoming sand which would otherwise accumulate around houses, schools, and mosques. People regain confidence in villages where it is no longer necessary to re-build every few years as a result of sand accumulation. The Mesquite trees are an increasingly important source of fuel wood, charcoal, and building