

" IT IS THE FARMERS WHO INSIST
ON THE HARD-HEADED ECONOMIC
CHOICE. NONE OF THE NATIVE TREES
COMES CLOSE TO MATCHING THE
PERFORMANCE OF THE EXOTIC
MESQUITE. "

coal. The pods provide nutritious livestock fodder but the tree itself is resistant to browsing and largely pest- and disease-free.

Despite its apparent lack of xeromorphic adaptations, its performance in the harsh conditions of northern Sudan is remarkable. Tap-root growth is exceptionally fast; the tree responds well to irrigation and can reach groundwater within six months (Ibrahim 1994). It has a high tolerance for soil or water salinity. Experiments suggest that Mesquite can tolerate longer periods without irrigation during establishment than alternative indigenous species (due to their slower tap-root growth). Mesquite can be planted on pure dune sand up to a depth of about four metres. In deeper sand, the trees appear to lack soil nutrients and become unrealistically slow to establish (Ibrahim 1994).

In 1995, the Government of Sudan banned Mesquite planting, and for a time the future of the Northern Province shelterbelts was in doubt. In parts of Sudan such as the Tokar Delta (where it should never have been introduced), Mesquite had become a noxious weed (Bristow 1996). It is always dangerous where it thrives. The seeds are spread by animals which eat the pods. Mesquite easily spreads onto farm land; if farmers fail to uproot it when young, it becomes difficult to eradicate. These risks are simply a consequence of choosing the most effective tree for the sand stabilisation task. A less aggressive species would not do the job. The government has now made a special dispensation for sites in the Northern Province.

Where farmers face an immediate threat of sand encroachment on farm land, their priority is to plant a shelterbelt directly in front of the oncoming dune. The farmer must accurately assess the rate of dune movement; the young trees will not survive if overwhelmed by sand in their first year, nor will the shelterbelt permanently protect the field. But the ability of Mesquite to continue growing while largely buried in sand ensures protection for ten years or more, depending on the rate of sand accumulation. The shelterbelt continues to grow within the slip-



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face zone of a transverse dune, which itself continues to accumulate sand. The wall of sand and foliage at the edge of the field shelters a large downwind area and provides excellent growing conditions for crops. Such a shelterbelt provides a breathing space for the farmer to consider options. The next move may be to plant a belt on the dune itself or an “external” belt to the windward side of the dune (if it is not too large). This will probably be a more difficult site for irrigation and tree establishment, with wind and sand exposure and a deeper water table. If it is successful, however, the external belt will cut off sand accumulation on the dune and provide a considerable degree of long-term protection. Every shelterbelt, however, will in due course create or modify its own dune, which may eventually become mobile. There is no permanent fix.

Thus, instead of complete re-vegetation farmers aim to establish linear belts of trees, usually as nearly as possible perpendicular to the prevailing wind, at strategic and feasible sites to the windward of the