Saving Eucalyptus Trees Grown in Libya

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Many *Eucalyptus* species are well adapted to the growing conditions in Libya. They are commonly planted along roadsides, in wooded areas and as shelterbelts and windbreaks. *Eucalyptus* trees are considered of great national importance in Libya due to their pronounced effect in reducing heat intensity and velocity of devastating desert dry winds, locally called 'Gebli'.

Unfortunately, a decline and eventual death of many well established eucalyptus trees is observed. An attempt was made through this study to investigate this problem, in order to find a suitable remedy.

It is known that eucalyptus trees are very sensitive to the lack of iron. Many Libyan soils, including Tripoli area are predominately calcareous and alkaline in reaction, where iron becomes scarce and unavailable to plants. Therefore, this investigation was conducted with the assumption that iron unavailability from the soil might be responsible for the decline of eucalyptus trees.

To elucidate this problem, five eucalyptus trees, grown at the University of Tripoli in Sidi El-Mesri, were selected for use in this study. Tree circumference ranged between 70 and 135 cm at about 1.5 m from the ground. They were showing a drastic twig die back and complete yellowing of foliage except the midribs and veins. A typical manifestation of the disorder is shown in Fig. 1A.

Iron was supplied to trees before the onset of spring growth, in late March, using dry iron citrate. Injections were made through holes slanting toward the centre of trunk, using a hand drill. Holes were 1.8 cm in diameter and about 4 cm deep into the sapwood without reaching the heartwood.

Treatments, as presented in Table 1, were either at 10 cm or 20 cm apart around the tree circumference. At approximate height of 1.5 m, holes were alternately bored at two slightly different levels from the ground, in order to minimize any possible interference with the flow of sap. Iron compound in the citrate form was used at two different rates. After treatment, all holes including the control were sealed with grafting wax.

By periodic observations, treated trees showed signs of gradual progress and improvement of the entire plant. Regreening of the old yellow foliage and flushing new growth were evident in all four treatments within 60 days. No apparent visual differences could be detected between treatments, however, treated trees were strikingly better than control (Fig. 1A and 1B). Duration of the treatments had lasted for only two years. Therefore, for

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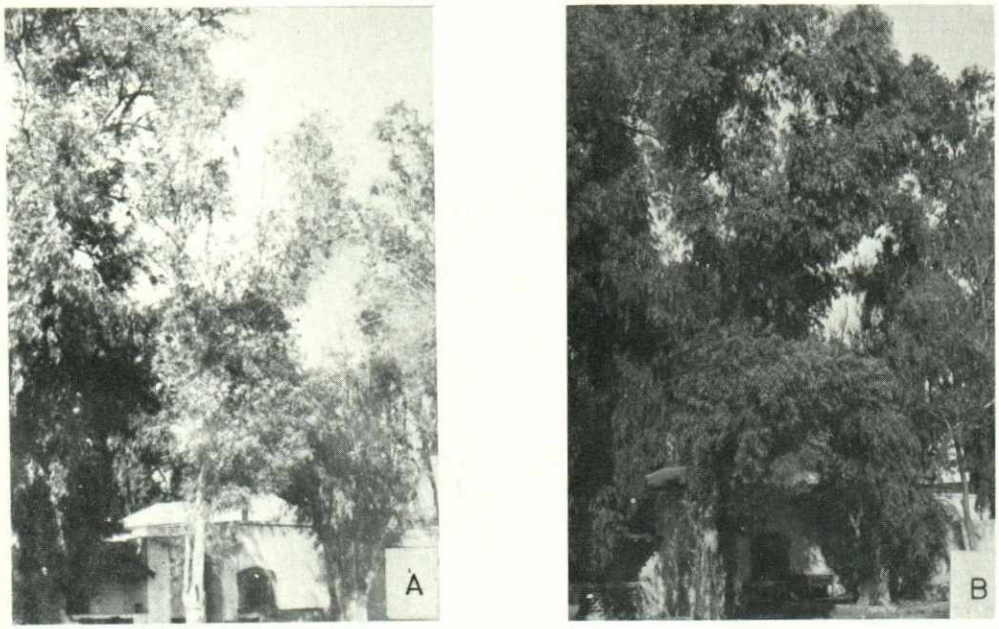

Fig. 1. (A & B). Eucalyptus tree, before and 60 days after injection with iron citrate, respectively.

the best tree maintenance, it is suggested that they should be treated once every two years, or whenever it seems necessary.

The results of this work show, that with small amounts of iron from relatively inexpensive source and by a simple method of application, eucalyptus trees could be readily saved with a little effort but great benefit, to small farmers, and to those who appreciate the value of these trees.

Table 1 The different treatments and levels of iron citrate, used for the injection of eucalyptus trees.[1]

Tree Number	Circum-ference	Number of holes	Iron citrate per hole	Total amount of iron citrate added/tree	Equivalent amount of elemental iron
1	90 cm	9 (10 cm apart)	1.65 gm	14.85 gm	2.48 gm
2	85 cm	8 (10 cm apart)	2.30 gm	18.40 gm	3.07 gm
3	95 cm	5 (20 cm apart)	1.45 gm	8.25 gm	1.38 gm
4	135 cm	7 (20 cm apart)	2.30 gm	16.10 gm	2.69 gm
5 (Control)	70 cm	7 (10 cm apart)	0.0 gm	0.00 gm	0.00 gm

[1]Approximate content of elemental iron in iron citrate is 16.7%.