

THE ROLE OF FERTILIZERS IN THE CURRENT CAMPAIGNS TO INCREASE TREE WEALTH ON MARGINAL AND FARM-LANDS

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At the time of independence of the country (1947), the mountainous areas were reasonably covered with a thick merchantable evergreen coniferous forest (1.9m ha); the foot-hills with deciduous scrub forests (1.7m ha); and the coastal forests (0.35m ha). Besides these natural forests, there were sizeable contribution of wood from man-made forests in the riverain belt and plains, canals, road-side plantations, and also from some scattered plantations of Farm-lands. Thus, the country had no critical shortage of wood; of course, there has still been dependence on selective importing of assorted timber wood from abroad.

Now due to the rapid increase in population (3% per annum), and the illicit cutting of natural forests, the balance of the natural ecosystem has been completely changed in a course of retrogression, and in the appearance of bare hills and expanding deserts. As a results, the productive top soils from the hills have been gradually washed by rain-storms and therefore the situation created watershed problems of high magnitude since it was forethought to affect the normal working condition of major irrigation dams of the country. By and large presently the state of fuel-wood and timber is such i.e. 0.3m³ and 3.4m³/ha per annum, respectively that the requirements for a population of 100 million heads of the country is far from accepting an optimistic view.

To overcome the energy crisis, an extensive energy plantation programme both in hilly areas and in plains have been launched in the country to bring more and more land-areas under afforestation. To achieve the national objective with minimum period of time, it is necessary to maintain the productivity of the nursery sites for the raising of vigorous planting stock. Because the natural nursery site-quality, no matter how good it may be, gets gradually deteriorated physically, and exhausted nutritionally, when plants are intensively raised on it, it needs attention to be manipulated. The productive capacity of soil can be maintained only if the intricate physico-chemical and biological inter-relationships are thoroughly understood, and properly adjusted; presently with the availability of varieties of commercial fertilizers, it is to be routinely done by the judicious application of fertilizers.

The seedlings which remain in nursery for one or more years not only are supposed to attain the necessary vigour to survive under the adverse conditions of the planting site, but the establishment of forest stands that will resist parasitic organisms, regenerate freely and produce high yields of valuable timber. Because the characteristics seedling acquire in the period of their early development in the nursery often decide the fate of the future plantations in afforestation and reafforestation areas in the field (i.e. economic and time factors). If the planting stock is raised in undesirable soil conditions and is lacking in vigor, one of the two results may be

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expected; either the seedlings will die shortly after being transplanted in the field or they may struggle for a number of years and eventually become hosts for parasitic organisms.

Such struggling plantations present great danger in artificial afforestation and reafforestation programmes in vast field areas because they provide the breeding centres from which parasites may invade forest stands throughout the region. Thus, the establishment of a successful nursery can be accomplished only if we know the physico-chemical and biological behavior of the soils. Because afforestation is practiced on large acreages and is a long term investment, negligence in the selection of planting sites may result in huge financial losses. It is therefore highly recommended that the replenishment of the nursery sites may be regulated by the use of organic and inorganic fertilizers.

Research all over the world, including some basic fertilization studies in Pakistan, during the past decades have confirmed that fertilization have a positive role to play in strengthening afforestation programmes. Selective fertilization also invigorates even the symbiotic activities of mycorrhiza and other nitrogen-fixing organisms in forest soils. It simultaneously improves the resistance of young plants against the dieback and other physiological diseases, even insect-pest attack, drought and frost affect and other affects of adverse conditions. Fertilization to forest tree crop, especially the fast growing industrial tree species, helps overall in many ways, such as root development, flower and seed formation and maturity, improves the wood quality, and finally the sustain yield of better-quality of various timber tree species.

Nursery fertilization will definitely result in producing healthy, vigorous, and invigorated planting stock on sustain production basis; will minimize the transplanting time for field plantations, will reduce the nursery costs; will fulfil the requirement of national afforestation programme at minimum time period; will result in better and sustain yield; and thus will fill the gap between supply and demand for wood in the country.