Trees and Surface Evaporation

The effects of tree belts on surface evaporation are very marked, according to Bates: "The efficiency of a windbreak in checking evaporation is proportional to its density. It may save at a single point in extreme cases 70 per cent of the moisture usually lost by evaporation. . . . The distance to which protection is felt increases with wind velocity. The protection is appreciable for a distance equal to five times the height in the windward directions and fifteen to twenty times the height to leeward."*

It is suggested that evaporation from the surface of storage reservoirs in irrigated districts could be materially checked by planting good windbreaks around the borders, and particularly where water has been turned on the fields; when for the first few days conditions are particularly favourable for loss from surface evaporation, good windbreaks, may prove exceptianally valuable. "An efficient windbreak, 50 feet high, would reduce this evaporation in a field 30 rods wide to leeward by at least 30 per cent."*

I think enough has been said to show absolutely that tree belts do have an extremely important influence, both in checking soil drifting and in conserving moisture.

Can such belts be established on a sufficiently large scale to influence the comparatively large crop areas which in the past few seasons have suffered so severely and which are going to suffer more in the future unless the damaging effects of the winds can be lessened in some way?

Spacing of Tree Belts

In considering the practical side of this problem, would it be better to have wide belts spaced at comparatively long intervals, say every quarter-mile, or single rows of such varieties as caragana or spruce at comparatively close intervals of say 100 yards or 50?

The single rows at close intervals would furnish a much more uniform protection over the whole area than would wide belts spaced far apart. The actual number of plants required and the actual labour in planting would be the same in both cases. Tho cost of upkeep, however, would probably be greater in the case of single rows. The system followed would largely depend upon the local farming operations. If stock is kept to any extent, then the belts would require fencing, and, in such case, the cost of protecting many single rows would be practically prohibitive, and wider belts would seem to be indicated.

Systematic Tree Planting Essential

The main difficulty would not be in actually getting trees to grow, because if proper methods are followed they can be grown practically anywhere. The chief trouble will be in devising some practical system for carrying out this work on a large scale in a uniform manner. Until one looks closely into the subject, it seems a comparatively easy matter to go ahead and plant up extensive tree belts, and suggestions and advice in plenty from men with no experience is handed out freely wherever this question of wind damage is discussed.

So far as I am aware, no practical scheme has yet been put forward. It must be conceded that, to be effective, the plantings must be on a large scale over comparatively large districts. The following points must then be considered:—

1. Where is the stock to come from?

2. Who is going to do the actual planting—private individuals or organized bodies under municipal, provincial or federal control?

3. What effect would such plantings have on winter travel in certain sections where snowfall is heavy?

4. Can any uniform system be developed depending only on private enterprise? If undertaken by governmental bodies, how will the land be secured on which the belts should be planted, particularly in cases where the private owner is not in sympathy with such a movement?

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* *Windbreaks, Their Influence and Value.* By Carlos G. Bates, Bull. 86, U.S. Forest Service, Washington, 1911.