SOIL EROSION.

TRENCH v. PLATFORM.

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SOME adverse comments on the platform terrace system made recently by the writer having given rise to a certain amount of argument, they are reproduced herewith in case they may be of interest to local agriculturists. An opinion was called for respecting the advantages or otherwise of the platform system and of the contour trench system of which the writer has made a speciality since 1925 when certain undesirable features of the platform terrace system became apparent to him. His observations of the two systems date back to the end of 1924 for the platforms and the beginning of 1925 for the trenches, a period of five years, during which both systems have been subject to the closest scrutiny. The platforms under observation cover an area of some 25 acres and the trenches an area of some 160 acres, all under rubber.

The disadvantages of the platform terrace system may be enumerated as follows:—

(1) The pocketing and consequent check to the growth of the planted product.

(2) Lack of moisture to the roots of the young plants during the first few years.

(3) The expense of the system, should dense planting be resorted to.

(4) Insecure anchorage of trees on steep land or, alternatively, delay of the plant's root system in reaching the best soil.

(5) Impracticability of using a quick-acting fertiliser with any benefit in the first few years, unless expensively large holes are cut for the plant.

That the platform terrace checks erosion in a most satisfactory fashion is not denied for a moment, but, in the writer's opinion, the trench system eliminates many of the less desirable features of the platform system. The various points are taken in the order given above and small rough sketches have been made in order to illustrate diagrammatically the action taking place and to enable a comparison with the contour trench system to be made.

(1) *and* (2). *Pocketing and consequent retardation of growth.*—The platform having been constructed, a hole must then be cut for each individual plant. This hole will be in the subsoil obviously, so that the plant is ultimately encased by subsoil, which bounds the four sides of the hole. The feeding soil will be only that which is put into the hole, and, when that is exhausted, the roots must strive to find a way out into either the back of the platform where there is moisture or to the best soil which has been thrown down in front of the platform where, however, the moisture content is lowest.

The question of moisture content being now recognised as a deciding factor and the necessity for conserving moisture being admitted as of primary importance, it is interesting to study the direction of watercourses formed in a contour platform and a contour trench. These have a direct bearing on the retardation of growth in the one system and on the reverse in the other. Looking at the diagram in section, the platform appears to be fairly well off, but, looking at it in plan, it will be seen that the only direct water that the plant receives is that enclosed by the dotted line until such time as the feeding roots have escaped from their pocket and established contact with the water passage. With the trench system, however, every drop of moisture has to pass over the root system before it gets away *via* the base and sides of the trench, and as long as there is any moisture coming down the plant is bound to be in touch with it and to remain so throughout its life.

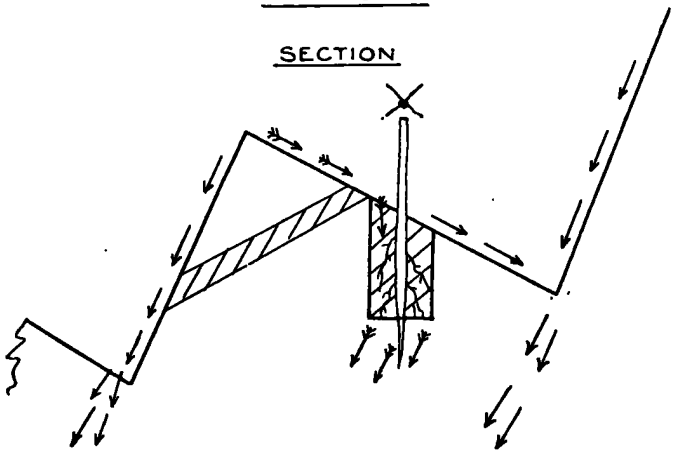
Some advocates of the platform terrace deny that the tree is pocketed but admit that they cut very large holes indeed, obviously to counteract the pocketing tendency, but it must be noted that the larger the hole the more expensive the work and that, unless the hole runs at right angles to the line of contour of the platform, they are still failing to overcome the moisture difficulty. In order to make a really successful job of it, a trench running parallel to the direction of the platform should be cut in the platform itself, and this once more throws up the cost of the work. Whenever the writer has had an opportunity of comparing growth, year for year, of the two systems, the platform appears to lag one-and-a-half years in four behind the trench.

(3). *Expense with dense planting.*—It is clear that if every plant has to have a hole cut for it, and if, as above, the holes are now being cut very large, dense planting of even 300 trees to the acre means 300 holes, and is an expensive business in addition to the platform cutting. With the trenches it costs no more to plant 1,000 trees per acre than it does to plant 20 as far as soil removal is concerned, and all will equally receive their share of moisture and nourishment.

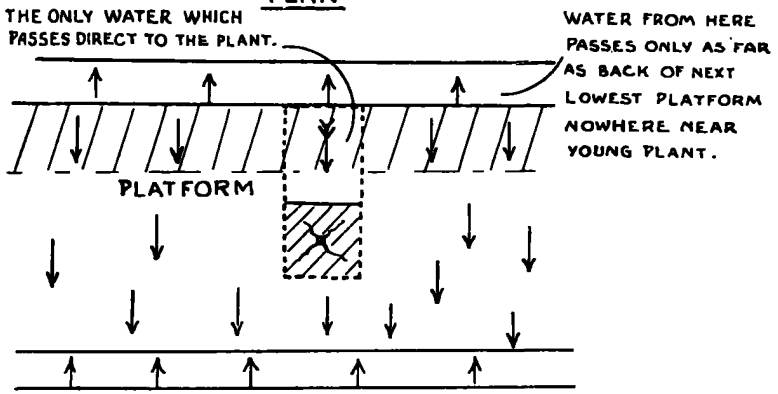
DIAGRAM

PLATFORM

SECTION

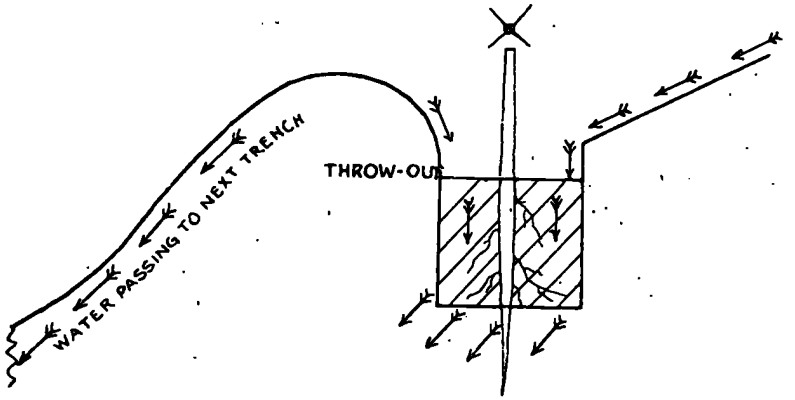


PLAN



TRENCH

SECTION



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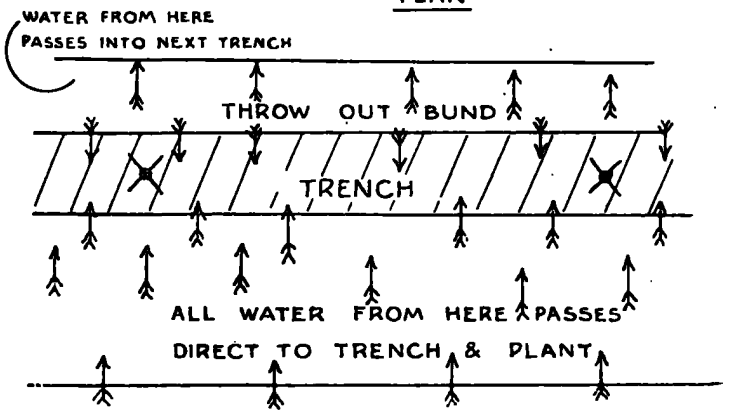

FEEDING SOIL = 

WATER AT ALL TIMES AVAILABLE FOR THE ROOT SYSTEM = 

WATER PASSING OFF WITHOUT BENEFITING YOUNG PLANTS = 

PLANTS SHOWN THUS = 

(4). *Insecure anchorage or delayed nourishment.*—Should a young tree manage to protrude its feeding root system into the best soil, apart from that which was originally placed in the hole, it will be seen from the diagram that the best soil lies on the outside of the platform covered by throw-out. The surface soil is friable, and the throw-out is weathering on its outside face; it is in any case in a state of disintegration and is not really consolidated. Should the tree's laterals reach this surface soil, they will in all probability make an attempt to pass through it, and through the throw-out in order to reach moisture either on the outside of the throw-out or on the back cutting of the next platform immediately below. If they can reach the latter and the back of their own platform and get a grip on the two together before they are faced by some exceptionally high wind, well and good. If, however, a tree is struck by a heavy squall just as it is trying to force its way to both sides, its anchorage would appear to be none too good. Again, if the anchorage is ensured by the laterals getting quickly into the back portion of the tree's own platform, the probability is that the tree will concentrate on the moist side and neglect the best soil which is of course in a much drier position.

(5). *Fertilisers.*—It is clear that on the steep-sloped platforms now being employed, a quick-acting fertiliser has not much chance of introducting itself to the roots in the first few years, unless it is put in the holes, and this is often not advisable. Either it runs to the back of the terrace or sinks into the hard subsoil, into which the roots have not yet penetrated.

In conclusion, the writer may be accused of inconsistency inasmuch as at lectures given in 1925 he advocated the adoption of the platform terrace. In fairness, however, it may be pointed out that at those lectures he mentioned that he had an alternative scheme which was designed to do away with the difficulties and bad features of the platform terrace. Furthermore, he never advocated or put in platforms with such an acute reverse slope as is now being employed in this form of opening by certain estates. If the reverse slope employed had a more gentle gradient, the plants would have a better chance and moisture penetration be better distributed, though the opening costs would no doubt be higher.