A SHORT NOTE

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A STUDY OF THE SHADING EFFECT OF SHEESHAM TREES ON WHEAT

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INTRODUCTION

The sheesham tree (Delbargia sisso) is one of the commonest trees of our country. It thrives best in the Punjab province where environmental conditions are most suitable for its growth. There are extensive stands of this tree in the irrigated plantations of Changa Manga, Gutwala, Kamalia, etc. It is also a common plant of avenues. Due to its popularity as a source of timber and fuel-wood , this tree has won favour with our farmers who plant them in and around fields. It is a common belief that trees growing in cultivated areas, exert adverse effect on the growth and yield of crops. The purpose of the present study was to determine the extent of losses in wheat yield due to the presence of sheesham trees.

MATERIALS AND METHODS

An extensive area under wheat crop was selected at the Students farm, University of Agriculture, Lyallpur, and divided into 5 fields. The sheesham trees in the selected fields were mostly on borders but in a few cases they were located in the centre of the fields. The selecected trees were mostly 1½ to 2 ft. in diameter at breast height and they were not lopped or pruned for the last three years. In order to observe the extent of damage, 3.1 ft. square metallic quadrat was thrown at 10 ft. 15 ft. and 20 ft. from the main trunk, and at places which were free from direct tree effect, i.e., far from the tree. The wheat plants falling in the quadrat were carefully cut and weighed in grams on a high-accuracy balance. The resultant weight was multiplied by 10 to get yield in pounds per acre. Each sample was carefully threshed and grains were again weighed. Data were statistically analysed.

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RESULTS AND DISCUSSION

The results are presented in Tables 1 and 2. There was a clear indication of a decrease in the harvest yield as well as in grain yield, as the distance from the trees decreased. In most of the cases the decrease or increase in the total yield was proportionate to the distance from the main trunk of the tree. In two of the five experimental fields, however, the yield from open plots was lower than the yield of plots located at 15, 20 ft. from the trees. In all the quadrats the yield was definitely lower within 10 ft. from the trees than the control which is a clear indication of the fact that the trees do adversely affect the plant growth. The statistical analysis of the results showed that there were no real difference in the mean yield of all quadrats. Non-significant results were obtained due to low yields from open quadrats in the fields 3 and 4 (Tables 1 and 2). The reduction in yield from the centre of the field could be due to many causes such as bird attack, a diseased or a poor saline patch.

Decrease in yield near the trees is mostly due to root competition and shade effects. Soil near the tree is mostly poor because tree roots exhaust most of the nutrients. Aonuma (1963) found decrease in yield of Japanese pump grass near the trees. Gill (1973) stated that the damage was 50% or more under the crown cover of a tree. The micro climate becomes better suited for crop growth near the trees due to the reduction of wind velocity and consequent reduction of evaporation and increased temperature in sheltered areas. Qureshi (1973) pointed out that the birds require a suitable observation post from which they can watch insect and attack them. In cases where the yield was more near the trees, it could be due to less insect attack and more relative humidity near the tree (Mishenev, 1968).

SUGGESTIONS

1. Add relatively more fertilizer near the trees to reduce the root competition between trees and cultivated crop.

2. Try to reduce the number of pests (birds and insects) by baiting, spraying and shooting.

TABLE 1. *Mean total harvest yield (grains-straw) of wheat in lbs./acres.*

	T_1	T_2	T_3	T_4
Field I	9990	9578	9506	12384
Field II	6568	7848	7956	12759
Field III	7770	9535	9712	9240
Field IV	9830	11185	11250	9015
Field V	7306	8885	8946	9335
Mean	8298.8	9406.2	9474	10546

TABLE 2. *Mean grain yield in lbs./acre.*

	T_1	T_2	T_3	T_4
Field I	1614	1670	1760	2802
Field II	1056	1404	1586	2879
Field III	2600	2896	3090	2495
Field IV	2660	3255	3655	3356
Field V	2147	2162	2637	3052
Mean	2015	2270	2545	2915

T_1 = 10 ft. from main trunk.

T_2 = 15 ft. from main trunk.

T_3 = 20 ft. from main trunk.

T_4 = centre of the field.

LITERATURE CITED

Aonuma, Kazue. 1968. The competition between planted trees and Japanese pump grass (Miseanthus sciences Andreas) Bio Abs. No. 4 Vol. 52. No. 19639.

Gill, M.A. 1973. Personal communication from Chairman, Department of Agronomy, University of Agriculture, Lyallpur.

Mishenev, V.I. 1968. The role of field shelter belts in the control of dry winds, Bio, Abs. No. 4 Vol. 52. 16631.

Qureshi, J.I. 1973. Notes of the useful feeding activities of birds in field areas in Lyallpur. Pak. J. Agri. Sci. 9 : 35—40.