segregating generations because of fixable nature of gene interactions.

The gca effects of TCH 63/1, TCH 63/4 and TCH 96/6 among lines and MCU 7 among testers were significant and in negative (desired direction). Nine out of 28 crosses have recorded significant and negative sca effects. And the cross MCU 9 X TCH 89/7 has recorded the highest negative sca effects of -6.33, which involves both the parents has recorded low gca effects but showed high negative sca effects indicating additiveness.

Among lines a positive significant gca effects was noted in TCH 65/8, TCH 70/7 and TCH 89/7. Among testers MCU 5 has recorded significant and positive gca effects for single seed kernel weight. Maximum significant and positive sca effects of 8.07 was recorded by the cross MCU 5 X TCH 89/7 in which both the parents are having positive significant gca effects indicating additive gene action. The parents TCH 104/1 and MCU 7 with negatively significant gca effects, produced a hybrid with positively significant sca effects, which might be due to non additive gene effects.

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LODGING OF SOYBEAN GENOTYPES IN UNDERSTOREY OF COCONUT PLANTATIONS

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ABSTRACT

Experiments were simultaneously conducted at the Tamil Nadu Agricultural University, Coimbatore with fifteen soybean genotypes in three environments to study the lodging pattern and to identify the lodging resistance or susceptability of soybean genotypes for appropriate use in various cropping systems. Soybean plants lodged severely within two coconut stands due to shade effect. The mean lodging per cent was 83.9 and 95.3 under eight and eighteen year old coconut plantations, respectively. The variety Hardee and Monetta recorded very low (less than 10 per cent) lodging percentages under eight year old coconut plantation. Besides these UGM 21 recorded low lodging per cent under eighteen year old coconut plantation which showed their shade tolerance.

Generally short statured intercrops or understorey crops are lodged depending on the shade intensity. Crop cultivars/cultures may differ in lodging behaviour under similar shade environment. Information on crop lodging of component crops is limited.

The present investigation was carried out to study the lodging pattern of soybean genotypes in understorey of coconut plantations and identification of lodging resistance or suceptibility of genotypes for appropriate use in various cropping systems.

MATERIALS AND METHODS

The experiments were conducted at the Tamil Nadu Agricultural University, Coimbatore, India. Fifteen soybean genotypes were grown simultaneously in open field and understorey, i.e., raising of a crop under the canopy of plantations of eight and eighteen year old coconut plantations during March-June season. The experiments were conducted in a randomised block design with three replications. The coconut spacing was 6.0 m x 5.0 m in eight year and 6.0 m x 6.0 m in eighteen year old coconut plantation. In the present study the lodging aspect was investigated within the two coconut stands, the open field being excluded since under open field condition, no lodging was observed.

RESULTS AND DISCUSSION

Several genotypes had comparable lodging trait. Soybean plants lodged severely within two coconut stands due to shade effect. The mean lodging per cent was 83.9 and 95.3 under the eight

Table 1. Lodging per cent of soybean genotypes grown in understorey of coconut plantations

/Environments Genotypes	Eight year old coconut plantation	Eighteen year old coconut plantation
Bragg	96.5	95.5
CO 1	97.8	98.6
DS 74 - 37	96.6	98.1
Hardee	9.6	83.2
Hill	94.0	97.8
JS 422	96.4	97.9
JS 72 - 185	98.0	98.6
KHSB 2	87.8	97.5
KHSB 5	93.4	97.6
KHSB 6	97.0	98.2
Monetta	8.6	87.2
Nimsoy 7	96.9	98.1
PB 1	95.0	97.8
UGM 21	95.4	85.3
UGM 24	95.6	98.3
Mean	83.9	95.3
SEd	1.1	0.8
CD (P=0.05)	2.2	1.7

and eighteen year old coconut plantations respectively and however, it ranged from 8.6 to 98.0 per cent under eight year old coconut plantation and from 83.2 to 98.6 per cent under eighteen year old coconut plantation. Hardee and Monetta recorded very low (less than 10 per cent)lodging percentages, all others recording upwards of 87.8 per cent under eight years old coconut plantation. Although all the fifteen genotypes recorded lodging per cent of above 83.2 the genotypes viz., Hardee, UGM 21 and Monetta recorded low lodging per cent of the overall mean in understorey of eighteen year old coconut plantation. The genotypes Co.1, JS 72-185 and KHSB 6 were consistently recorded higher lodging per cent in both the coconut stands. The genotypes Co.1 and JS 72-185 recorded the highest and second highest lodging percentages in understorey of eighteen year old coconut plantation and second highest and highest and highest lodging percentages under eight year old coconut plantation.

Soybean plants lodged severely in understorey of coconut plantations due to shade effect. Low lodging percentages of Hardee and Monetta in both coconut stands showed their shade tolerance. The genotypes Co.1, JS 72-185 and KHSB 6 appeared to be particularly prone to lodging. Appropriate cultivars should be fitted in cropping systems for achieving maximum production protential in the specified environment.

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GENETIC ANALYSIS OF YIELD COMPONENTS IN SHORT DURATION RICE (*Oryza sativa* L.) VARIETIES

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ABSTRACT

The genetic analysis for yield and its components was attempted using 4x4 diallel. The diallel analysis showed the importance of both additive as well as non-additive gene action for all the traits studied. Except for ear bearing tillers, SCA variances were higher than GCA variances for all the traits suggesting the predominance of non-additive gene action. In the case of ear bearing tillers, the GCA variance was greater than SCA variance indicating more of additive gene action. Parents with high combining ability have been identified.

Breeding for higher grain yield has been the main objective of crop improvement among the breeders. A knowledge of the genetic architecture of the genotypes and the nature of gene action for the traits is a pre-requisite for improvement in any crop plant. Many biometrical techniques help the breeder to choose appropriate parents. Among them diallel analysis is the one which enables the breeder to make predictions from the information collected from the F_1s. In this paper, an attempt has been made to study the nature of gene action and the degree of combining ability for yield and its components in short duration rice varieties.

MATERIALS AND METHODS

The experimental material for this study consisted of four short duration rice varieties, viz.,