of the soil. The maximum pod weight in Lincoln was recorded with 40 kg + 30 kg P ha and in Bonneville 40 kg N + 60 kg P/ha though this attribute was not significantly affected either by main effects of N and P or their interactions. For pod yield again there was differential response of varieties to N and P levels. In Lincoln, application of 20 kg N + 60 kg P/ha recorded the highest yield while in Bonneville 40 kg + 30 kg P/ha was found to be optimum dose during, 1983-84. The differential response of varieties to the nutrients may be be attributed to the genotypic differences, as the dwarf varieties, in general require less amount of N for their growth but larger amount of P for the development of better size pods with bold grains and ultimately more yield.

REFERENCES

AMMA, A.T. (1971) The effect of nitrogen, phosphorus, potassium and lime on pea growth in the san pedro province of Buenos Aires. **Revistade Investigacinoes Agropecuaries** 8(2): 67-79

ANONYMOUS (1984) All India Coordinated Vegetable Improvement Project Progress Report 1983-84 **Indian Council of Agricultural Research, New Delhi.**

BERRY, J.W. J.R. (1973) Nitrogen fertilizer trials on irrigated green peas in central Washington **Circular, Washington Agric. Expt. Stn. No.556**, 6pp

CUTCLIFFE, J.A. and MUNRO, D.C. (1980) Effect of nitrogen, phosphorus, potassium and lime on yield and maturity of green peas. **Can.J.Plant Sci., 60** : 599-604.

GUBBELS, G.H. ALIKHAN, S.T. CHAUBEY, B.B. and STAUVERS, M. (1982) Cooking quality, yield and seed weight of field pea as affected by irrigation. nitrogen, phosphorus and harvest date. **Can. J.Pl. Sci. 62** : 893-899.

JAIN, B.P. PUJARI, M.M. and SINGH, K.K.N. (1977) The effect of different levels of phosphate on the earlyness of vegetables peas. **Proc. Bihar Acad Agric. Sci. 25** : 127-128.

PATE, J.S. (1978) **Pea Crop physiology** (Evans, L.T. ed.) Cambridge University Press, Cambridge, London, pp.207-208.

SCHMELCZ, L. (1985) Cultivar trials, green peas. **Kerteszeter Szoleszet 34** (1): 8.

SVOBODA, J (1974) The effect of phosphorus nutrition on the growth characteristics of dwarf peas. **Rostlinna Vyroba Czechoslovakia 20**: 1189-1191.

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CORRELATION AND PATH ANALYSIS IN FODDER LABLAB

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ABSTRACT

An experiment on correlation and path analysis involving thirty six hybrid combinations of fodder lablab was conducted in *kharif* 1993. The results indicated positive significant association of the quantitative traits with green fodder yield except crude protein content. Selection for yield improvement based on dry matter yield, dry weight of leaf and dry weight of stem has been suggested for fodder yield.

KEY WORDS : Fodder lablab, Correlation, Path Analysis

Lablab (Lablab purpureus (L.) Sweet) is valued as an important fodder crop due to its fast growing habit, bushy nature and other foliage attributes. Its fodder yield is almost static as not much break through in genetic improvement has been achieved in our country. A knowledge on the nature of character association through path analysis can furnish a clue for partitioning of genetic associations of complex traits like fodder yield. In view of above, the present study was conducted in lablab.

MATERIALS AND METHODS

Thirteen genotypes were collected from the Department of Pulses, Tamil Nadu Agricultural University, Coimbatore and crossed in line x tester mating design. Thirty six hybrid combinations along with their parents were grown in a randomised block design replicated thrice at the Agricultural College and Research Institute, Killikulam. Each genotype was sown in a single row with a spacing of 45 cm between rows and 30 cm between plants. Five plants were selected at random in each line for recording observations.

Table 1. Genotypic correlation coefficients between different traits

Character	Number of leaves	Total leaf area	Specific leaf weight	Dry weight of leaf	Dry weight of stem	Dry matter yield	Crude protein	Green fodder
Number of primaries	0.235	0.337*	0.176	0.255	0.237	0.003	-0.165	0.294*
Number of leaves		0.731**	0.175	0.698**	0.213	0.736**	0.165	0.775**
Total leaf area			0.216	0.769**	0.171	0.774**	0.206	0.843**
Specific leaf weight				0.158	0.120	0.322*	0.267	0.388*
Dryweight of leaf					0.861**	0.890**	-0.101	0.910**
Dry weight of stem						0.887**	0.102	0.920**
Dry matter yield							0.236	0.917**
Crude protain								-0.503**

* Significant at 5 per cent level; ** Significant at 1 per cent level

Mean values were subjected to analysis of variance and phenotypic and genotypic correlation coefficients were computed as suggested by Johnson *et al* (1955). The path coefficient analysis were carried out using genotypic correlation coefficients as discussed by Dewey and Lu (1959).

RESULTS AND DISCUSSION

The analysis of variance indicated highly significant differences among the genotypes for all the characters. The genotypic correlation coefficients between fodder yield and eight other metric traits are presented in Table 1. All the characters showed significant positive association with green fodder yield except crude protein content which showed negative correlation. Similar negative association was also reported by Ushakumari and Chandrasekharan (1991). Dry weight of leaf is highly associated with the characters, viz., number of leaves, total leaf area, dry weight stem and dry matter yield. This indicated the possibility of simultaneous improvement of the fodder characters. This is similar to the findings of Ushakumari and Chandrasekharan (1991).

Path analysis provided an aid for sorting out the total correlations into direct and indirect effects of different characters on yield. The results of path analysis (Table 2) revealed that the maximum positive direct effect was exerted through dry matter yield followed by dry weight of leaf and dry weight of stem. Similar types of positive direct effects were also reported by Jindal (1989) and Akundabweni *et al* (1990).The direct effect of plant height, specific leaf weight and crude protein content were positive, but very low, indicating the neutral behaviour of these traits towards green fodder yield.

Table 2. Direct and indirect effects of different traits with green fodder yield

Character	Primary branches	Number of leaves	Total leaf area	Specific leaf weight	Dry weight of leaf	Dry weight of stem	Dry matter yield	Crude protein	Genotypic correlation coefficient
Primary branches	-0.016	-0.021	0.109	0.052	-0.382	-0.180	0.379	0.079	0.294*
Number of leaves	-0.004	0.691	0.237	0.052	-0.418	-0.551	0.998	0.206	0.775**
Total leaf area	-0.005	0.066	0.324	0.064	0.460	0.585	1.085	0.231	0.843**
Specific leaf weight	-0.005	0.616	0.070	0.298	0.154	0.091	0.242	0.127	0.368*
Dryweight of leaf	-0.004	0.063	0.249	0.077	0.598	-0.652	1.170	0.261	0.910**
Dry weight of stem	-0.004	0.566	0.250	0.036	0.515	0.759	1.183	0.239	0.920**
Dry matter yield	-0.003	0.067	0.250	0.066	0.532	-0.673	1.181	0.255	0.917**
Crude protein	-0.003	0.039	0.157	0.080	-0.328	0.381	0.646	0.076	-0.503**

Underlined figures show the direct effects

Residual effect = 0.739

* Significant at 5 per cent level; ** Significant at 1 per cent level

From the correlation and path analysis studies it can be inferred that dry matter yield, dry weight of stem, dry weight of leaf and number of leaves are the major component traits for the improvement of fodder yield on cowpea. Selection for yield improvement based on dry matter yield, dry weight of leaf and stem weight is as complex as yield itself, and selection based on those attributes will be more effective.

REFERENCES

AKUNDABWENI, L.S. PETER PAUL, C. and SINGH, B.B. (1990) Evaluation of elite lines of cowpea *(Vigna unguiculata* (L.) Walp) for leaf/fodder plus grain. **Trop.Agric.**, (Trinidad) **67**: 133-136

DEWEY, D.R. and LU,K.H. (1959) A correlation and path-coefficient analysis of components of crested wheat grass seed production. **Agron.J., 51**: 511-518.

JINDAL, S.K. (1989) Path coefficient analysis in fodder cowpea grown under rainfed conditions. **Madras Agric.J., 76**: 121-124.

JOHNSOWN, H.W. ROBINSON, H.F. and COMSTOCK, R.E. (1955). Genotypic and phenotypic correlations is soybean and their implications in selections. **Agron.J., 47**: 477-483.

USHAKUMARI, R., and CHANDRASEKHRAN, P. (1991) Genetic variability and correlation studies in fodder lalab *(Lablab purpureus* L.) **Forage Res., 17**: 1-5.

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AN APPRAISAL OF SEED HEALTH OF RICE IR 20 AS INFLUENCED BY PROVENANCE AND GENERATIONS OF MULTIPLICATION

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ABSTRACT

Significant differences were noticed in the percentage infection of seed-borne pathogens and white tip nematode *(Aphelenchoides besseyi christie)* in 33 seed samples of IR 20 rice belonging to three generations of multiplication produced at 11 locations. (6 in Madurai District of Tamil Nadu and 5 from Pondicherry) Of them, seeds from periyakulam recorded very low infection of seed-borne pathogens. The seed produced at Theni were totally from nematode infestation. Besides, nine samples of certified seed produced at eight selected locations in Madurai District and one from Karaikal also revealed significant differences. Certified seeds from Sedapatti, Theppampatti and Thirumangalam were free of seed-borne pathogens and seeds from Kottampatti, Thirumangalam and Vinayagapuram were completely free from nematode infestation.

KEY WORDS : Rice, Seed Health, Provenance, Generation Time, Effect

A number of pathogens and nematodes affect rice causing loss of vigour and viability during storage and ultimately affect the yield potential. *Aphelenchoides bessyi christie* White tip nematode is common in rice, feeding ectoparasitically on tender tissues of leaf primordia and developing grains (Israel *et al.*, 1964). By invading the inflorescence, it becomes seed- borne. Seeds having infestation level of 30 or more nematodes per 100 seeds were enough to cause appreciable damage (Fukano, 1962). Many of the seed-borne fungi were transmitted through seeds, more common being *Fusarium moniliforme, Alternaria alternata, Curvularia lunata* and *Trichoconis padwickii* (Sharma *et al.*, 1987) causing reduction in germination. Studies have indicated variations in the prevalence of individual fungi in respect of variety and location (Hossain *et al.*, 1976; Basak and Mirdha, 1985). Hence, experiments were conducted to study the influence of provenance and generations of multiplication affecting seed health condition of rice (IR 20) seeds conforming to three generations and from 11 locations as well as certified seeds produced in 9 selected locations.

MATERIALS AND METHODS

Representative seed samples of rice IR 20 were collected from the farmers saved-seeds belonging to three generations from 11 locations (6 from Madurai district of Tamil Nadu and 5 from the Union Territory of Pondicherry). The generations include the first, second and third after certified seed (G1. G2 and G3) and compared with