DISCUSSION
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The amount of importance of height in flax is much more than in linseed type as fibre yield is proportionate to the height of flax. Results on the genetic analysis of height elucidated that the additive genetic variances in both the types was the major component to control height. However, in both the types dominance component was significant but the proportion of additive in comparison to dominance one in flax was comparatively larger than that in linseed as could be discerned from the ratio of additive variance to the total genetic variance, in the former case it was 0.97 and in the latter the same was 0.83. Earlier observation made by Doucet (1981) and Yang and Bo (1981) that additive was a major component controlling height in flax supported the present observation in flax. There are, however, reports (Pavelek 1981, Doucet 1980) contradictory to the present observation.

as the type of genetic expression largely depends on the genotypic constitution of the parents taken into crosses. These observations did not, however, clarify how far the epistatic gene action or effect was in operation. In view of the adoption of non epistatic model of analysis, such information on epistasis was not available. Earlier, Naidu (1964) and Makhija (1974) reported a control of height by additive x additive interaction in linseed. Duplicate (Jeswani, Murty and Deshpande, 1962; Kansal and Gupta, 1981) and complementary (Kansal and Gupta, 1981) types of epistasis controlling height were reported. Evidences are there to show that both dominance and additive component did control the height in linseed equally (Kansal and Gupta, 1981; Patil and Chopde, 1983; Singh, Singh and Mishra, 1987).

In the present study additive genetic variance was found to control in major way the base stem thickness of both the types. As opposed to the present observation, Pavelek (1982) observed a control for the base stem thickness by dominance mainly. Such an observed difference in the results could be explained on the difference of the genotypic samples chosen for the respective studies. Base stem thickness, however, is not at all any way a cognizable trait to have any relevance to linseed type which is grown for seed yield. But the present result on base stem thickness has certainly confirmed that it is a heritable character and is under polygenetic control. Such a study of inheritance is not expected to help in developing breeding strategy for the improvement of seed yield of linseed but would allow to understand comparatively the inheritance of this character in two complexes of Linum usitatissimum. Hence it is necessary to reiterate that the proportion of additive variance to total genetic variance was of equal order in both the types as observed from this study.

The number of effective tiller in both the types was found mainly
controlled by additive genetic variances. However, in flax the dominance variance was found to have considerably larger role in controlling this character than in linseed. This would be quite evident from that result that the proportion of additive genetic variance to total genetic variance in flax was 0.69, whereas the same in linseed was 0.94. The earlier reports do not fully support the present observation as Singh, Pachauri and Tewari (1987), and Singh, Srivastava and Singh (1987) reported the major role of additive genetic variance in controlling this character and on the other hand Singh and Singh (1979) found dominance variance to have major role in controlling this character. Such an opposite type of result could emerge due to the fact that the parental genotypes crossed for elucidation of genetic variances differed genetically. In the case of linseed, major role of additive genetic variance (Anand and Murty, 1969; Badwal and Gupta, 1970; Badwal and Bains, 1974; Rai and Das, 1974; Chandra, 1978; Singh and Singh, 1979; Kumar and Chauhan, 1980; Patil and Chopde, 1981; Singh, Singh and Singh, 1981b; Patil and Chopde, 1982; Patil, 1987; Singh, Pachauri and Tewari, 1987), more or less equal role of additive and dominance (Dakhore, Narkhede and Khorgade, 1987a) and major role of dominance variance (Jeswani, Murty and Deshpande, 1962; Singh, 1963; Murty and Anand, 1966; Bhatnagar and Mehrotra, 1980; Kansal and Gupta, 1981; Thakur and Rana, 1987; Sharma, 1986; Thakur, Rana and Sood, 1987) were reported. Besides the above, epistatic gene action (Badwal and Bains, 1974; Rao and Singh, 1983) particularly complementary type of epistasis was observed by Singh and Singh (1979) and Patil (1987).

From the present study it has been found that additive genetic variance played a major role in controlling the days to flower in flax as well as in linseed. However, in both the cases, though dominance controlled this
character in lesser magnitude, it was found significant. The proportions of additive genetic variance to the total genetic variance in flax and linseed were 0.80 and 0.81 which could be very well considered to be of equal magnitude. Reports on the genetic control of the days to flower in flax made by other workers were mainly by additive (Yermanose and Allard 1961), mainly nonadditive (Alberchtson 1968) and also combinations of additive, dominance and epistasis (Baker, Pesek and Mckenzie 1972). Supporting evidences such as additive genetic variance played a major role in linseed towards expression of the days to flower were provided earlier (Joshi, Ramanujam and Pillay, 1962; Jeswani and Murty, 1963; Murty and Anand, 1966; Murty, Arunachalam and Anand, 1967; Badwal and Gupta, 1970; Anand, Rana and Jain, 1972; Badwal and Bains, 1974; Rai, 1976; Singh and Singh, 1979; Kumar, Chauhan and Jaimini, 1980; Singh, Singh and Singh, 1981a, 1981b, Kansal and Gupta, 1981; Patil and Chopde, 1982). Contrary to the above mentioned evidences, Singh and Joshi (1966), Vijayakumar, Rao and Mensinkac (1975), Chandra (1978), and Patil and Chopde (1982) observed major role of nonadditive gene action playing major role in controlling this character. Further, duplicate type of epistasis (Kansal and Gupta, 1981) as well as complementary epistasis (Jeswani, Murty and Deshpande, 1962) were also reported to play a considerable role in the expression of days to flower in linseed.

In contrast to flax the fibre yield in truly linseed type is not considered as an important trait for obvious reason for the utilization of linseed for seed yield. For comparative analysis fibre in linseed type was estimated and the genetic analysis for the same was done. Additive genetic variance comparatively in greater magnitude played a role of controlling the fibre yield in linseed than in flax. However, additive genetic variance did control the fibre yield in flax and was found comparatively greater in magnitude
than the dominance. While the proportion of additive variance to total genetic variance in linseed was 0.91 the same in flax was 0.68 indicating comparatively greater role of additive variance in linseed than in flax. Kupyanskaya (1979), Prygun and Polonetskaya (1985) and Singh, Pachauri and Tewari (1987) observed that additive genetic variance controlled largely the fibre content. It is however, not possible to confirm whether the present result on genetic control for fibre yield in linseed was also observed earlier, as no such report on the attempt of elucidation of genetic control was made in linseed except the one reported by Singh, Pachauri and Tewari (1987).

In fact it is not understood how stick weight could have relevance to fibre weight but it is sure that stick weight, in other words, total amount of wood produced by the plant, is expected to have relationship with lodging or nonlodging of stem, particularly the type grown for fibre such as flax where tallness as well as erectness are desirable characters. Anatomically within a stem of Linum usitatissimum in pericycle regions the fibre is developed and the groups of fibre constitute the fibre bundle of commerce (Hayward, 1948). The development of pericycle fibres are centripetal, the first ones differentiated being adjacent to the endodermis, while later formed ones are towards the phloem. Along the formation of fibre, thickening and proliferation of other tissues below the pericyclic regions such as primary and secondary phloem, primary and secondary xylem take place continuously during ontogeny and they essentially form the stick. Since fibre cells and other tissues below them are the results of an integrated and correlated development of the tissues offering mechanical strength to the plant, stick weight will certainly have relationship with fibre cells developed in the plant and the stick weight will have relation with the
fibre weight. Hence the study on genetic control of the stick weight is justified. The stick weight of linseed and flax was found to be under major control of additive genetic variance in the instant comparative study. However, the proportions of additive variance to the total genetic variance were quite different between two types. In flax the proportion was only 0.61 indicating a substantial role of dominance variance controlling this character, on the contrary the proportion of additive variance to total genetic variance was found to be 0.96 indicating a very minor role of dominance in controlling the character. Earlier observation made by Prygun and Polonetskaya (1985) in flax received confirmation from the present study that the additive genetic variance controlled the stick weight. No report on the mode of inheritance of stick weight in linseed is available. But the present investigation has led to prove that stick in linseed was under polygenic control and additive variance was the major component to control this trait.

Crude fibre percentage is an expression of the ratio of fibre to fibre plus stick weight and is considered to be a very useful derived measure based on which selection can be exercised towards increasing fibre percentage per plant in flax. For comparison, fibre percentage in linseed was taken for genetic study along with that of flax.

The present result has established that unlike other traits, the crude fibre percentage in flax was largely under the control of dominance variance with a lesser amount of additive variance controlling this character. The additive genetic variance was found to control in major way the crude fibre percentage in linseed. It would be more clear from the proportions of additive genetic variance to total genetic variance, which in the case
of flax was 0.46 and in the case of linseed was 0.79. Unfortunately no
previous research report is available on the inheritance of this trait except
the one in which Chung (1975) reported fibre ratio to have high heritability.
If the report of Chung (1975) is interpreted, it would thus mean that additive
genetic variability had the major control for fibre ratio.

Different types of results have been obtained as regards the inter-
action between general combining or specific combining ability and year
for different traits studied in the present case. The general and specific
combining abilities of flax interacted significantly for height, effective
tiller number and days to flower while those same genetic components
did not interact with year for the above mentioned traits in linseed type.
General and specific combining ability variances of stick weight and crude
fibre percentage of linseed interacted significantly with year while they
did not do so for the same traits of flax. These two genetic variances
for fibre yield of both flax and linseed did not interact significantly with
year. While general combining ability variances for base stem thickness
did not interact with year significantly in both the flax and the linseed
types, the specific combining ability in the case of flax for the same trait
did not interact with year but same variance in the case of linseed did,
interact significantly with the year. Hence it can be conveniently concluded
that wherever a particular genetic variance exhibited significant interaction
with year, that genetic component was susceptible to environmental variation
typical to years. On the other hand cases where such genetic component
did not interact significantly it is to be concluded that either general
or specific combining abilities or both were stable over the years. Patil
and Chopde (1981) from a diallel analysis over locations found that both
gca and sca for days to 50% flowering in linseed type showed interaction
with locations. Gupta and Basak (1986) conducting an experiment with sixty flax genotypes grown over three years found that genotypes significantly interacted with years as regards days to flower, plant height and fibre yield. However, such an observation was related to phenotypic interaction and as such this study could not focus on the interaction of genetic components and years. Singh, Pachauri and Tewari (1987) who undertook combining ability analysis of linseed types over two years did not, however, resort to combined analysis to infer directly whether gca and sca variances did interact with years or not. But an inspection of the ANOVA tables of their report showing mean sum of squares for gca and sca and the gca and sca effects over two years would indicate quite clearly that mean sum of squares and effects for plant height, tillers and fibre yield, the traits relevant to the present context, varied non unidirectionally with the years, perhaps, suggesting the possibility of existence of interaction between gca and sca variances and effects with years. In the present case, though statistical analysis of diallel table did show presence of interaction of gca and sca for some characters either of flax or of linseed, the estimated variances of gca, sca, gca x year and sca x year presented in different tables would clearly reveal a general trend that the estimated variances of interaction components were relatively much smaller than their estimated respective main genetic components except in the case of base stem thickness and crude fibre percentage where estimated sca x year variance of linseed exceeded their respective estimated sca variances. It is interesting to note that wherever genetic component interacted significantly, as a rule the estimates of the interaction between sca and year were invariably greater than their corresponding estimates of gca x year interaction. Such an observation leads to conclude that dominance variances, if interacted significantly with year, were comparatively more unstable than the interacting
additive genetic component. In view of more instability of $\text{sca} (b)$ it was thus felt necessary to find out whether any subcomponent of $\text{sca}$ or dominance ($b$) such as $b_1$, denoting mid parental deviation, $b_2$, indicating asymmetry of dominance gene distribution in parents used in crosses and $b_3$, a residual dominance not ascribable to any of the above two causes, exhibited any trend of interaction with years so that a general conclusion could be drawn. Relative proportions of variance for $b_1 \times \text{year}$, $b_2 \times \text{year}$, and $b_3 \times \text{year}$, wherever found significant, did not show any specific trend. In some case $b_1 \times \text{year}$, in other case either $b_2 \times \text{year}$ or $b_3 \times \text{year}$ was found to be the largest among the three first order interactions. That the first order genetic $\times$ environmental interactions, even though significant against their respective error variances, were not large enough to make their corresponding mean sum of squares either for $\text{gca}$ or $\text{sca}$ nonsignificant in most of the traits of two types of Linum except for stick weight and crude fibre percentages of linseed type where the first order interaction of $\text{sca}$ and year rendered respective $\text{sca}$ mean sum of squares not significant when tested for significance by first order interaction. Hence it can be concluded that in comparison to the mean sum of squares of $\text{gca}$ and $\text{sca}$, their interactions with year were considerably negligible, however, these interactions might have shown statistical significance against their error variances. It is to be emphatically stated here that considering the above evidences emerged from the present study, the general combining ability variances vis à vis additive genetic variances for most of the traits were proved to be fairly stable. But Moll and Stuber (1974) concluded that no general pattern of genotype-environmental interaction could be associated with specific type of mating system or with specific type of traits. Gardner (1963), Moll and Robinson (1967) and Stuber and Moll (1971) observed that genotype-environment interaction variances
in maize were found significant and relatively larger when compared with estimates of their corresponding main genetic variances and the second order interactions were greater than the first order interactions. The present study conducted over years keeping the location fixed, did not offer any scope to find out second order interaction and as such observations reported by Moll and Stuber (1974) could not be verified. However, results on first order genetic-environment interaction, though in many cases exhibited significance, were not relatively large enough as was found in maize by the above mentioned authors. In general genotype-environment interaction effects and epistatic effect contribute to biases for any genetic prediction made (Moll and Stuber, 1974) and experimental results from maize Otsuka et al (1972) and Stuber et al. (1973) commented that genotype-environmental interaction produced greater bias than epistatic effects when interpretation and predictions were made using data obtained in a single environment but when several environments are used for prediction values, biases arising out of the two types of effects become nearly equal. The genetic design followed in the present analysis did not allow to estimate separately the epistatic effects but in view of repetition of the experiments over the annual environments, it is reasonably expected that any bias of the estimate had likely been neutralised partially, if not fully and hence the future breeding strategy to be developed from the present genetic observations would likely to have more reliability.

The genotype-environment effect, particularly in a species like Linum usitatissimum, indeed assumes a major importance in view of the findings of Durrant (1962a,b; 1971; 1972) who identified plastic and non plastic types in flax and linseed genotypes. The plastic type was the one which underwent genetic changes in response to specific environment expressing altered phenotype and maintained the same for generations after generations
and such an altered type was termed as genotrophs. Durrant and Timmis (1973) on the experimental basis propounded that "plastic" type had a nuclear factor and a cytoplasmic factor responsible for plasticity so that when grown in specific environment would undergo permanent changes rendering the phenotype altered whereas the non plastic types had similar nuclear and cytoplasmic sites but without the factor rendering them incapable to alter into phenotype. Whether the expressed genotype-environment interaction recorded in the present study had any role of plasticity of genotype, in the sense stated above inducing genotype-environment interaction in the present was beyond the comprehension or detection by this type of experiments reported here. Certainly the presently reported observations on genotype-environment interaction hardly permit to find out any relationship leading to the metamorphosis to genotrophs as observed by Durrant and his associates. Timmis (1973).

The present observation on general and specific combining ability effects and also estimated additive and dominance variances for fibre yield and its associated traits offers an insight into the genetic situation to suggest breeding approach for improvement of fibre yield but certainly does not offer any scope to suggest any breeding approach for linseed keeping in view the improvement of seed and oil yield as data were not collected on these traits. The linseed type and their crosses used in present experiment were hypothetically accepted as if they were a separate class of fibre yielding types. Hence no attempt will be made per se to suggest any genetic improvement programme for linseed type.

A truthful phenotypic expression of a genotype largely depends on how far the genetic components such as additive, dominance and epistasis
are influenced by the given environment associated with growing condition. In case the genetic components are least affected by the given environment showing stability of genetic components, then the genotypic performance and phenotypic performances will be corresponding ones. In the present study it has already been concluded that results indicated that the general combining ability, in other wards additive genetic variance, for most of the traits studied was by and large stable over the years. The results of gca effects and their corresponding phenotypic mean performances of parents for most of the characters had strikingly one to one relationship. In linseed type first three top ranking general combiners for height, base stem thickness, effective tillers, days to flower and fibre yield were the same three top ranking phenotypic performers, explicitly speaking, were same as three top mean performers. Only for crude fibre percentage the top two general combiners were same as the two top phenotypically best parents and in the third rank there was an interchange of position. For height, effective tiller number, stick weight and fibre weight of linseed type LT 992, LT 38 and LT 65 in descending order were the best three general combiners and best three phenotypic performers. For days to flower in linseed types LT 65, LT 82 and LT 66 were the three parents to flower earliest and also were the best three general combiners for earliness of flowering. In linseed type the best mean performer as well best general combiner for base stem thickness and crude fibre percentage was the parent LT 66. The next two best general combiners and the best parental mean performers interchanged their position. It is thus quite obvious that the realization of striking similarity between best performing phenotype of the top three parents and best three general combiners was possible due to the stability of the expression of additive components in hybrid condition of the parents.
The situation in flax type was not that close as found in linseed. The parents FT 896 and FT 895 for height and fibre yield were the best general combiners as well as the best mean performing parents. For base stem thickness, effective tiller number and for delayed flowering the parent FT 889 was the best general combiner as well as the best mean performer and second and third top general combiners were same as the top mean performing parents. The parent FT 829 was the best general combiner for early flowering followed by FT 841 and FT 834 but the earliest flowering parent was FT 841 followed by FT 829 and FT 834. The parents FT 896 and FT 895 were the best three top ranking general combiners for stick weight whereas for this trait best mean performing parents were FT 895, FT 896 and FT 889 indicating a slight interchange of ranks. The best three top ranking general combiners for crude percentage of fibre were FT 837, FT 896 and FT 895 in descending order whereas for this trait the best three performing parents in descending order were FT 896, FT 897 and FT 841 indicating an interchange of position of the first two parents as regards their gca and mean performance.

It is to be mentioned here that magnitudes of gca effects of linseed types for height, base stem thickness, effective tillers, stick weight and fibre yield were much smaller in comparison to those for the above mentioned traits in flax but the gca effects for earliness of flowering and crude fibre percentage were two fold in linseed types than those in flax types for these two traits. Most significant finding about the gca effect was that the best general combiner for crude fibre percentage in flax had a value of 0.83 whereas in linseed type for the same trait the best general combiner (LT 66) had a value of 1.74. It thus strongly suggests that further search may be made amongst the linseed germplasm for finding out still a better donor parent of linseed which may be used for increasing fibre content.
in flax. Mention may be made that sea effect of the best specific combiners of the cross, LT 66 x LT 82, of linseed for crude fibre percentage was 1.58 whereas same effect of the cross FT 881 x FT 889 of flax 1.55 which was evidently slightly less than that of linseed. It is thus clear that a cross which yields the highest percentage of crude fibre percentage in linseed may be crossed to cross of flax type such as FT 881 x FT 889 followed by intercrossing among the segregants and by selection so that the best favourable recombination for fibre percentage can be selected. This suggestion has an obvious restriction as the difference in the plant type of the two Linum complexes has not been taken into active consideration as increase of fibre percentage should follow the desired plant type desirable for flax.

Since a clear insight about the genetic control of different characters of flax has been obtained from the present study a consideration towards developing breeding strategy may be thought of. There is clear two consideration about flax. The first one is to develop an exclusive flax type and alternatively to develop a dual type yielding fibre and seed. A dual type is obviously expected to be an issue of compromising between flax and linseed plant type demanding a sacrifice to different extent of fibre and seed yield as in the former case a fast vegetative growth without any lateral flower and fruit bearing branches and in the latter case an enhanced period of flowering are considered desirable. Hence an evolution of an exclusively flax type is to be envisaged.

Flax and linseed is predominantly an autogamous species (Howard and Khan 1923; Kadam, Kulkarni and Patel, 1940; Richharia, 1950). In view of this, an utilization of additive genetic variance towards effecting an improvement of flax is the only means. It has already been shown in Table 43 that proportions of additive genetic variance for all the traits
of both the types except the crude fibre percentage in flax were greater than 0.5, thus indicating a major role of additive variance in controlling these traits. Among the traits studied the most important ones were fibre yield, height and crude fibre percentage whereas the last named trait had low additive variance in flax whereas these traits in linseed had the quite high amount of additive variance and that is why a suggestion was made to utilize linseed type with high fibre content as donor to flax type. In view of the preponderance of additive genetic variance controlling the majority of traits of flax, best general combiners have to be chosen for crossing with a view to elevating the performance of each trait as well as striking a suitable combination of traits necessary for obtaining improved fibre yield. The parent FT 896 turned out to be the best general combiner for height, fibre weight and stick weight and the parent FT 889 was the best general combiner for base stem thickness, effective tillers and for late flowering and the parents FT 837 and FT 896 were the two top ranking general combiners for crude fibre percentage. The parent FT 896 or FT 889 or both in cross combinations showed the best or next to the best one specific combining ability for fibre weight, height and stick weight. The parent FT 896 or FT 889 was also found to be one of the parents for the cross combination showing best specific combining abilities for base stem thickness, early or lateness of flowering and crude fibre percentage of fibre. Exceptionally in the case of effective tiller number none of these two above mentioned parents was found to be in cross combination showing the first two best specific combiners but for this trait the cross showing third best specific combining ability had FT 889 as one of the two parents in cross combination. The present species of Linum being essentially a self pollinated species and in absence of practical or commercial
use of male sterile line, the utilization of dominance genetic variance, and for that matter utilization of specific combining ability has obviously to be ruled out. But mention of the best specific combiners for different traits has been made to show that the crosses of particular parents showing high general combining abilities did show high specific combining abilities. Hence crosses of these parents should be considered as base materials for further selection in different generations. To induce more of recombination intercrossing among the biparental progenies for some cycle would be a rewarding proposition. In view of having fairly satisfactory and good correspondence between phenotypic and genotypic performance as pointed out earlier, selection on the basis of phenotypic performance would likely to be effective. However, the sample of genotypes taken into this programme may prove limited for any breeding programme aimed at improving the fibre yield of flax and in view of this further attempt should be made to acquire broad based germplasm for identification of better genotypes, if any found.

Jeswani, Murty and Deshpande (1962) attempted to elucidate the genetic difference between linseed and flax by studying two crosses - one between linseed types and another between linseed and flax types and their different generations. They found wide difference in additive components between two crosses for plant height and in dominance component for tiller numbers. They analysed further for additive, dominance and interaction components and observed that estimates of genetic interactions such as additive x additive and dominance x dominance differed between the two crosses involving linseed and linseed and other linseed and flax. Their analysis of parent progeny regression showed that cross between linseed and flax had 80 percent more additive component than that had
by the linseed x linseed cross. They did not find any difference of additive component between two crosses for tiller number. But their investigation was not adequate enough to establish how far genetic architecture of flax and linseed varied. However, the present study has led to understand the similarities and differences in genetic constellation of flax and linseed types.

In flax additive genetic component for height was comparatively much larger than dominance while in linseed additive, though a major component, dominance in comparison to additive was quite substantial for height. Dominance variance was the major component for crude fibre percentage in flax whereas additive variance was the major component for the same trait in linseed. For remaining traits both in flax and linseed additive variance was the major controlling component. But relative proportion of additive variance to the total genetic variance was invariably greater in linseed than that in flax for the remaining traits indicating that dominance variance was greater in magnitude in the remaining traits in flax than that in the corresponding traits in linseed (Table 43). As a rule the direction of the expression of dominance for all the traits in linseed was significantly towards negative side indicating that smallness of the traits was dominant over largeness of the traits in linseed. But in flax the direction of the dominance was towards positive side for all the traits except for days to flower and crude fibre percentage for which direction was significantly towards negative side. Hence expression of dominance in a particular direction in the two types of Linum quite distinct and variable between the two types. As regards the interaction of gca (a) or additive variance and of sca (b) or dominance with the variation of year again showed some type of similarity and dissimilarity. Both gca and sca variances inter-
acted significantly with year for height, effective tiller number and days to flower in flax and gca and sca variances in linseed for these traits did not significantly interact with year. The gca and sca variances for stick weight and crude fibre percentage in flax did not significantly interact with the year, while the two genetic variance in linseed for these two traits interacted significantly with year. Neither in flax nor in linseed the fibre weight and base stem thickness did interact significantly with year excepting the sca for base stem thickness which interacted with year significantly in linseed. Thus the above mentioned observations have indicated the stabilities of the different genetic components over the years for two types of complexes of Linum.

Study of correlation between different traits of flax and linseed is another aspect of inspection to infer how due to different types of selection pressure the traits have become correlated or associated. Kumar and Singh (1970), Basu and Bose (1975) and Pospisil (1975) observed positive correlation between height and fibre yield in flax. While Basu and Bose (1975) found positive correlation between base stem thickness and fibre yield, Pospisil (1975) found the reverse correlation between the above mentioned two traits in flax. Ivanova and Matveev (1960) recorded positive correlation between fibre content and fibre yield of flax. Chawla and Singh (1983) in linseed found plant height and tiller number positively correlated with days to flower. Number of research results on correlation between traits in linseed are available but traits of linseed considered in the present study were quite different from the traits studied in linseed by other linseed breeders were quite different as they undertook study of correlation between traits relevant to seed and oil yielding crop and as such those traits have no relevance to the present context.

The correlations found between the similar types of traits in flax and linseed showed similarities as well as dissimilarities. It may be mentioned
that no attempt was made to compute correlation of crude fibre percentage with any other trait as the former one was a derived trait from fibre weight and stick weight. Three character pairs such as height-days to flower, days to flower-stick weight and days to flower-fibre weight in both types of Linum did not show any significant correlation between them. The following character pairs such as height-stick weight, height-fibre weight and stick weight-fibre weight in both the types of Linum showed positive and significant correlation. The correlations between height and base stem thickness and base stem thickness and fibre weight were significant and positive in flax but they were significant and negative in linseed. While base stem thickness had no correlation with tillers in flax, this trait was found significantly correlated in negative direction in linseed. Base stem thickness had significantly positive correlation with days to flower and stick weight in flax and same character was found not correlated with the above mentioned two traits but directions of correlation were negative. While days to flower was found significantly correlated in positive direction in flax, the same correlation was not found significant in linseed. Again the effective tillers in linseed was correlated significantly with stick and fibre weight but such corresponding correlations in flax were not significant.

In view of striking differences between flax and linseed as regards the magnitude of additive and dominance genetic variance, direction of the expression of dominance, interaction of additive and dominance components with the annual environmental changes and often opposite types of correlations for same trait between flax and linseed, it may thus be concluded that phenotypically and genetically flax and linseed differed widely. Such a difference in character association and genetic control
has been the result of human selection of flax and linseed in opposite purpose and direction. Results obtained from present study particularly on the amount of additive genetic variance in comparison to total genetic variance were quite suggestive. For most of the traits the amount of additive variance was found to be more in linseed than in flax, indicated comparatively more intensive human selection exercised on linseed than on flax. Since linseed and flax are predominantly self pollinated ones, more selection pressure would naturally accumulate more of additive genetic variance.