Discussion

During the past years pesticides, herbicides and chemical fertilizers have become the foundation of highly productive forms of agriculture in **"Green Revolution"**. However, accompanying their indiscriminate use carriers the risk serious changes in ecological symmetry and poisoning. As a result, more sustainable agriculture being brought to replace or compliment system for nutrient mobilization or biofertilizers are getting popular and new systems and being introduced to cater for different cropping system.

Sugar and distillery industries discharge their large quantities of solid and liquid waste. The conversion of these waste as compost provides a sound solution for their disposal and helps in meeting the nutrients requirements besides sustaining soil health by maintaining soil organic carbon matter status and reducing considerably the problem of pollution (Devmani *et al.,* 2006).

The use of biological degradation (mineralization/ sequence) of organic wastes as proceeds under natural conditions are degradation processes (anaerobic digestion, sulphate reduction, dentrification). It is the 1st main biological treatment step because they remove the organic pollutants and promote formation of very useful byproducts (resources). High rate micro-aerobic processes that the conversion of reduced sulphur compounds into elementary sulphur. The degradation part of the remaining, easily biodegradable organic pollutants, removal of colloidal matter including dispersed pathogenic organism by a coagulation process (McCorty, 1964, Young and McCorty, 1969). Removal of the small amount of remaining biodegradable matter for nitrification of ammonia and biological treatment N-removal process (nitrification combined with dentrification) by a physical chemical treatment step that is for the treatment of wastewater such as by conventional compost (Lettinga, 2008).

The spentwash liquid waste of industry serves an additional source of fertilizer for agricultural use and prevents the environment from pollution hazard. It has exorbitant load of secondary nutrient like Ca, Mg and S and its ameliorative potential in the reclamation of sodic soil can be well exploited (Soundarajan *et al.,* 2007).

The use of fresh and partial decomposed press mud cake (PMC) give rise to the incidence of disease and pests. Distillery effluent (spentwash) is hazardous but can be used for composting of PMC to produce enriched quality of compost (Rajanan *et al.,* 1996a). Fresh PMC has high carbon level and a very wide carbon and nitrogen ratio. Being organic in nature could serve as a vast store house of macro and micro nutrients in addition to being a very effective soil amendment.

Compost is not only an alternative to chemical fertilizer or manure but is also a nature's best protective covering to increase the soil's water holding capacity in clay as well as sandy soils, thus preventing evaporation of moisture. Compost inhibits growth of weeds, enhanced soil quality/fertility and encourages healthy root development microorganism feed on the organic matter provided in compost and naturally produce phosphorus nitrogen and potassium which keep the soil in a healthy balanced condition. Compost or compost extracts used as an organic fertilizer have beneficial effects on plant growth and considered as a valuable soil amendment (Gharib *et al.,* 2008).

Composting is a controlled microbiological process where microorganisms reduce solid waste and convert the raw materials into humus like material that provides an amendment for soil fertility. This process is controlled by the growth and activity of microbial succession which inturn, is governed by the composition of organic substrates under going decomposition (Gaur, 1999).

Composting process completed have two steps, firstly degradation of organic materials take place both physically and chemically like degradation process and secondly synthesis of stabilized humic substances which take place like synthesis process. Infact, composting is a micro-environment point of view. It is succession of the micro-organisms and their cumulative variations which cause the final decomposition of substrates (Gotass, 1956).

Decomposition is a complex and often a prolonged process and subsystem performs two major functions *viz.* mineralization of essential elements and formation of soil organic matter. According to Weigert and Evans (1964), dead organic material establishes a link in energy and nutrient transfer between autotrophic and heterotrophic organisms. The process of decomposition is mainly influenced appreciably by the composition of decomposer community (Stott *et al.,* 1986). Similarly Haritha Devi *et al.* (2009) investigated that microbial numbers and their extra cellular enzyme profile showed relative variation and were found increasingly more abundant at 28th day in vermicompost than in normal compost.

The decomposer varies from minute bacteria, actinobateria fungi to large invertebrates like earthworms and termites. They can be classified into macro fauna (protozoan, nematodes, rotifers, etc.) and micro fauna (arthopods, molluscus and large earthworm). Micro flora (bacteria, actinomycets and fungi) are the main decomposers of primary resources because these are within this group that the depolymerising enzymes such as celluloses, protease and oxydoreductase are found (Malani, 2007).

The decomposition (stabilization) of organic matter of biological action has been taking place in nature since left over first appeared on this planet while parameters like temperature and moisture remaining uncontrolled. In recent times, man has attempted to control, the process of decomposition by manipulating the involvement of organisms and directly utilizing the process for sanitary purposes by recycling and reclamation of organic waste materials. Maturity of the compost is of another critical importance and use of immature or insufficiently mature compost may cause hazardous effects to crop plants. Prediction of the compost maturity can be explained on physical and chemical parameters.

Temperature is a key parameter of determining the success of composting process. Moisture content is essential for heap microorganisms for their multiplication. After the first turning temperature depends on moisture content. The temperature changes alongwith microbes represent a typical succession of five composting phases (**psycrophillic, mesophillic, thermophillic, stabilization and poikilothermic**). The finding of the present study indicated that the psychrophillic phase is cool temperature phase.

In this phase aerobic bacteria (O_2 living microorganisms) are developed and these digest organic matter at the cool temperature and composting start in the substrates. These bacteria are the first to invade the compost heap.

Compost pH is the good indicator of its maturity. The present investigation revealed that the high pH value for the decomposition of compost at 8th day in all treatment of compost and then it declines gradually.

The high pH value just before 1st turning was caused by ammonia liberated from proteins of composting substrates. The long duration of the period of high pH in the compost was caused by interplay of biological and chemical factors. High pH and high NH_3 concentration was thermophillic phase leaded to NH_3 volatilization. The increases in pH were generally though to be the result of the volatilization and microbial decomposition of the organic acids which were originally present and the release of ammonia by microbes mineralizing organic nitrogen sources (proteins) that performed experiments by Farrell and Campbell (1970).

The initial pH of compost during the initial phases of composting has been reported by Poincolot (1972). pH dropped to near neutrality recorded in present experiment support the findings of Eiland *et al.* (2001). In present investigation, pH was lowered to near neutral in T_2 (6.8) and T_4 (6.9) treatment of compost at 32nd day of decomposition due to the oxidation of NH_4^+

to NO_3^-. The high pH and EC might become the inhibitory factors responsible for the phytotoxicity. This was conformity with those of Lau and Wong (2000). These results seem to indicate that increased pH may be an indirect indicator of high levels of microbial activity. Since these temperature range for maximal pH values, correspond roughly with those for maximal microbial activity.

In our experiment further it was observed that the final finished product after sufficiently long period of maturation is dark black or almost black colour in T_2 treatment of compost a crumbly texture, earthy smell and organic materials continue to decompose and are finally converted to biologically stable humus. It is possible to monitor the maturity of compost based on degree of darkening by visual observation (Saugahara *et al.,* 1979).

The wide range of values in temperature, pH and moisture content found throughout this process show that composting is a complex series of microbiological processes. Turning of decomposable material facilitate recalcitrant organic molecules to be completed by special group of microbes under relatively high O_2 and moisture status maintained during turning and the vast majority of the T_3 treatment of compost rather than other treatment analyzed fell within the latter optimum moisture content. Similar results have been supported by Jeris and Regan (1973). Macgregor *et al.* (1981), and Chatterjee *et al.* (2005). It is the succession of the microorganisms in each microenvironment and their cumulative action which cause the final decomposition. The range of pH over which microbial activity has been reported to be optimal composting is very wide and under condition of constant temperature and moisture to determine the optimal pH range for composting microorganisms. These results are similar to Jeris and Regan (1973).

Gaseous loss of N from compost include ammonia volatilization is a non-biological process that is favoured under high pH>7.5 and occurs during II turning. Dentrification is a biological reaction, where NO_3 is reduced to NO (Nitric oxide) and N_2O (nitrous oxide) and finally N_2 gas. Our findings of present study indicate that the higher rates of nitrogen in T_2 treatment and lower rate of nitrogen were found in T_1 of compost on 32nd day of decomposition. Elserafy *et al.* (1980) estimated a steady increase in nitrogen content with simultaneous decline in carbon content of composted material. The higher rate of mineralization of N during the early period may be positive effect of microorganisms on the organic waste. The nitrate is the main end point of manure decomposition and it is continuously released from organic matter undergoing decomposition.

It was observed that phosphorus maximum in T_2 treatment and minimum in T_1 treatment. Increase in phosphorus content was due to production of carbon dioxide (CO_2) as a result of mineralization of organic matter (Neely *et al.,* 1991 and Tyageshwari and Prumul, 2002). Singh and Yadav (1986) observed a significant increase in residual available phosphorus in soil with the addition of phosphate enriched PMC compost. Continuous mixing of reserve of phosphorus in the compost has already impoverished in most of the Indian soil (Pant, 2004).

These finding of the present study revealed that the increased potassium content of soil due to the spent wash compost treatment T_2 which contained large quantity of K. The decreased potassium content was observed in T_1 compost at 32^{nd} day of decomposition. These finding were in the agreement with that of Bertraman *et al.* (1989). Iqbal and Qadir (1973), Pathak and Sarkar (1994) and Mishra *et al.* (2010a).

The high temperature also accelerate the breakdown of proteins, fats and complex carbohydrates like cellulose and hemicellulose. The major structural molecule in plant to decrease the C/N ratio and chaetonium thermphile bacteria are active in this process.

The data revealed that there was tremendous improvement in the quality of compost being higher value of N.P.K. and lower organic carbon value due to incubation with cellulolytic fungus (*Trichoderma viride*) of compost in comparison to control (no effluent). The *Trichoderma viride* was found capable of decomposing the substrate (agroindustrial waste with other biodegradable) in 32nd day of decomposition. The increased nutrient value reduced the organic carbon value and narrowed the C/N, C/P and C/K ratio. Considerably *Trichoderma* was used in T_1, T_2 and T_3 treatment and observed that the maximum decomposing ability were found in T_2 with *Trichoderma viride* which enhanced decomposition of the substrate within 32nd day of decomposition in comparison to other treatment over control like Yadav (2012).

Our finding of the C/N ratio of composting material is most important factor governing the rate of decomposition and consequently rate of N-mineralization optimum levels of C/N ratio in the range of below 20 seems to be ideal for decomposition of immature or mature compost T_1, T_2 and T_3 showed decrease C/N ratio while T_2 (5-6) treatment the low C/N over control respectively. However, C/N in T_2 was observed 5.70 and 32nd day of maturity which revealed the decomposting efficiency of *Trichoderma viride* (Chauhan *et al.,* 2007). Similar observations were reported by Mishra *et al.* (2001b) that the faster decomposition could be due to lower lignin and narrow C/N ratio of legume straw.

Narrowing the C/N ratio was recorded that T_2 and higher C/N ratio in T_1 treatment of compost in Glyricdia, which may be due to high CO_2, evaluation in Glyricdia, which may be due to high content of N and narrow C:N ratio (Jyotimani *et al.,* 1997). The higher rate of mineralization of N during the Period may be due to positive effect of decomposers on degradable material. Highest ratio followed by the T_1, treatment, while the T_2 treatment recorded the lowest C/P and C/K ratio at 32nd day decomposition (Rao and Tarafactar, 1996).

Plant bioassay test for germination (%) and root growth of *Triticum aestivum* L. in extracts of immature or mature compost are observed. Germination (%) was significantly increased in the compost extract and follows the trends $T_1>T_3>T_2$ with root growth over the control. Germination index (G.I.) multiplying germination % and root growth is the most sensitive parameter that able to account for low phytotoxicity affecting root growth and seed germination (Zucconi *et al.,* 1981). T_2 compost extract has high germination index which revealed maturity of compost. On 32nd days of composting germination index remained > 100 in T_2 and T_3 treatments. However, G.I. < 100 % was observed for T_1 at 32nd day implying immaturity that's why these were phytotoxic.

Bioassay test signifies that germination index was significantly negatively correlated with T_1 and T_3. Compost which showed inhibited seed germination and root elongation. Similarly plant bioassay results showed higher seed germination and root growth for Chinese cabbage and tomato (Naidu *et al.,* 2010).

Nevertheless, high germination index in T_3 and T_2 had revealed maturity of compost. Enzyme activity (urease, phosphatase and dehydrogenase) of compost was significantly increased due to application of distillery effluent (Madhusudhana *et al.,* 2007). Haritha Devi *et al.* (2009) investigated that normal compost and vermicompost underwent changes in microbial numbers and enzyme activities. As process proceed the cellulose and amylase activities in vermicomposting were increased by 28^{th} day. They catalytic transformation was organic form to more readily available mineral elements to microorganisms and plant (Moreno *et al.,* 2006).

The level of EC (ds/m^{-1}) was lower in T_2 compost than T_3, T_1 over control. Neutral pH in T_2 and T_3 treatment were recorded over control. Although the high EWC would cause a significant inhibition of root growth and germination of *Triticum aestivum* L. Therefore, EC concentration could be the major factor affecting seed germination and root growth EC and T_2 and T_3 had shown the higher germination index which revealed the composting rate was accelerated by *Trichoderma viride*. Hence, quality of compost increasing the high pH and EC might become the factor, which was responsible for the phytotoxicity.

The organic residues added to the soil must be decomposed for nutrient recycling and availability of nutrient for plant the organic residues contained cellulose lignin and other. Polysaccharides that decomposition was difficult. Application of organic nature along with fertilizer and only increased the efficiency of the latter, but also had beneficial effects on the succeeding crop and soil. Despite several hurdles for overall interact of sustaining soil productivity, the use of organic manure had to be encouraged (Prasad, 1990).

The increase available N, P and K content was due to the application of spent wash biocompost and bios per (Sertranon *et al.,* 1989 and Davmani *et al.,* 2006). The increase in available nitrogen would be attributed to the release of nitrogen from organic during the course of decomposition as observed by Tiwari *et al.,* 1998).

Seed germination is one of the major aspect of plant physiology to understand an actual development in an organism one has to go through in its life cycle. Plant development is a cyclic process. Germinating seed is a convenient plate to begin because seeds are quiescent or resting organs that represent normal hiatus in life cycle. When the condition are appropriate the seed will renew its growth and gummites. Such an important phenomenon will be affected by different condition it was cleared table 3, 4, 5, 6 that percentage germination showed increase in T_1, T_2 and T_3 than control.

The seed germination obtained in the present study was presumably due to the physiological and biochemical changes that occur as a result of seed germination (hardening) which would have improved the germination potential (radicle thrust) or the resistant caused by the revealed compost effect on seed germination % of both test crops to maximum germination percentage % on both in T_2 treatment and minimum in T_1 compost treatment, while moderately in T_1, T_2 and T_3 treatment of compost such changes include greater hydration of colloids, higher viscosity and caloricity of protoplasm, increased pound water potential, which ultimately result in earlier and uniform emergence of germination consequently to seed hardening were reported in paddy crop by Joseph and Nair (1989).

Observation noted from the present study that the germination of both was similar to earlier reports and maximum effects have been seen in the T_2 treatments of compost study made by Datta and Gupta (1983), Haritha Josephine *et al.* (2002). and Rathinasamy and Lakshmi Narashimanan (1995). The maximum effect of FYM (Farm Yard Manure) on growth and yield of legumes have also been reported by Mishra and Sharma (1995).

The seed germination, seedling growth and dry weight of radicle and plumule were found to be decreased in both test crop similarly increase in effluent concentration in six varieties of groundnut (*Arachis hypogea*) as reported by Sundramurthy and Kunjilthapathan (2000) and Singhal *et al.* (2003). These act as retardant to Plant growth since they have been reported to affect the water absorption and other metabolic process of the plant (Khosla, 1980). The major cause for inhibiting the growth was higher salt concentration in the rhizosphere but diluted effluent did not affect the plant growth. Result are in lines with the finding of Anjumfarooqui (1999). Result showed that T_1 increased the seed germination and germination relative index (G.R.I.).

In respect to seedling vigour the data had indicated that T_2 treatment recorded significantly improve as against of control. The increased vigour index in T_2 due to *Trichoderma viride* inoculation was presumably an account of the growth promoting substances produced by ptera. These results were in conformity with those of Girija *et al.* (1994). The increased vigour index observed as a result of seed hardening was seen through an earlier germination which later reflects on shoot and root length and ultimately on the vigour of the seedlings. Similar improvement in seedling vigour had been achieved through seed treatment with *Azospirillum* in cereals. These findings were observed by Govindhan and Purushotaman (1984).

The growth performance of the result was that T_2 treatment of compost, seedling growth of *Triticum aestivum* L. and *Trigonella* *foenum-graecum* L. are influenced over control. Observed length of radicle and plumule and vigour index increase with seedling age. Observation as slight promotion and inhibition of seedling growth by compost. Generally the growth of root was more inhibited as compared to shoot. The length of root and shoot were generally smaller in the treated plant than control. The decrease in length of root and shoot is quite significant in T_1 and T_3. Moreover the T_2 treatment of compost revealed promontory for root and shoot length of *Coriandrum sativum* L. cv. Kalmi and *Phaseolus aureus* Roxb. Cv K-851 (Kasyap and Ali Khan, 2005). The root and shoot growth were also affected by phosphorus efficiency directly or indirectly of plant height in T_2 treatment of compost. Treated soil revealed highest growth while in T_1 treatment of compost showed decreased significantly over control. As earlier report on the plant height might be completely inhibited if the T_3, T_2 and T_1 treatment of compost over control.

The initial growth of seedling completely depend upon the stored matter in seeds for energy and carbon requirement. Unless these achieved the capability of photosynthesis. In such seedling dry weight will show an increasing trend with time. However, the present experiment dealing with the effect of compost on the growth of seedling. The phytomass of seedling has been observed increase in T_3 treatment of compost while dry weight of elongating root and shoot gradually decreased in T_1 treatment due to depletion of the stored food materials.

The significant decrease in phytomass could be due to synergistic effect of pollutants on metabolic processes. This commemorates the finding of Jain (1980) and Bhargava (2000). It was apparent that dry weight of root and shoot increased with seedling age and were associated with a decline in dry weight. The substantial reduction in dry weight of *Ocimum gratissimum* from T_1 and T_3 treatment of compost might be due to the lower nutrient status and high salt concentration in soil, high osmotic pressure of the roots, which effects various metabolic pathways of plant leading to dry weight (Goel and Kulkarni, 1994).

Saroj *et al.* (2002 and 2004) reported inhibitory effect of *Ziziphus mauritiana* on dry weight of wheat and mustard and stimulatory effect on fresh and dry weight of cluster bean. Similar stimulatory effect of some perennials on growth and phytomass of annual crops have been recorded (Bisla *et al.,* 1992). Finding of present investigation have been supported by Narwal and Tauro (1994) and Taheruzzaman and Kushar (1955). The reduction in dry matter accumulation in pods of inter-cropped green gram was mainly attributed to the lower dry matter producing ability due to the presence of associated crop of pigeon pea. Similar reduction in dry matter in green gram and pigeon pea has been reported by Haushal and Malik (1988).

The **chlorophyll indicator** of plant health is the essential component for photosynthesis and occur in chloroplasts as green pigment in all phytosynthetic plant tissue. They are bound loosely to proteins but are readily extracted inorganic solvent such as acetone or ether. Chemically, each chlorophyll molecular contains a porphyrin nucleus with a chelated hydrocarbon side chain attached through a carboxylic acid group. The percentage loss of total chlorophyll content must be properly monitored after drying to ensure the colour retention (Arjunan, 1980).

The chlorophyll ‘a’ and chlorophyll ‘b’ are the best known found in all autotrophic organisms except pigment containing bacteria (*Rhodospeudomnas virdis*) (Jain, 2002). The chlorophyll molecules has as cyclic tetrapyrrolic structure (Porphyrin) with an isocyclic ring containing a magnesium atom as it centre (Devlin and Witham, 1997).

In the present investigation data on the maximum chlorophyll content revealed that T_2 treatment of compost Proto Chl., Chl. ‘a’, Chl. ‘b’ and Total Chl. (a+b) content of both crop and minimum content of chlorophyll occurred in T_1 compost at 60th days after sowing. The study in the poly bags culture trials. The Chl. ‘a’, Chl. ‘b’ and total Chl. on 60th DAS were influenced significantly by compost treatment and nutrient status. Similar finding were recorded by Sinha and Sakal (1993). The increase in chlorophyll content was probably the favourable effect of the T_2 treatment of compost. The joint application of mineral nutrient standard and organic manure on the synthesis of chlorophyll. Our finding to be supported by Wankhede *et al.* (1993). The Chl. 'a', Chl. 'b' and Total Chl. (a+b) increased with increasing content of nutrients recorded in T_2 treatment of compost (Sharman and Bhandari, 2002).

Peng *et al.* (1993) also observed higher chlorophyll content with higher levels of nitrogen (Pickiclika and Rox, 1992). The improvement in morphological parameters under the influences of N might have resulted in larger canopy development and presumably higher chlorophyll content of leaves as N actively participates in its formation. Since, both these components have a profound influence of photosynthetic efficiency of plant. This might have lead to higher accumulation of dry matter (Kunyaporn and Kongsarkar, 1992). These finding are in the close agreement of Rao *et al.* (1983) and Vgherja and Chundhawat (1992).

FYM which leads to higher density of chlorophyll in leaves (Peltonen *et al.,* 1995; Aishwatt *et al.,* 2003). The interaction effect of N levels with P and with FYM on chlorophyll content was found to be remarkably higher in T_2 treatment and lower in T_1 treatment of compost over control at 60^{th} day after sowing.

The reduction of chlorophyll may be attributed to the reduction in Mg^{+2} ion is present in chlorophyll molecules. Therefore, deficiency of Mg^{+2} will leads to less chlorophyll synthesis. Inhibition of chlorobiosynthesis might occur at chlorophyllide state by interference with the enzyme Chl. 'a' reductase (Bhattacharya and Chaudhari, 1994). Potassium deficiency also caused decreased chlorophyll synthesis (Treshow, 1970). The reduction in Chl. 'a' is dependant on the duration of compost treatment and the degree of response exhibited by the cultivars.

Visual observations in this study have suggested that lower rate of nutrients in compost caused a decrease in branches inhibition. It is observed that T_2 treatment of compost enhances formation of florigin hormone which depicts early flowering in comparison between control T_1 treatment of compost. The compost creates a disturbance of hormone while T_2 enhanced the formation of florigin hormone. The data indicated to days to 50% flower are different in accordance to the compost treatment in *Triticum aestivum* L. and *Trigonella foenum-graecum* L. The T_2 compost has a favourable impact on days to 50% flowering. The compost decreases the no. of flowers, ovule per pistel and pod or seed. Our findings are in conformity by Srivastava and Verma (1981). The beneficial effect of medium level of available phosphorous in T_2 compost on flower primordial inhibition, stimulation of growth and formation seed (Patel *et al*., 2003). Positive effect of compost (FYM) on the yield of grains of legumes have also been reported by Mishra and Sharma (1995). The Promotive effect in our study revealed that T_2 compost on yield and yield attributes in *Triticum aestivum* L. and *Trigonella foenum-graecum* L. which depicts higher yield in comparison to compost over control. In T_1 has lower rate of nutrients (Tandon, 1991, John, 1994, Varavain *et al.,* 1997 and Salam *et al.,* 2004).

Seed yield of *Triticum aestivum* L. increased with increasing levels of phosphorous application as report of Rao *et al*. (1993) and Singh and Ali (1994). The T_2 compost due to conditions of higher amount of nutrients caused better soil conditions and thereby to Stimulatory effect on the growth of the plant produced more livecuriant plant automatically leading to higher drug matter production (DMP). Both the superposition of T_3 compost in fertility status increased the seed yield numerically.

Ali *et.al.* (1999) observed non-significant linearly component for seed yield plant^{-1}, no. of umlets umbel^{-1}, no. of seeds, no. of primary branches plant^{-1} and days to maturity. The linear and non linear components were significant for plant height 1000 seed weight, harvest index and oil content in *Triticum aestivum* L. (Singh and Shah, 2003). Higher yield obtained under T_3 treatment might be due to significant improvement in growth parameters as a result of favourable moisture supply to the crop. Similar results were reported by Trivedi *et al*. (1994) and Kavitha and Wahab (2001).

The highest net production was also obtained under T_2 compost. This increase might be due to improved no. of branches plant^{-1}, no. of pods plant^{-1} and pod length (Srivastava and Verma, 1981; and Kalita, 1989). This was found in conformity with the findings of Gupta *et al.* (1981) for the day to maturity, plant height, pd plant^{-1}, seed pod^{-1} and 1000 seed weight (Naidu *et.al*., 1991; Sharma *et al*., 1993 and Jahangirdhay *et al.*, 1994).

The faster growth of plants as evidenced from increased biomass plant^{-1} with T_2 compost subscribe to the views that these was better availability of metabolites and nutrients which synchronized to the demand for the growth and development of each reproductive structure of the coriander plant (Sharma and Israel, 1991 and Keenyaporn-Kongsarkar, 1992). The major essential nutrient for most plant species plays a crucial role in plant growth and development. Application of compost on no. of seed and 1000 seed weight of *Triticum aestivum* L. and *Trigonella foenum-graecum* L. observed in compost treatment. It is observed that the decrease in weight of seeds in T_1 treatment has been correlated with the reduction of photosynthesis. This decrease in yield resembles to the decrease in phytomass is terms of both leaves and stems. Similar observation has been made by Jain (1980), Verma (1993) and Manisha *et.al.* (2003). The significant effect of T_2 compost increasing in yield parameter by the higher content of phosphorus in compost. The increase in yield was boosted by the increase in no. of pods/umbel^{-1} and 1000 seed weight. Similar findings have been found by Tyageswari and Prumul (2002) and Ghosh *et.al*. (1985).

The variation in the proportion of harvest index reflected on the differences in the total dry matter produced in biological yield. The situation appears to be a common feature at all creates as reported by Shukla and Dixit (1996). The relative ranking of the harvest index did not change in which every way the biological yield is estimated and that the root dry matter remains almost, unaltered even through the total dry matter showed a progressive increase from root leaf stage to maturity to explains the constant ranking of harvest index. The total dry matter plant^{-1} was positively correlated with yield. Costa (1991), Madhuri *et al*. (1994), Tolessa (1998) and Khan *et al*. (1999) reported significant improvement in yield components with increase in nutrient supply (Imran *et al*., 2002).

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