1. BACKGROUND

In intensive farming systems, organic materials and soil nutrients are quickly depleted, for this reason, it is necessary to use new scientific methods to meet the ever-increasing needs of the growing population. Therefore, in order to achieve optimal yield, there is a need to replace nutrients. Based on this, the management of agricultural systems should be seriously revised and new systems should be designed, whose priority is long-term stability and, at the same time, maintaining production in the short term. Among these new scientific methods is ecological agriculture, which is an integrated agricultural system based on ecological principles, in which the quality of products is more important than their quantity (Moridian, 2019). Long-term experiments in fixed plots of combined use of organic and chemical fertilizers showed the greatest increase in the amount of soil organic carbon compared to the use of each of the organic and chemical fertilizers alone. The use of organic fertilizers with their effect on soil stability and self-regulation should be considered. Organic fertilizers have an effect on the quantity and quality of carbon and soil capacity in storing and releasing nutrients needed for plant growth during the process of decomposition and mineralization. The use of organic fertilizers is more effective in maintaining the structure of the soil and increasing its quality than directly helping to increase the yield of crops (Alipoor Miandehi *et al*., 2013). Abdel Gawad *et al*. (2019) stated that the increase in the green cover of the plant due to the use of basic chemical fertilizers, especially nitrogen, and as a result, the increase in the amount of radiation and materialization, were cited as the main reasons for the increase in the production and accumulation of dry matter and the increase in the plant biomass. Arazmjo *et al*. (2010) stated that the application of chemical fertilizers has the greatest effect on increasing the amount of photosynthetic pigments in the plant and increase in pigments leads to an increase in the amount of material production and as a result, an increase in the accumulation of dry matter, fresh and dry yield of edible stem. Manure plays an important role in improving physical, chemical and biological properties of the soil. Manures contain a low concentration of plant nutrients and they have a slow acting nature, organic manure alone may fail to tend the high nutritional requirements of crops (Hossian *et al*., 2002). Also, Cassman *et al*. (2017) pointed out the relationship between the use of basic chemical fertilizers and the increase in the amount of photosynthetic pigments in the plant and stated that this increase in the amount of pigments has an important effect in increasing the rate of materialization and accumulation of dry matter. In general, the simultaneous application of chemical and manure fertilizers, along with calcium and sulfur, has led to an increase in nitrogen content in the plant. This increase has also resulted in higher levels of chlorophylls and carotenoids, which contribute to enhanced greenness, better sunlight absorption, increased production of photosynthetic substances, and ultimately improved

growth and dry matter yield in asparagus. Many factors like soil fertility, imbalanced nutrition, disturbed soil properties, cultivars being grown weed infestation etc. limit its yield worldwide. Different management practices are adopted to increase and optimize the maize yields. For example, use of organic manures alongside inorganic fertilizers often lead to increased soil organic matter (SOM), soil structure, water holding capacity and improved nutrient cycling and helps to maintain soil nutrient status, cation exchange capacity (CEC) and soil's biological activity (Saha *et al.*, 2008). Although chemical fertilizers are important input to get higher crop productivity, but over reliance on chemical fertilizers is associated with decline in some soil properties and crop yields over time (Hepperly *et al.*, 2009). Therefore, an integrated use of inorganic fertilizers with organic manures is a sustainable approach for efficient nutrient usage which enhances efficiency of the chemical fertilizers while reducing nutrient losses (Schoebitz and Vidal, 2016). Integrated nutrient management practice is recognized as a sustainable option for reinstating soil health, improving soil organic C, and sustaining the overall system productivity (Fig. 1).

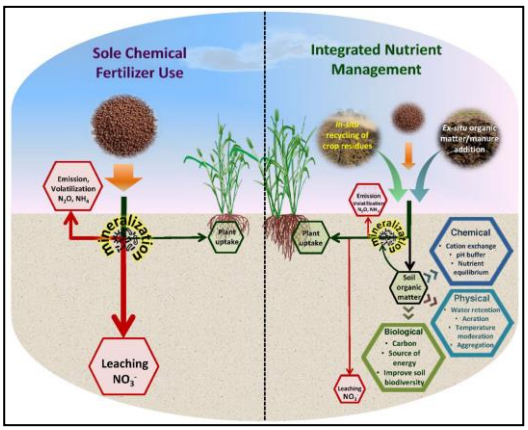

Fig. 1. Contrasting influences of sole chemical fertilizer vs. integrated nutrient management on the nitrogen pools, mineralization, leaching, and volatilization fluxes (Bhardwaj *et al*., 2022).

According to the report of Roustaei *et al*. (2009) the use of organic fertilizers in combination with chemical fertilizers increased growth and accumulation of dry matter in corn. The reason for this situation is the better and timelier supply of nutrients needed by the plant, especially nitrogen (which is needed in all stages of plant growth). Nitrogen increases the durability of the leaf surface, increases the photosynthetic materials during the growth period of the plant, and causes an increase in the number of branches and their final volume, which ultimately increases the amount of dry matter. Lenardis *et al*. (2016) reported an increase in the rate of vegetative growth and as a result an

increase in the fresh and dry yield of edible stems in coriander plants with the application of basic chemical fertilizers, which was consistent with the results of this research.

2. OBJECTIVES

Current research was done to assess effect of macro nutrient (Nitrogen) on chlorophyll content of cereal crop as an effective trait on seed yield.

3. EVIDENCE ACQUISITION

Current research was conducted according evaluate results of valid researcher.

4. RESULT AND DISCUSSION

Shadab Niazi *et al*. (2017) by evaluate the effect of different level of vermicompost (0, 2.5 and 5 t.ha^{-1}) on mung bean, reported the highest protein yield and seed yield were obtained from 5 t.ha^{-1} vermicompost and the least of these traits were due to non-use of vermicompost. Increase protein percentage with using bio-fertilizers is due to the effect of bacterial inoculation that increased the effective regulation of the growth, physiological and metabolic activity of the plant (Eidy Zadeh *et al*., 2012). Fig.2 describe effect of biologic fertilizer to decrease application chemical fertilizer.

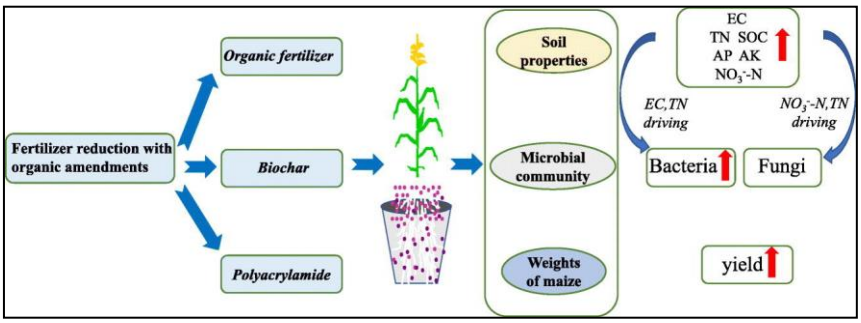

Fig .2. Effect of biofertilizer to reduce consume chemical fertilizer (Han *et al*., 2021).

Combined application of organic fertilizer and urea fertilizer or combination urea fertilizer and polyamines significantly increased yield, vegetative growth and chlorophyll index (Zeid, 2008). Adesoji *et al*. (2018) reported application of 60 kg N ha^{-1} produced significantly longest panicle which was at par with application of 90 kg N ha^{-1}. In combined means, application of 30, 60 and 90 kg N ha^{-1} increased length of sorghum panicle by 2.0, 5.9 and 4.7% when compared with no zero N, respectively. Azimi *et al*. (2013) found that application of Super nitroplass biofertilizer with Phosphate barvar2 treatment has the highest seed yield (7.6 t.ha^{-1}) and non-application of biofertilizers treatment has the Pishtaz cultivar has the lowest seed yield (6.3 t.ha^{-1}). Some researchers also have a significant increase in maize leaf area index of up to 120 kg N ha^{-1} combined with biological fertilizers (Mirshekari *et al*., 2009). Nouraki *et al*. (2016) reported mixing of biological fertilizers with chemical fertilizers could reduce the needs of chemical fertilizers up to 25%

and these results are comparable to the application of 100% chemical fertilizers. Therefore, the best hybrid maize is the single cross 704 that has good yield potential when the chemical fertilizer is used at either 25% or 50% of the current application when mixed with the biofertilizer. Other studies determined that plant growth was improved even when the nitrogen fertilizer applied was reduced by 30-35% as long as the seeds had been inoculated with growth promoting bacteria. Tarang *et al*. (2013) reported applications of Nitroxin biofertilizer and chemical fertilizer (400 $kg.ha^{-1}$ urea with 300 $kg.ha^{-1}$ ammonium phosphate) had a significant effect on traits of root dry weight, number of seed per row (36.5), number of seeds per ear (458.56), 1000-grain weight, seed (13.23 $t.ha^{-1}$) and biological yield (26.4 $t.ha^{-1}$) , and harvest index (53.88%). Cheraghi *et al*. (2016) studied the effect of organic manure and phosphorus fertilizer on yield and its components of bread wheat and reported that the combined application of organic manure or vermicompost with chemical fertilizer has a better effect on yield and yield components of common wheat rather than single application. On the other hand combined application of organic and chemical fertilizers had more efficiency due to some positive interaction between their microorganisms in the soil that led to a synergistic effect and therefore lead to an increase in seed yield. Potals (2017) reported that the maximum plant height was produced in rice plant with the use of biological fertilizers with consumption of 180 $kg.ha^{-1}$ nitrogen.

5. CONCLUSION

Use of chemical fertilizers adds large amounts of nutrients to the soil, plants are not able to absorb all these nutrients and materials so that the material accumulation over years has led to the current acute problems such as erosion, soil destruction, environmental pollutions, salt accumulation, and changes in pH of the soil and thus reduced fertility, creation of undesirable complexes, reduced levels of organic carbon, biodiversity loss, genetic erosion, and finally the disruption of the food chain. So combined application of organic and chemical fertilizers to alleviate negative effect of chemical fertilizer and produce crop economically.

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