



# Evaluation of the effects of organic and chemical fertilizer on quality and yield of flue-cured tobacco under irrigated and rainfed conditions

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## Introduction

Traditional agricultural practices reduce organic matter and soil fertility and also cause reduction in quality and yield in many parts of the world. Therefore, attention to the preservation of soil organic matter seems necessary and also, in order to create stability in soil fertilization, it is necessary to use renewable sources such as organic fertilizers.



Fig 1. Photos of experimental/sampling practices in growth stage of tobacco

## Materials and Methods

For this purpose, a completely randomized block design was performed with 12 treatments in 4 replicates in two rainfed and irrigated conditions for one year on K326 tobacco cultivar using MSTAT-C. Treatments were: T1. cow manure 10 tons per hectare; T2. cow manure 20 tons per hectare; T3. no fertilizer; T4. 100% chemical fertilizer; T5. enriched poultry manure 450 kg per hectare; T6. enriched poultry manure 450 kg plus 200 kg potassium sulfate per hectare; T7. enriched poultry manure 650 kg per hectare; T8. enriched poultry manure 650 kg plus 150 kg potassium sulfate per hectare; T9. enriched poultry manure 850 kg per hectare; T10. enriched poultry manure 850 kg plus 100 kg potassium sulfate per hectare; T11. Vermicompost 5 tons per hectare; T12. Vermicompost 10 tons per hectare.

## Results and Discussion

Variance analysis in rainfed condition showed that all quantitative traits (leaf length, width, thickness, green weight, dry weight, price, gross income, net income, leaf area index) were significant at the one percent level and in qualitative traits relative water content, cytoplasmic membrane, chlorophyll b, chlorophyll ab and carotenoids were significant at 1% level and chlorophyll a was significant at 5% level and proline amino acid was not significant. The best treatment in rainfed condition was enriched poultry manure 650 kg plus 150 kg potassium sulfate per hectare. In variance analysis table in irrigated condition all quantitative traits (leaf length, width, thickness, green weight, dry weight average tobacco price, gross income, net income, leaf area index) were significant at one percent level and in qualitative traits relative water content and cytoplasmic membrane were significant at 1% level, chlorophyll a and chlorophyll ab was significant at 5% level, proline amino acid, chlorophyll b and carotenoids was not significant. The best treatment in irrigated condition were enriched poultry manure 650 kg plus 150 kg potassium sulfate per hectare, enriched poultry manure 650 kg per hectare and cow manure 10 tons per hectare.

## Recommendation

The best treatment in irrigated condition were enriched poultry manure 650 kg plus 150 kg Potassium sulfate per hectare, enriched poultry manure 650 kg per hectare and cow manure 10 tons per hectare



Enriched poultry manure  
650 kg plus 150 kg Potassium



Cow manure 10 tons per hectare

## References

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