

# Effect of Different Doses of Gamma Irradiation on the Growth and Yield Attributes of Tomato

Rahul Biswas<sup>1</sup>, Sabikun Nahar Dina<sup>2\*</sup>, Dr. Md. Azizur Rahman<sup>1</sup>

<sup>1</sup>Department of Horticulture, Faculty of Agriculture, Bangladesh Agricultural University, Mymensingh 2202, Bangladesh

<sup>2</sup>Department of Soil Science, Faculty of Agriculture, Bangladesh Agricultural University, Mymensingh 2202, Bangladesh

## INTRODUCTION & AIM

The tomato (*Solanum lycopersicum* L.) fruit is one of the most popular, as well as important, commodities in the world. Tomatoes are one of the world's largest vegetable crops in terms of production volume.

The present research work was undertaken with the following objectives

- To select the suitable genotype of tomato that ensures higher growth and yield
- To find out the most effective gamma irradiation dose in relation to growth and yield
- To assess the effect of the interaction between suitable gamma irradiation dose and genotype on the growth and yield of tomato

## METHODOLOGY

### Treatment of the experiment:

**Factor A:** Gamma irradiation doses: 200 Gy, 250 Gy, 300 Gy, and Control (without irradiation)

**Factor B:** Collected three genotypes.

(i) LTS, (ii) LT, and (iii) BTP

The experiment was laid out in a Randomized Complete Block Design (RCBD) with three replications.

## RESULTS

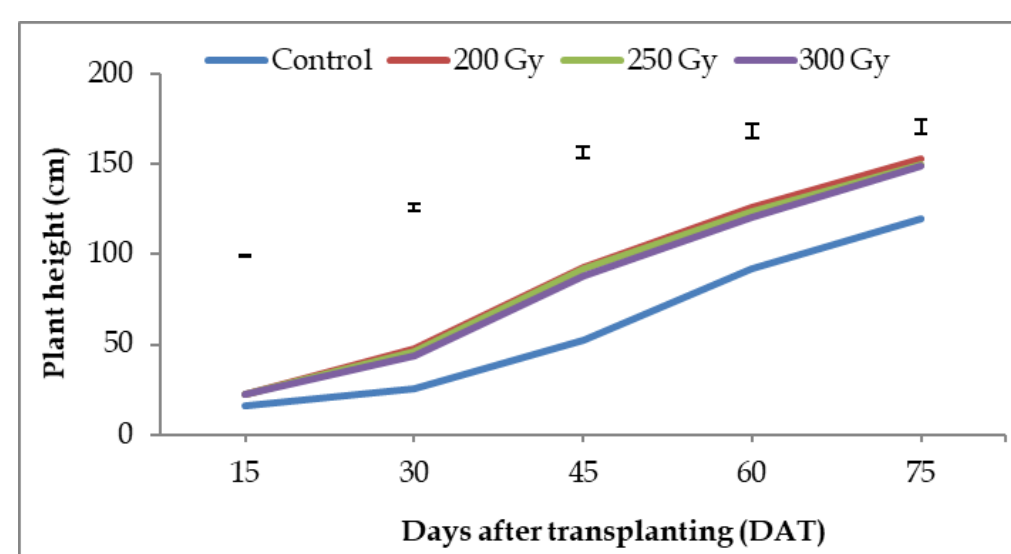


Figure: Effect of different gamma irradiation doses on plant height at different days after transplanting. Vertical bars represent LSD (0.01)

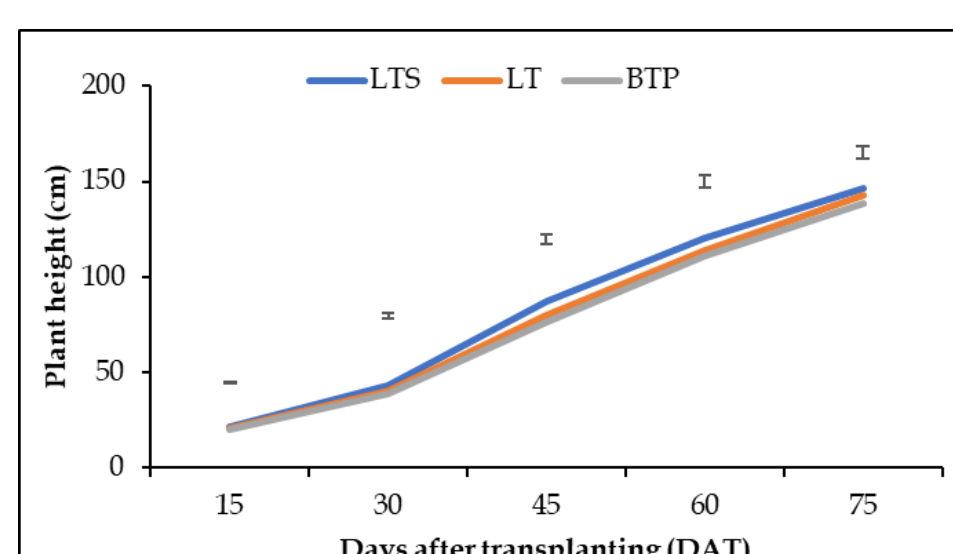


Figure: Effect of genotypes on plant height at different days after transplanting. Vertical bars represent LSD (0.01)

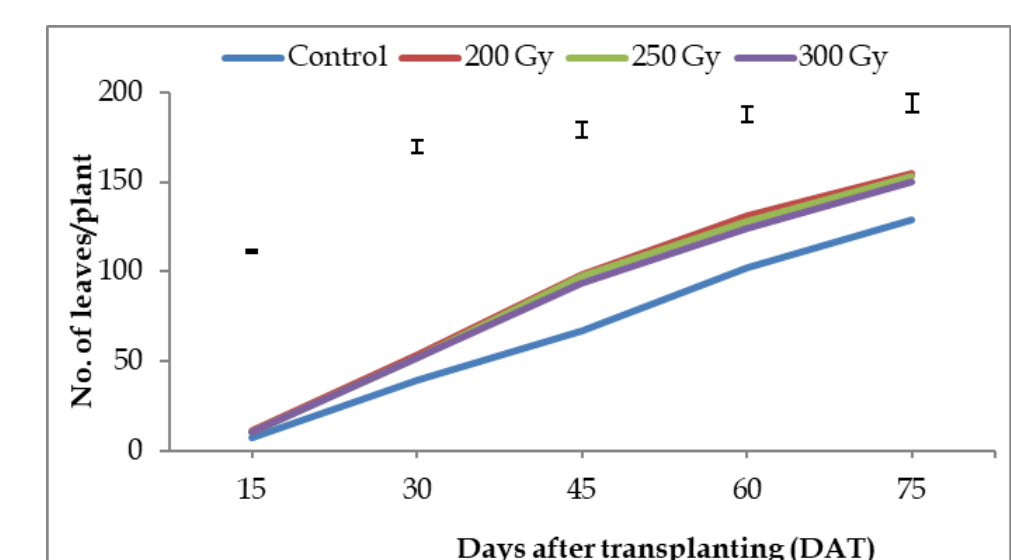


Figure: Effect of different gamma irradiation doses on the number of leaves per plant at different days after transplanting. Vertical bars represent LSD (0.01)

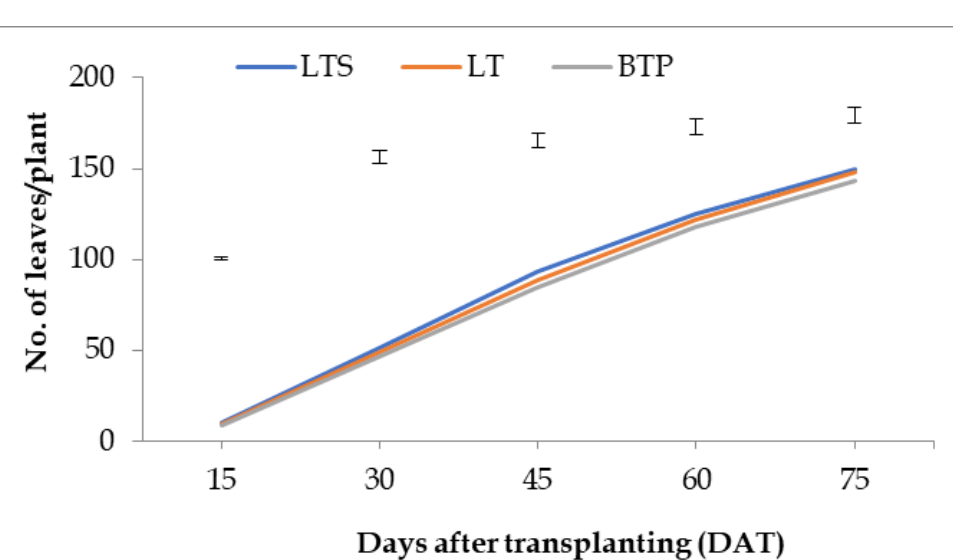


Figure: Effect of genotypes on the number of leaves per plant at different days after transplanting. Vertical bars represent LSD (0.01)

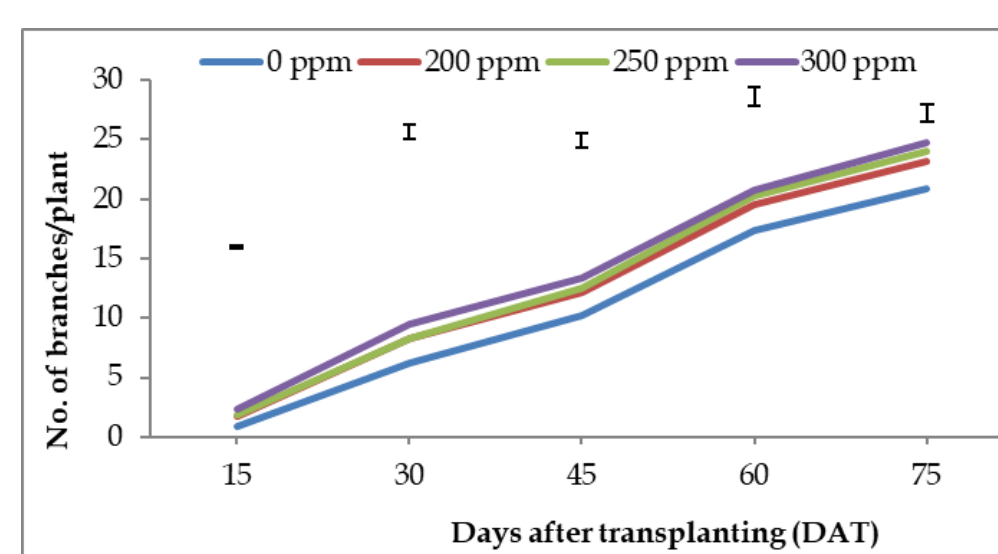


Figure: Effect of different gamma irradiation doses on the number of branches per plant at different days after transplanting. Vertical bars represent LSD (0.01)

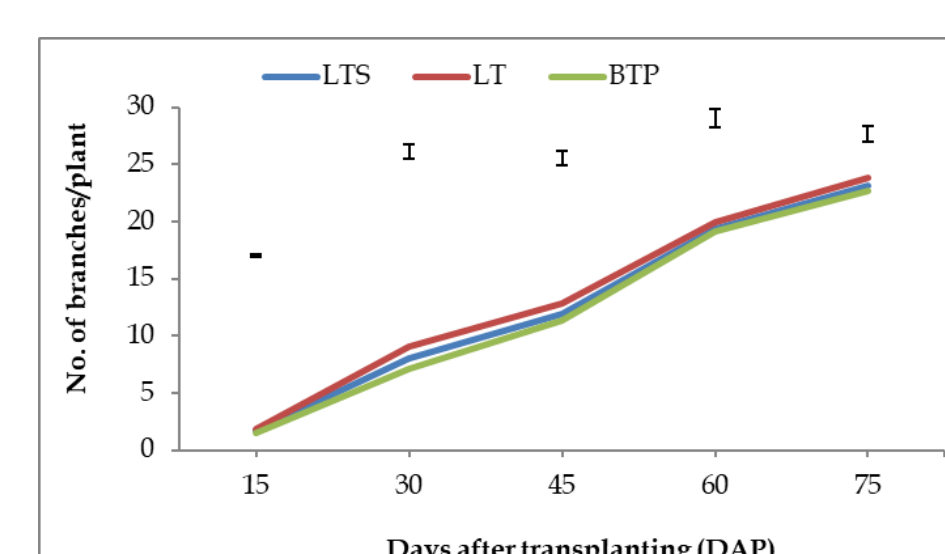


Figure: Effect of genotypes on the number of branches per plant at different days after transplanting. Vertical bars represent LSD (0.01)

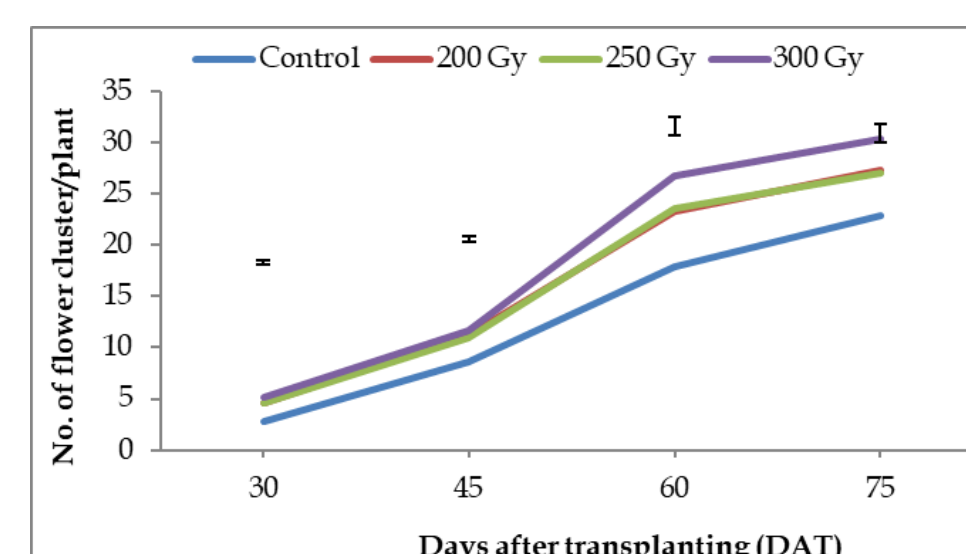


Figure: Effect of different gamma irradiation doses on the number of flower clusters per plant at different days after transplanting. Vertical bars represent LSD (0.01)

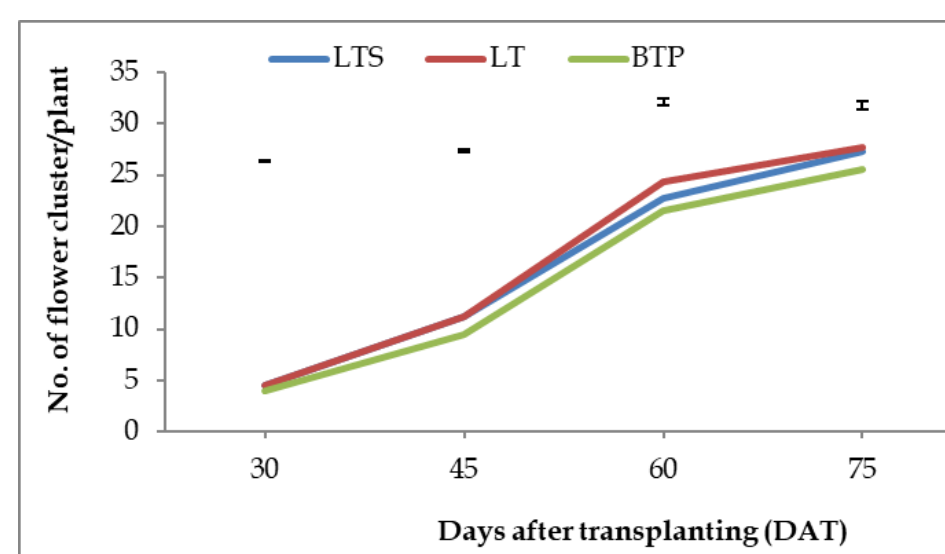


Figure 8: Effect of genotypes on the number of flower clusters per plant at different days after transplanting. Vertical bars represent LSD (0.01)

Table: Combined effects of gamma irradiation and genotype on yield and yield contributing characters of tomato

Treatment combination	Leaf length (cm)	Leaf diameter (cm)	No. of fruits/plant	Fruit weight/plant (kg)	Fruit weight/plot (kg)	Fruit yield (t/ha)
LTS						
Control	18.21	17.02	43.87	3.38	30.43	76.07
200 Gy	20.30	20.57	55.87	3.95	35.55	88.88
250 Gy	19.07	18.57	54.53	3.62	32.62	81.56
300 Gy	20.06	18.28	55.80	3.57	32.09	80.24
LT						
Control	17.62	17.02	62.60	2.37	21.33	53.33
200 Gy	20.29	19.07	78.87	3.46	31.16	77.91
250 Gy	18.86	19.22	81.67	3.36	30.28	75.71
300 Gy	19.39	18.27	83.67	3.36	30.25	75.62
BTP						
Control	17.26	15.80	41.87	2.31	20.81	52.02
200 Gy	19.04	18.27	66.73	2.96	26.66	66.66
250 Gy	18.40	19.00	65.80	2.60	23.44	58.61
300 Gy	18.59	19.21	69.93	2.74	24.65	61.62

LSD <sub>0.05</sub>	1.03	1.36	1.66	0.25	2.29	5.72
LSD <sub>0.01</sub>	1.40	1.84	2.26	0.34	3.11	7.77
Level of significance	**	**	**	**	**	**

\*\* = Significant at 1% level of probability

## CONCLUSION

For the potential development of new varieties, further studies may be carried out to evaluate the mutant genotypes in the subsequent generations

## REFERENCES

- Naika, S., Juede, J., de Goffau, M., Hilmi, M., & van Dam, B. (2005). *Cultivation of tomato: Production, processing and marketing*. Digigrafi. (Ed. B. van Dam)
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