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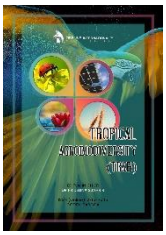

REVIEW ARTICLE

IMPACTS OF SOWING TIME ON WHEAT IN NEPAL: A DETAILED REVIEW

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ABSTRACT

Wheat (Triticum aestivum L.) belonging to the family Poaceae is the most important cereal crop in Nepal as well as globally as it contributes a major portion to the world food supply. Similarly, it is the third most cultivated cereal crop in Nepal in terms of production and area. However, due to the impact of sowing time, severe losses have been reported, posing a serious threat to Nepalese agriculture's growth, development, and productivity.

KEYWORDS

productivity, sowing, *Triticum aestivum*

1. INTRODUCTION

Wheat (Triticum aestivum L.) is the world's most important staple food crop in terms of area and output, yet it is ranked third in our nation, after rice and maize. It is a healthy cereal crop with a high biological value, high protein content (10-13%), and carbs, vitamins, and minerals. It is planted on around 707505 hectares, with a total production of 2185289 metric tons and a productivity of 3.09. (Agricultural diary, 2078). Wheat accounts for 30.92 percent of AGDP and 33% of GDP (MoAD, 2015). In Nepal, wheat accounts for 19.98% of total cereal crop production (MoCA). Wheat is mostly grown in Nepal during the winter season, following the rice harvest. Wheat may be cultivated in the winter as well as the spring season in Nepal. The wheat crop's planting time has a significant impact on yield. As a result, correct planting timing is necessary for good output and optimal input usage. Wheat is typically planted in November-December and harvested in March-April in Nepal. Wheat that is planted too early also yields poorly. So, if wheat is seeded in mid-November, the climate is ideal for wheat production (Thapa et al., 2020). It can collect enough solar energy and use it for grain growth and development at that time (Ali, 1999; Anwar et al., 2011; Islam et al., 2015; Rezaei et al., 2012; Wajid et al., 2002). The major focus of this review study is on the impact of different planting dates on wheat growth, development, and production.

2. MATERIALS AND METHODS

Secondary sources of data are solely used for the preparation of this review paper. Different newspaper articles, research papers, national and international open access journals, and various books were studied for collecting information regarding the effect of planting dates on wheat yield.

3. DISCUSSION

3.1 Causes of Late Sown Wheat in Nepal

Delay sowing in wheat is observed in Nepal especially in Rice-wheat growing pattern. The growing of late-maturing rice varieties like Janaki, Radha-7, Radaha-11, Barse 3004, etc especially in the Terai and inner terai region is one of the major reasons promoting delay sowing. Conventional land preparation in wheat takes relatively more time mainly due to the formation of the hardpan in the rice field and hence delay in wheat sowing. As rice crop is given more priority in Nepal, most of the laborers are engaged in harvesting and threshing of this crop which may cause labor shortage for the land preparation and sowing of wheat on time. Delay in sowing wheat has been a major issue to its productivity which severely affects Seed emergence (per m2) or germination percentage, No. of tillers per plant, days to heading, No.of grains per spike, and grain quality.

3.2 Effects of Late Sown Wheat in Nepal

Wheat sowing is delayed, shortening the growing time and preventing the crop from reaching its optimum productivity potential. Wheat sowing beyond mid-November results in a yield loss of 50 kg ha-1 d-1 (Khan et al., 2010). Crop development is hindered due to poor germination and seedling establishment. Due to inadequate crop growth and development, the wheat maturity time overlaps with a time of hot and desiccating western wind (during Chaitra-Baishak), resulting in forced ripening of the spikes and too tiny grains. Early planting results in more spikes m-2, larger grains, and the maximum grain production ha-1, but late planting harms these qualities. According to a study, wheat types perform better when planted in the last week of October or the first week of November (Hameed et al., 2003). Late seeding, either in the first or third week of January, yielded the lowest yield (Shahzad et al., 2002). Wheat grain yields were reduced due to a delay in seeding beyond the first week of November (Mahajan et al., 1994). In the January planted crop, yield reductions of up to 62 percent were documented. The incorrect mix of environmental needs at various phases of wheat development creates circumstances that reduce production.

The table below clearly shows the effects on the yield of early and late sown conditions of the wheat. The timely sown wheat is recorded of yielding high than early and late sown wheat. Different promising varieties sown out of their sowing time are too recorded of yielding less.

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Table 1: Showing the impacts of sowing conditions in different varieties on wheat.

S.N.	Varieties	Sowing conditions	Yield	Place of research
1.	BL-3060 (Vijay)	Early and late sown condition	3458 Kg/ha	Bhairahawa; Chitwan
2.	NL-3063	Early and late sown condition	7% higher than current popular variety	Bhairahawa
3.	NL-1177	Early and late sown condition	2993kg/ha	RARS, Tarahara
4.	BL-3555	Early and late sown condition	2764 Kg/ha	RARS, Tarahara
5.	NL-539	Early and late sown conditions	2180 Kg/ha	N/A
6.	UP-212 UP-262, RR-21, BL-1135	Sown up to 10th December	1710-1970 Kg/ha	Chitwan

N/A= not available; kg= kilogram; ha=hectare

Source: Research Gate

4. Conclusion

Wheat is a major cereal crop after rice and maize in Nepal. It is a great pillar to improve the quality of life of people as well as to strengthen the national economy. Wheat sown too early may use soil moisture accumulated in the fall. However, medium season seeding of winter for any locality is usually most favorable, whereas wheat sown late suffers more winter injuries, produces fewer tillers, and may ripen in less grain weight and several grains per plant. Encouraging people of terai and inner-terai for Planting early maturing rice varieties like Radha-4, Ghaiya-2, Loktantra, etc can be one of the attempts to meet the timely sowing of wheat. The use of mechanical harvesters for harvesting rice makes more area available for land preparation of wheat in time. The use of minimum or zero tillage technology helps in the early preparation of land and timely sowing of the wheat. Sowing of early maturing wheat varieties like Gautam, Bijaya, Aditya, Badganga, etc under late sown condition especially in terai/inner terai region. Thus, focuses should be made on the time of sowing of wheat to overcome its impacts.

References

Ali. 1999. Growth and Yield Response of Facultative Wheat to Winter Sowing, Freezing Sowing, and Spring Sowing at Different Seeding Rates Characterization of Bread Wheat Genotypes for Drought Resistance at Late Stages of Plant Growth View project. https://doi.org/10.1111/j.1439-037X.2006.00187.x

Anwar, J., Ahmad, A., Khaliq, T., Mubeen, M., Sultana, S.R., 2011. Optimization of sowing time for promising wheat genotypes in a semiarid environment of Faisalabad, 2 (1), Pp. 24–27.

Sajid, M., Muhammad, A., Md, H., Ali, M., Fida, M., 2021. Variations in Yield along a Phenological Gradient in Bread Wheat (Triticum aestivum L.).

Shah, W.A., Bakht, J., Ullah, T., Khan, A.W., Zubair, M., Khakwani, A.A., 2006. Effect of Sowing Dates on the Yield and Yield Components of Different Wheat Varieties. Journal of Agronomy, 5, Pp. 106-110.

Thapa, S., Ghimire, A., Adhikari, J., Thapa, A., Thapa, B., 2020. Impacts of sowing and climatic conditions on wheat yield in Nepal. Online) Malaysian Journal of Halal Research Journal, (1), Pp. 2616–1923. https://doi.org/10.2478/mjhr-20200006

Thapa, S., Thapa, A., Thapa, B., Ghimire, A., Adhikari, J., 2020. Impacts of sowing and climatic conditions on wheat yield in Nepal. Malaysian Journal of Halal Research, 3 (1), Pp. 38-40

Yasmeen, A., Basra, S.M.A., Ahmad, R., 2012. Performance of Late Sown Wheat in Response to Foliar Application of Moringa oleifera Lam. Leaf Extract. Chilean J. Agric. Res., 72 (1), Pp. 92-97. DOI: 10.4067/S0718-58392012000100015