International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2019): 7.583

Study of Raised Bed Planting Method on Yield and Yield Components of Wheat in Kabul

Sayed Maqsod Hashimi[1], Wakil Ahmad Sarhadi[2], Nigar Afsana[3]

[1, 2, 3]Agronomy Department, Agriculture Faculty of Kabul University, Agriculture Research Station of Kabul University, Kabul, Afghanistan

[1]Corresponding author E-mail address: *s.maqsod[at]yahoo.com* (Sayed Maqsod Hashimi)

Abstract: ***Wheat cultivation as a broadcast planting method is commonly used for growing wheat in Afghanistan and the crop is irrigated by flood irrigation but it leads to ineffective use of applied nitrogen owing to poor aeration and leaching and volatilization losses. These practices lead to lodging, lower water use efficiency and decreased yield. The wheat cultivation in raised bed planting not only saves water but improved fertilizer use efficiency and grain yield increased. The results of two sites data showed that wheat planting increase grain yield by 21%, 1000 grain weight 30.5%, stand population percentage 15.7%, net income 20.80%, biological yield 29%, grain weight per spike 24.1%, the number of spikelet per spike 20.7%, the number of grain per spike 17.6%, spike length 20.8%, the total number of tillers 10.8% and plant height 14.2% under Raised Bed (75cm) planting method increased relative to Flat Line sowing method with an equal application of fertilizers. The data pertaining to the economic analysis revealed that the maximum net income of (AFN. 74000) was obtained in case of Raised Bed (75 cm each bed) planting method apart, followed by Raised Bed (200, cm each bed) planting method (AFN. 61540) and Flat Line sowing method (AFN. 58550) and the lowest net field income was recorded (AFN. 57500) in Ridge-Line sowing and was also attributed to the lower grain and biological yields.***

Keywords: Raised bed, ridges/furrow and flat planting of wheat, Grain yield and yield components of wheat, Economic analysis in raised bed, ridges and flat planting

1. Introduction

Wheat is one of the most extensively grown crops in the World. Wheat is a primary staple crop for food security and self-sufficiency in Afghanistan.It was grown on an area of 2.53 million ha with a total production of 4.89 million tons in 2019 which shows 49 percent land increasement and 35 percent in production compare to 2018 as per the Agriculture Annual Report 2019, MAIL- Afghanistan. Wheat contributes about 70% to the country's total output of grain cereals and still suffering inadequate machinery for timely harvesting, threshing, processing, and storage, in pre- and post-harvest results in further losses of approximately 15-20%, (N-CAD-NPP2, 2016-2020).Afghanistan still suffers low wheat yield due to associated factors such as late sowing, suboptimal plant population, cultivars with lower yield potential, poor weed control practices, ineffective water use as well as inappropriate planting methods.

The growth of wheat as a broadcast flat system is commonly used in Afghanistan and the crop is irrigated by surface irrigation. Appropriate planting method plays a vital role in seed placement for better emergence, improved crop stands and balancing plant competition. The overall goal of the research study was to evaluate the performance of most appropriate and cost-effective planting to wheat in different planting methods in Kabul climatic conditions.

The results of the study showed that raised-bed planting of wheat not only increase yield productivity as well as improve water productivity, saving water, decrease and leads nitrogen use efficiency compare to flat planting or other conventional methods. One of the biggest reasons to consider raised bed agriculture is water management. In areas that receive excessive moisture at key points in the season raised beds may be a good fit. Since they are above the surface of the land, they can shed water more easily, and if done properly, the growing media where the plant's roots are can avoid waterlogging, which can destroy a crop.

Environmental benefits of raised bed farming include a reduction in soil salinity, soil and water pollution, waterlogging, and drainage water. Crops best suited for raised beds; almost any crop can be produced using a raised bed system, but some are better suited than others. The other thing to consider relating to crops is their susceptibility to mud splash, leaf diseases, and root rot; as raised beds can help you keep these challenges at a minimum because you get better air exchange in the bed than if they're planted flat with a lot of residue on the surface of the soil. Some of the crops include; root crops, greens, fruiting vegetables, and grasses.

2. Materials and methods

2.1 Experimental Sites and Planting Methods

The research was conducted in two areas with the same fall season year (2018-2019) at the 1) Agriculture Research Farm of Kabul University and 2) Botanical Garden of Agriculture Faculty, Kabul University, Kabul Afghanistan. The climate of the experimental areas is characterized in the fall (May-October), it is good weather with pleasant average temperature, in summer (June-September) hot season, again from (May-December) Kabul face with dry periods and the warmest month is August and coolest is January. The mean maximum and minimum temperatures show a wide range of fluctuation. The wheat variety "Solh 02" was sown at two different sites in 2018/2019 replicated four different planting methods include 1 and 2) raised-bed (200 cm width of each bed) and (75 cm width of each bed), 3) ridge or furrow sowing and 4) flat sowing methods in Randomized Complete Block Design (RCBD) with three replications and four treatments. Seedbeds were well leveled and prepared;

the space between rows were same (25 cm), the distance between plants were 6 cm and sown in depth of 3 cm in all planting methods.

2.2 Selection of Variety, fertilizer, irrigation methods

The variety "Solh 02" was selected in consultation with Afghanistan Research Institute of Agriculture (ARIA), which shows a big different in yield performance in winter and fall cultivated areas across the country. Solh 02 is also good to resist pests and diseases as well as to abiotic stresses such frost, cold, heat, salt and drought. All treatments were applied fertilizer in three times. At the beginning land preparation before wheat planting, tillering and heading stages, respectively. The application of fertilizer comprised of N, phosphorus (P), and potassium (K) were applied at XX, XX, and XX kg/ha in the forms of urea and di-ammonium phosphate (DAP). The surface irrigation has been applied in four intervals at the crown root initiation, the jointing, the heading and the milk dough stages. The irrigation was light with approx. 5 cm of water just to moisture the surface of the soil.

2.3 Description of treatments, swathing and harvesting

The research study was comprised of four different treatments included 1) raised-bed planting method (200 cm each bed); 2) raised-bed planting method (75 cm each bed); 3) ridges planting method and flat planting method in in Randomized Complete Block Design (RCBD) with three replications and four treatmentsequal to 12 plots per experimental area, each plot sized 3x3 m, 108 m2 for the first experimental site and both sites 216 m2. Twelve lines of wheat were cultivated in 25 cm distance for each planting method, and the distance between two plants was four cm with the depth of planting 15 cm. All the recommended agronomical packages and practices were followed for good crop stand. The wheat plants were observed in each replication in both experimental areas and data were recorded at different stages of plant growth according to the prepared datasheet.

Harvesting crops on raised beds differ from harvesting on normal seedbeds only in terms of the constraints imposed by tracking the harvesting equipment in furrows. Ensure all mobile machinery has wheel tracks that fit the furrows; otherwise they need to operate on specially constructed access tracks, cross-drains, or at the end of the field on the headland or catch drain. Swathing is possible with some adaptions.

Figure 1: Depicting the data record in experimental plots and figure 2 depicting the view of wheat plots in heading stage

2.4 Soil Analysis

The fertility of the experiment site was uniform. A composite sample of soil from 0 to 30 cm of soil depth was taken randomly from ten places of the field before preparing the layout of the experiment. The soil samples were mixed thoroughly, dried and subjected to mechanical and chemical analysis. The perusal of soil analysis data revealed that the soil of the experimental field is sandy loam in texture, non-saline, medium in organic carbon, low in available nitrogen, high in available phosphorus and rich in available potassium (Table 1).

Table 1: Physical and chemical properties of soil of the experimental field

SN	Parameters	Values observed
1.	Soil texture	Sandy clay loam
2.	Ph	8.10
3.	EC (dS/m)	0.38
4.	Organic carbon (%)	0.46
5.	Available nitrogen (kg/ha)	140.50
6.	Available phosphorus (kg/ha)	32.00
7.	Available potassium (kg/ha)	554.00

2.5 Statistical and Benefit-Cost Ratio Analysis

The mean value of observations recorded on different parameters was subjected to statistical analysis. The factorial RCBD for field parameters and factorial CRD for laboratory parameters were used for the analysis of variance as per procedure given by opstate software. http://14.139.232.166/opstat/default.asp

Cost of labor, seedbed preparation, inputs and irrigation were recorded for simple economic analysis including total variable cost (TVC), net field benefit and cost-benefit ratio (CBC) were determined for each planting method. Net field benefit was calculated by using: NI= GI – CP (where NI is net income (AFS. ha-1), GI is Gross income and CP is Cost of production). The benefit-cost ratio calculated for different planting methods (Table 2).

Table 2: Economic analysis of different planting methods in the wheat-growing season in Kabul Climatic conditions

Planting Method	Total Variable Cost (AFN. ha^{-1})	Total Expenditure (AFN. ha^{-1})	Gross Income (AFN. ha^{-1})	Net Income (AFN. ha^{-1})	Benefit-Cost (AFN. ha^{-1})
Flat Sowing	2450	10200	71200	58550	6.98
Raised Bed (75 cm)	2650	14500	91150	74000	6.29
Raised Bed (200 cm)	2560	14300	78400	61540	5.48
Ridge Sowing	2600	14100	74200	57500	5.26

3. Results and Analysis

3.1 Plant Yield and Yield Components Analysis

Wheat cultivation as a broadcast planting method is commonly used for growing wheat in Afghanistan and the crop is irrigated by flood irrigation but it leads to ineffective use of applied nitrogen owing to poor aeration and leaching and volatilization losses. This practice was compared in term of grain yield and yield components with other planting methods including raised beds and ridges using the same fertilizer application rate 120 kg/ha with the aim of to evaluate the performance of most appropriate and cost-effective planting to wheat in different planting methods in Kabul climatic conditions.

The two sites polled data concerning grain yield and yield components were showed that grain yields increased 21%, 1000 grain weight 30.5%, stand population percentage 15.7%, net income 20.8%, biological yield 29%, grain weight per spike 24.1%, number of spikelet per spike 20.7%, number of grain per spike 17.6%, spike length 20.8%, number of total productive tillers 7.8% and plant height 14.2% under raised bed method increased relative to flat planting with an equal application of fertilizers (Table 3.1 and 3.2).

Table 3.1.1: Plant Yield and Yield Components Analysis

Treatments	Plant Height (cm)	No of effective tillers (m2)	Length of spike (cm)	No of grains per spike	No of spikelet per spike
Raised Bed (200 cm)	78.4±3.29b	387.6±3.3a	8.1±0.1b	41.7±0.8b	14.3±03b
Raised Bed (75 cm)	85.4±0.8a	410.1±4.a	8.4.2±0.2a	44.3±0.2a	16.4±0.2a
Ridge Line Sowing	75.9±3.2bc	359.3±2.1b	7.9±0.0c	39.16±2.6c	13.6±0.07c
Flat Line Sowing	73.2±4.3c	323.6±4.2c	7.7±0.1d	36.5±1.4d	13.01±0.02d
C.D (0.5%)	4.08	23.8	0.17	1.76	0.35
$P \leq 0.05$	0.0002	0.0000	0.0000	0.0000	0.0000
C.V (%)	4.15	5.11	1.03	3.47	1.92
***Significant at $P \leq 0.05$, ** Significant at $P \leq 0.01$**					
Indicates plant height (cm), No. of effective tillers (m2), Length of the spike (cm), No. of grains per spike, No. of spikelet/spike					

Table 3.1.2: Plant Yield and Yield Components Analysis

Treatments	Grain weight per spike (gr)	1000 grain weight (gr)	Biological yield (kg/m^2)	grain yield (kg/m^2)
Raised Bed (200 cm)	1.21±0.00b	32.9±1.6b	1.96±0.02b	0.76±0.01b
Raised Bed (75 cm)	1.34±0.06a	39.2±1.3a	2.35±0.04a	0.84±0.02a
Ridge Line Sowing	1.11±0.08bc	303±1.4c	1.79±0.10bc	0.71±0.01c
Flat Line Sowing	1.01±0.14c	27.2±0.6d	166±0.16c	0.66±0.02d
C.D (0.5%)	0.11	1.42	0.20	0.03
$P \leq 0.05$	0.0005**	0.0000**	0.0001**	0.0000**
CV (%)	8.15	2.46	8.38	4.17
*Significant at $P \leq 0.05$, ** Significant at $P \leq 0.01$				
Indicates grain weight per spike (gr), 1000 grain weight (gr), biological yield (kg/m2), and grain yield (kg/m2)				

3.2 Economic Analysis (Benefit-Cost Ratio)

The cost and benefit of both experimental sites were recorded such as cost for labor, seedbed preparation, inputs and irrigation as well as the grain yield and straw produced for economic analysis including total variable cost (TVC), net field benefit and cost-benefit ratio (CBR). The analysis showed that maximum benefit-cost ration of 6.29 was observed in the case of raised bed (200 cm each bed), followed by a raised bed (75 cm) with a benefit-cost ratio of 6.98. The lowest benefit-cost ratio of 5.26 was obtained in the case of ridges planting method. The lower benefit-cost ratio in ridges planting method was associated with the higher cost of labor and machinery involved (Table 3.2.1). The benefit-cost ratios (BCR) were determined by using: BCR= GI/TE (where BCR is the benefit-cost ratio, GI is gross income and TE is total expenditure).

Table 3.2.1: Economic analysis of different planting methods in the wheat-growing season in Kabul Climatic conditions

	Total Variable Cost (AFN. ha^{-1})	Total Expenditure (AFN. ha^{-1})	Gross Income (AFN. ha^{-1})	Net Income (AFN. ha^{-1})	Benefit-Cost (AFN. ha^{-1})
Flat Line Sowing	2450	10200	71200	58550	6.98
Raised Bed (75 cm)	2650	14500	91150	74000	6.29
Raised Bed (200 cm)	2560	14300	78400	61540	5.48
Ridge Line Sowing	2600	14100	74200	57500	5.26

3.3. Comparative Increase in different parameters under raised-bed (200 cm) and flat sowing methods with an application of 120 kg N ha^{-1}

The comparative increase in different parameters under raised bed relative to flat line sowing with the application of 125 kg N ha^{-1} is observed. It concluded that Grain yield (t ha^{-1}) increased by 21%, 1000-grain weight increased by 30.5%, stand population increased by 15.7%, Net income increased 20.80%, Biological yield increased 29.2%, Grain weight per spike increased 24.1%, a number of spikelet per spike increased 20.7%, a number of grains per spike 17.6%, Spike length (cm) increased 20.8, a total number of tillers increased 10.8, the number of effective tillers increased by 7.8, and plant height increased by 14.2%, respectively (figure 1).

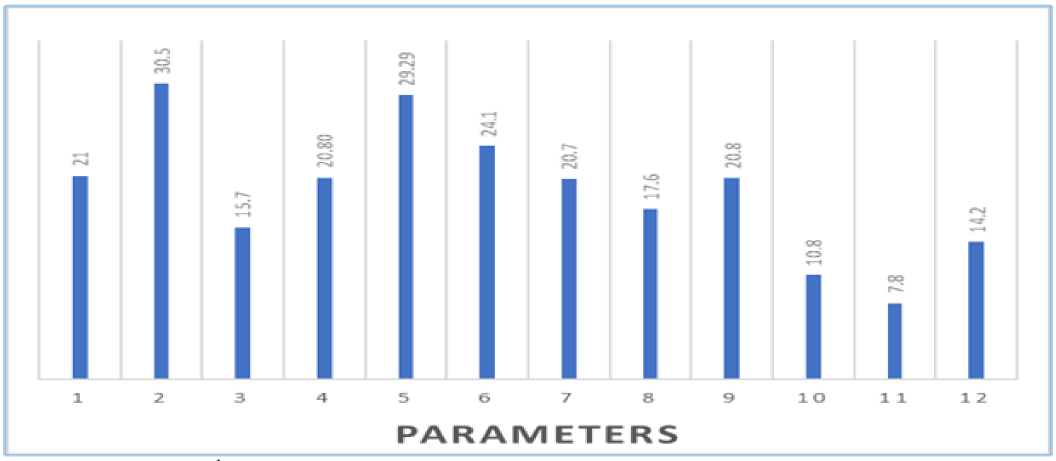

Figure 1: (1) Grain yield (t ha^{-1}); (2) 1000- grain weight (g); (3) stand population (%); (4) net income (%); (5) biological yield (%); (6) grain weight per spike (%); (7) No. spikelet per spike (%); (8) No. of grain per spike (%); (9) spike length (cm); (10) total No. tillers (%); (11) No. effective tillers (%); (12) plant height (cm)

4. Discussion

4.1 Quantitative Traits

The number of grains per spike produced is generally influenced by the planting conditions. The results showed that there were highly significant differences between different planting methods of wheat. The maximum number of grains per spike was recorded in a raised bed (75 cm) planting (44.3 g), followed by raised bed (200 cm) planting method (41.7 g), however, the minimum number of grains per spike (36.5 g) were recorded in flat sowing method, followed by ridge/furrow sowing method apart. The results of a higher number of grains might be attributed to relatively healthy spikes in raised bed (75 cm) planting and followed by a raised bed (200 cm) planting method.

The grains' weight per spike (g) has a direct bearing on the final grain yield of wheat. The data regarding grains weight per spike showed a non-significant difference among different planting methods. The heaviest grain weight of 1.3 g was recorded for a raised bed (75 cm) planting method, followed by the raised bed (200 cm) planting method and the minimum grain weight per spike of 1.0 g was recorded in flat sowing method apart and followed by ridge sowing method. The results of lower grain weight per spike agreed with the previous reports on wheat that narrow row spacing produced lower grains weight per spike (Rafique et al., 1997; Ali etal., 2010).

The biological yield consisting of grain yield and straw is the main objective for farmers to utilize grain for family consumption and straw for animal feed. The biological yield represents the overall performance and growth evidence and is an indispensable tool concerning crop production. Biological yield is also an important yield parameter. The research study had some significant results in terms of biological yield. The maximum biological yields were obtained from raised bed (75 cm) planting method, followed by ridges and the minimum biological yield was recorded in the flat sowing method. The biological yield under the raised bed (75 cm) planting method has a significantly higher (21.1 t/h^{-1}) biological yield as compared to other planting methods. It seems that lowest biological yield was recorded in the flat sowing method (17.0 t h^{-1}, respectively was correlates with the plant height and planting density.

4.2 Physiological Traits

Quality of seed is determined by test seed of weight (1000 seed weight), stand population percentage and standard germination, speed of germination, seedling length, seedling dry weight, and seedling vigor. The planting method has a significant role in seed quality. 1000-grain weight plays an essential role in determining the yield components and makes a major contribution towards the final grain yield of wheat. The results showed that the heaviest 1000-grain weight (39.2 g) was recorded in a raised bed (75 cm) planting method, followed by a raised bed (200 cm) planting method (32.9 g). The However, the lower 1000-grain weight (27.2 g) was recorded in the case of a flat sowing method. The higher grain weight for 1000 seeds was attributed to a healthy plant stand, which resulted in bold grains.

4.3 Economical Traits

The economic trait is one of the major role-playing factors and the only crucial concern of farmers to stimulate their decisions and planting to the agriculture practices and adaptation. Farmers only focus on the net revenue generated from the production. Many factors contribute to the economic ratio of production including the appropriate planting method. Under this research study, the data about the economic analysis revealed that the maximum net income of (AFN. 74000) was obtained in case of the raised bed (75 cm) planning method apart, followed by the raised bed (200 cm) planting method and the lowest net income in flat sowing method, which was attributed to the lower grain and biological yields.

The data for both research sites in the same year was pooled wheat grain and straw yield data were used for calculating cost-benefit ratios. The analysis showed that the highest cost-benefit ratio was achieved by a raised bed (200 cm) planting method, followed by a raised bed (75 cm) planting method. The lowest benefit-cost ratio of 5.26 was obtained in the case of ridges planting method which attributed to the healthy plants and stands population.

5. Conclusion

It is concluded from the results of two site findings that the highest 1000-grain weight and grain yield (t ha-1), as well as the highest net return with a benefit-cost ratio, proved raised bed (75 cm each bed) and raised bed (200 cm each bed) planting methods of wheat apart as an appropriate and economical method of wheat sowing under agro-ecological conditions of Kabul. There was a non-significant effect of planting methods on grain weight per spike (g). However, detailed research using different planting methods to wheat under Kabul climatic conditions is required to confirm these findings. Based on the results, raised bed (75 cm) is recommended and we recognized it as the best method for wheat growth.

6. Acknowledgement

I would like to extend my profound regards to my research advisor, Pro. Dr. Wakil Ahmad Sarhadi, Sr, Scientist of Agronomy Science, Agriculture Faculty of Kabul University (AFKU), for his prudent guidance and also a deep sense of gratitude to the reviewers for the improvement of this manuscript.

References

[1] Majeed, A. and Muhammad, A. (2007). A study on Bed planting of wheat (Triticum aestivum L.) improves nitrogen use efficiency and grain yield compared to flat planting. Organization name, article, pp 4-5.

[2] Karrou, M., Oweis, T., Benli, B. and Swelam, A. (2011). Improving water and land productivities in irrigated systems. Community-Based Optimization of the Management of Scarce Water Resources in Agriculture in CWANA. Report no. 10. International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syria. vi + 195 pp.

[3] Malik, M.A., Irfan, M., Ahmed, Z.I., and Zahoor, F. Residual effect of summer grain legumes on yield and yield components of wheat (Triticum aestivum L.), Pak. J. Agric. Eng. Vet. Sci. 22 (2006) 9–11.

[4] National Priority Program of Afghanistan, National Comprehensive Agriculture Development Priority Programme (NCADPP)-NPP2 (2016-2020).

[5] Afghanistan Statistical Yearbook (2015-2016), Central Statistics Organization of Afghanistan.

[6] National Wheat Program of Ministry of Agriculture, Irrigation, and Livestock (MAIL), Government of the Islamic Republic of Afghanistan (GoIRA)- (2016-2021).

[7] The Afghanistan Living Condition Survey (ALCS) (2016-2017) mid-term highlights, Central Statistics Organization of Afghanistan.

[8] Ministry of Agriculture, Irrigation, and Livestock (MAIL), General Directorate of Planning and Policy (PPD), Statistics Directorate of MAIL, Government of Afghanistan, NRVA survey of Afghanistan (2012-2013).

[9] Tanveer, S.K., Hussain, I., Sohail M., Kissana N. andAbbas S. (2003). Effects of different planting methods on yield and yield components of wheat. Asian J. Plant Sci. 2:811-813.

[10] Tripathi, S.C., Sayre K.D., Kaul J.N. and Narang R.S. 2002. Effect of planting methods and N rates on lodging, morphological characters of culm and yield in spring wheat varieties. Cereal Res. Commun. 30:431-438.

[11] Walia, U., Brar, L., Jand, S., (2003). Integrated effect of planting methods and herbicides on Phalaris minor and wheat. Ind. J. Weed Sci. 35:169-172.

[12] Hussain, M., Khan M., Mehmood Z., Zia A., Jabran K. and Farooq M. (2013). Optimizing row spacing in wheat cultivars differing in tillering and stature for higher productivity. Arch. Agron. Soil Sci. 59:1457-1470.

[13] Joseph, K., Alley M., Brann D. and Gravelle W., (1985). Row spacing and seeding rate effects on yield and yield components of soft red winter wheat. Agron. J. 77:211-214.

[14] Khan, A., Arif M., Shah A., Ali S., Hussain Z., and Khan S., (2007). Evaluation of planting methods for grain yield and yield components of wheat. Sarhad J. Agric. 23:561-563.

[15] Khatri, R., Goel A. and Malik R., (2002). Comparative wheat crop performance in bed sowing and conventional flat sowing in the rice-wheat system

under different irrigation levels. Haryana Agric. Univ. J. Res. 32:11-18.
[16] John, D. Freelance writer for tractor export, raised bed farming, online: https://tractorexport.com/raised-bed-farming/Www.dawn.com/news/277486, raised-bed planting for the wheat crop, 26 November (2007).
[17] Connor D.J., Gupta Raj K., Hobbs Peter R. and Sayre K.D., bed planting in the rice-wheat system, pgs. 2-3.
[18] Connor, D.J., Timsina J. and Humphreys E., (2002). Prospects for Permanent Beds for Rice–Wheat Systems. In: Ladha, J.K. et al. Improving the Productivity and Sustainability of Rice-Wheat Systems: Issues and Impacts. Special Publication, ASA. Madison, Wisconsin, USA.
[19] Gupta, R.K., Hobbs P.R., Salim M., Malik R.K., Varma M.R., Pokharel T.P., Thakur T.C. and Tripathi J. (2000). Research and Extension Issues for Farm Level Impact on Productivity of Rice-Wheat Systems in the Indo-Gangetic Plains of India and Pakistan. Rice-Wheat Consortium Traveling Seminar Report Series 1. Rice Wheat Consortium for the Indo-Gangetic Plains, New Delhi, India. pp26.
[20] Rafique, M., Ahmad A., Muhammad N., Siddique M. and Kamran M. (1997). Effect of seeding densities and planting techniques on late sown wheat (Triticum aestivum L.) yield. J. Agric. Res 35, 147-153.
[21] Rath, B., Misra R., Pandey D. and Singh V. (2000). Effect of sowing methods on growth, productivity and nutrient uptake of wheat (Triticum aestivum) at varying levels of puddling in rice (Oryza sativa). Ind. J. Agron. 45:463-469.
[22] Riffkin, P., Evans P., Unkopich M. and Leary G. (2003). Successful high rainfall cropping in southern Australia using raised beds. Proceedings of the 11 the Australian Agronomy Conference Geelong.

Author Profile

Afghanistan is considered one of the poorest countries in the world. Its institutions are under-resourced with subsistence agrarian economy. This is true at a time when around 75 percent of Afghans live in rural areas with agriculture as the primary source of income and one third of the GDP coming from the sector.

In view of this, I believe that in order for my country to industrialize and progress, we need to have a developed and modern agriculture sector. We need to transform the agriculture sector from a subsistence to a productive one. I worked hard and succeeded to get admission in the agriculture faculty of the Nangarhar University in 2008.

In my senior year in the University, I also interned as a Survey Group Leader with Strengthening Afghan Agriculture Faculties Program (SAAF) project implemented by the Purdue University, USA. Moreover, during university, I remained part time student and later head of students with Global Connections & Exchange (GCE) Program at the Afghan and American Pre- College Institute, Moini International Consulting (MIC). I was also used to teach English at different private institutes. This proved catalyst in my education as it enhanced my communication and language skills and gave me confidence.

Further, I have honored to successfully complete my MBA Degree in Master of Business Management, specialization in Marketing Management and International Business Environment from Mahatma Gandhi University in 2016, India. Nevertheless, during my professional career I was honored an opportunity to pursue my second master's in agriculture science (MSc), specialization in Agronomy Science from Agriculture Faculty of Kabul University (AFKU) in 2019. Prior to completing my BSc, I joined International Foundation of Hope (IF Hope), a US based agriculture organization in the capacity of Communication, Relation and Training Officer. In addition, I worked with International City/County Management Association (ICMA), USAID- CAWSA Program as Project Management Specialist. I have also worked for a short time with Afghanistan Rural Enterprise Development Program (AREDP), World Bank funded project; I worked with the Killid Group (TKG)/United Nations Democratic Funds (UNDEF). Moreover, I also worked with the United Nations Human Settlement Program (UN-Habitat), Afghanistan as a Knowledge Management/Communication Officer. I can be reached at (0093) 787 808 077, s.maqsod@yahoo.com, and invites connections at linkedin.com/in/sayed-maqsod-hashimi-93082770