Name: Farshad Bakhtiar
Research Position: Member of Scientific board, Department of Cereal Research of Seed and Plant Improvement Institute (SPII).
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Academic graduation

1- **BSc.:** Agronomy and Plant Breeding, Islamic Azad University**,** Karaj campus August 6, 1994.
2- **MSc.:** Plant Breeding, Islamic Azad University, Karaj Campus March 15, 1999**.**
3- **Ph.D.:** Genetic and Plant Breeding**,** Razi University, January 5, 2016**.**

Curriculum vitae

My name is Farshad Bakhtiar, I was born in 1970 in Karaj. I am married and I have two children.
I was graduated from Faculty of Agricultural Sciences and Engineering Department of Agronomy and Plant Breeding of Razi University in January 2016. The title of my Ph.D. thesis was Production and evaluation of wheat resistant lines to rust diseases using doubled haploid technique and marker assisted selection
In 1999, I graduated in Plant Breeding from Karaj Islamic Azad University. The title of my M.Sc. thesis was Improvement of bread making quality of cultivars (Navid & Karaj1) using superior alleles in Bezostaya and Inia through haploid breeding method.
Now I am working as a wheat breeder in Cereal Research Department (CRD) of Seed and Plant Improvement Institute (SPII). I have been working for 27 years in CRD and have conducted many research projects during last years including research projects such as Development of doubled haploid lines for resistant to major wheat diseases as: yellow rust, fusarium head blight as well as barley DH lines for resistance to powdery mildew.

Research activities:
Implementation of more than 30 research projects.
Publishing more than 30 articles in scientific journals.
Advisor of 9 M.Sc. theses.

Abstract of Ph.D. thesis

Cereal rusts are the most important wheat diseases in Iran and worldwide.One of the most effective control measures of these diseases is deployment of resistant cultivars. Recently the use of plant biotechnology techniques, such as haploid breeding and moulecular markers which have been identified for many useful wheat genes, specially rusts resistance genes, have shorten the duration of breeding programs and allowed selecting superior genotypes with appropriate agronomic traits.

The objectives of this study were production of wheat doubled haploid lines, identification of stem and yellow rust resistance genes in parentes and doubled haploid lines and piramiding stem rust resistance genes in wheat cultivars Bahar and Pishtaz.

In the present study, chromosome elimination method based on wheat and maize crosses was used for production of wheat doubled haploid lines. Three F_1 wheat hybrids including Ghods*3/MV17, Flanders/3*Ghods and Hybrid Bersee/*Ghods along with three maize genotypes H1: KSC 108, H3: SC 301 and H7: SC 704 were used as plant materials. Results showed that, the effect of wheat genotypes on seed production was significant ($P<0.01$). However effects of maize genotypes and interaction between wheat and maize genotypes was not significant. Also the effect of wheat and maize genotypes and their interaction on embryo formation and haploid plantlet production was not significant.

In 2013-14 and 2014-15 cropping seasons, 150 DH lines resulted from all three crosses along with check cultivars i.e. Parsi, Mihan, Bolani, and their parents Ghods, Hybrid Bersee, and MV17 were sown in an augmented design, and were evaluated for their reactions to yellow rust and stem rust at both seedling and adult plant stages. Initially, the reaction of all genotypes to races of *Puccinia striiformis* f.sp. *tritici* causal agent of strip rust (race. $7E158A^{+}$,*Yr*27 at the seedling and adult plant stages and race $110E158A^{+}$,*Yr*27 at the seedling stage) collected from Karaj and Kermanshah, respectively were studied using infection type and coefficient of infection evaluation. The Result showed that differences between check cultivars for infection type and coefficient of infection induced by both races were significant ($P<0.01$). Cluster analysis of DH lines based on infection type and coefficient of infection showed that genotypes regarding to both races of yellow rust were classified to two major groups of susceptible and resistance groups. Total of 28 DH lines at both seedling and adult plant stages were resistant when inoculated with race $7E158A^{+}$,*Yr*27 and more likely in addition of seedling genes comprises of one or a few minor or Adult Plant Resistance (APR) genes.

For stem rust evaluation, the study was based on infection response of standard varieties. Two races in Kelardasht region (PTMNC and TTSTK) and one race in Dasht-e-Azadeganin Khuzestan province (TTKSK) were identified and used as dominant races of these regions for further studies. Results indicated that differences between check cultivars for coefficient of infection induced with race PTMNC at the adult plant stage was significant at 1% probability level. Also for infection type at the seedling stage, differences between check cultivars inoculated with race TTSTK was significant ($P<0.01$), but none-significant reaction was seen for races PTMNC and TTKSK. Cluster analysis of DH lines based on infection type and coefficient of infection showed that genotypes were classified into two major groups of susceptible and resistant when induced with all three races. In general, out of 150 DH lines that were evaluated at the adult plant stage with race PTMNC, 41 DH lines were resistantand109 lines were susceptible, while more than 50 percent of resistant lines belonged toDH-28:Hybrid Bersee/* 3Ghods population.

In molecular study, eight known molecular markers which are tightly linked to resistance genes including *Yr*5, *Sr*31/*Yr*9/*Lr*26, *Yr*15, *Sr*38/*Yr*17/*Lr*37, *Lr*34/*Yr*18/*Pm*38, *Yr*27, *Yr*36 and *Yr*48 were screened in parents of all three populations. Results showed that the molecular markers for *Yr*5, *Yr*15, *Yr*27 and *Yr*36 couldn't detect polymorphism between parents as well as positive and negative controls. For gene block *Sr*38/*Yr*17/*Lr*37 and locus *Yr*48 allele sizes were not similar to those which were expected for these genes.

MV17 and Flanders cultivars had gene block of *Sr*31/*Yr*9/*Lr*26. Evaluation of DH lines with this gene block showed that only 3 lines of population DH-26: Ghods*3/MV17 had this gene block from which two doubled haploid lines showed resistance reaction to PTMNC, TTSTK and TTKSK at the seedling stage and only one of them showed resistance reaction at both seedling and adult plant stages.

Genetic analysis for the presence or absence of gene block *Lr*34/*Yr*18/*Pm*38 on parents of doubled haploid lines showed that MV17 carries this gene block. Evaluation of DH lines as compared with this gene block showed that six DH lines of DH-26: Ghods*3/MV17 population have this gene block from which only one showed resistance reaction to *Puccinia striiformis* f.sp. *tritici* race of 7E158A^{+}, *Yr*27 at both seedling and adult plant stages.

For pyramiding resistance gene to stem rust in Bahar and Pishtaz cultivars, initially the virulence of eighteen isolates of stem rust that had been collected from several parts of Iran was studied in cultivars/lines Bahar, Pishtaz, Eagle, Ac Cadillac and Tr129. Results showed that, cultivars of Ac Cadillac, Eagle, and Tr129 had good levels of resistance to all evaluated isolates.

After initial and complementary crosses in order to transfer resistance genes to Bahar and Pishtaz cultivars, the F_1 seedling resulted from complementary crosses were evaluated for their resistance to stem rust and consequently were screened for presence or absence of resistance genes using molecular markers. For Sr26 gene, primers Sr26#43 and BE518379; for Sr42 gene, primer SrCad; and for SrTr gene, primers GPW2295 and GPW4032 that showed polymorphism between parents were used to detect presence or absence of resistance genes. Results showed that for progeny of complementary crosses in Bahar cultivar transfer of resistance genes have been successfully completed, and in Pishtaz based on distinctive ability of markers used, at least transfer of two genes from the three genes in progenies was observed.

Abstract of M.Sc. thesis

In this study in order to develop doubled haploid lines of wheat the chromosome elimination method involving crosses between wheat and maize was used. The plant materials used in this research were F1 seeds of wheat from ,crosses between Navid * Bezostaya (NB) and Inia * Karaj1 (IK).along with four Maize genotypes H1=SKC 108,H3=KSC 301,H7=CS 704 and sinika 60. Finally 60 lines of wheat doubled haploid were developed.

During the developmental stages of wheat doubled haploid lines traits such as percent seed set, embryo development, haploid seedling development, number of callus, necrosis, and albino were studied. In this research also the effects of three maize genotypes H1,H3,H7 along with two wheat genotypes NB,IK on seed set and haploid

embryo were investigated which was not significant. Besides the three maize genotypes H1, H3, H7 showed no significant difference as compared with the maize genotype SINIKA 60 for seed set and haploid embryo production. In order to investigate the quality of seed storage proteins in this study 47 doubled haploid lines of wheat along with parents and F1 seed the variety chinese spring and Markuis were measured using electrophoresis method. In order to separate the glutenin subunit SDS-PAG method with 10% gel was used and the total of 11 subunits in three gene locations were observed .Null subunit with 75.4 present and subunit 6+8 with 4.3 present had the most and with the least frequency.
In the lines studied several gene locations which were unexpected were observed and finally lines under investigation were graded for glutenin quality fractions. A number of doubled haploid lines had the highest quality grade compared with the parents and F1 seeds.

Papers:

Detection of stem rust resistance genes *Sr42*, *Sr26* and *SrTr6A* in progeny of wheat cultivars Bahar and Pishtaz using marker assisted selection
Farshad Bakhtiar, Habibollah Ghazvini, Mostafa Aghaee Sarbarzeh, Farzad Afshari , Ezatollah Farshadfar, Mohsen Sarhangi and Esmaeail Ebrahimi Meymand
Crop Biotech Autumn (2016) 15: 69-83.
Cereal rusts are the most important wheat diseases in Iran and worldwide. One of the most effective control measures of these diseases is deployment of resistant cultivars. The objective of this study was identification of stem rust resistance genes and pyramiding these genes in wheat cultivars Bahar and Pishtaz. For this purpose, initially the virulence of eighteen isolates of stem rust that had been collected from several parts of Iran was studied in cultivars/lines Bahar, Pishtaz, Eagle, Ac Cadillac and Tr129. Results showed that cultivars Ac Cadillac, Eagle, and Tr129 with Sr_{42}, Sr_{26} and $Sr\text{Tr}_{6A}$ genes had good levels of resistance to all evaluated isolates. In order to transfer resistance genes to Bahar and Pishtaz cultivars, after initial and complementary crosses the F_1 seedling resulted were evaluated for their resistance to stem rust and consequently the progeny of complementary crosses were screened for presence or absence of resistance genes using molecular markers. For Sr_{26} gene, primers Sr26#43 and BE518379; for Sr_{42} gene, primer STS (FSD-RSA); and for $Sr\text{Tr}_{6A}$ gene, primers GPW2295 and GPW4032 that showed polymorphism between parents were used to detect presence or absence of resistance genes. Using the seedling test in green house and also detection of molecular markers, it was found that for progeny of complementary crosses in cultivar Bahar transfer of resistance genes Sr_{26}, Sr_{42} and $Sr\text{Tr}_{6A}$ have been successfully completed, and in Pishtaz based on distinctive ability of markers used, at least transfer of two genes of three genes in progenies was proved.
Key words: Wheat, Disease, Stem rust, Molecular marker

Study on the presence of yellow and stem rust resistance genes in doubled haploid lines of bread wheat using molecular markers
F.Bakhtiar .,E.Farshadfar .,M.Aghaee Sarbarzeh: .,H.Ghazvini.,F.Afshari
Crop Biotech.Summer (2015) 10: 41-56.
Abstract
In this research, 150 wheat doubled haploid lines were produced using chromosome elimination method by crossing between wheat and maize. Resistance of doubled

haploid lines, their parents and check cultivars against strip and stem rust was evaluated at seedling and adult plant stages. Accordingly, eight known molecular markers which are tightly linked to resistance genes including *Yr*5, *Sr*31/*Yr*9/*Lr*26, *Yr*15, *Sr*38/*Yr*17/*Lr*37, *Lr*34/*Yr*18/*Pm*38, *Yr*27, *Yr*36 and *Yr*48 were screened in parents. Results showed that molecular markers for *Yr*5, *Yr*15, *Yr*27 and *Yr*36 couldn't detect polymorphism between parents as well as positive and negative controls. For gene block *Sr*38/*Yr*17/*Lr*37 and locus *Yr*48 allele sizes were not similar to those which were expected for these genes. Results also showed that MV17 and Flanders have gene block of *Sr*31/*Yr*9/*Lr*26, and only 3 lines of population DH-26: Ghods*3/MV17 had this gene block from which two doubled haploid lines showed resistance reaction to TTSTK and TTKSK of *Puccinia graminis pers.* f.sp *tritici* races. Genetic test for the presence or absence of gene block *Lr*34/*Yr*18/*Pm*38 on parents of doubled haploid lines showed that MV17, and 6 doubled haploid lines of population DH-26:Ghods*3/MV17 have this gene block for which only one doubled haploid line showed resistance reaction to *Puccinia striiformis* Westend f.sp. *tritici* race of 7E158A^{+}, *Yr*27 at both seedling and adult plant stages.

Key Words: Wheat, Rust Diseases, Molecular marker, Doubled Haploid

Evaluation of Resistance to Stripe Rust in Doubled Haploid Lines of Bread Wheat

F. Bakhtiar, E. Farshadfar , M. AghaeeSarbarzeh, F. Afshari, H. Ghazvini

Seed and Plant Journal of Agriculture Research Volume 31, Issue 4, winter 2016

Abstract

In the present study, virulence factors of two isolates of stripe rust, collected from Karaj and Kermanshah, Iran were determined on differential lines, and for genes Yr2, 2+, 6, 6+, 7, 7+, 8, 9, 17, 18, 25, 26, 27, 32, A, DN virulence was observed in both isolates. Reaction of 150 doubled haploid lines together with parents and check cultivars to stripe rust (Puccinia striiformisf.sp. tritici) was evaluated at seedling and adult plant stages by assessment of coefficient of infection and infection type in an agmented design. The results of analysis of variance showed significant differences among check cultivars for infection type and coefficient of infection of two races of Karaj (7E158A+, Yr27) and Kermanshah (110E158A+, Yr27). Using Ward's method of cluster analysis based on infection type and coefficient of infection of both races, doubled haploid lines and 7E158A+,Yr27 were classified in two groups of susceptible and resistant. Overall, 28 doubled haploid lines at both stages of seedling and adult plant showed resistance reaction to race of Karaj which indicates the probability of carrying one or more minor genes of adult plant resistance in addition to seedling major genes.

Keywords: Wheat, stripe rust, doubled haploid line, infection type, coefficient of infection.

Investigation of bread making quality in doubled haploid lines of wheat by the use of seed storage proteins.

Bakhtiar, F., Bozorgipour, R.

Iranian Journal of Agricultural Sciences .Scientific – Publication of Faculty of Agriculture University of Tehran Karaj, Iran.vol.31 No.4 2000 P: 798-805

Abstract

In this study in order to develop doubled haploid lines of wheat, chromosome elimination method involving crosses between wheat and maize was employed. The plant materials used were F1 seeds of wheat from crosses between Navid*Bezostaya

(NB) and Inia* Karaj1 (IK) along with four Maize genotypes; H1=SKC, H3=KSC301, H7=CS704 and sinika 60. Finally 60 lines of wheat doubled haploid were obtained. In order to investigate the quality of seed storage proteins, 47 doubled haploid lines of wheat, parents, F1 seeds and Marquis varieties were studied using electrophoretic analysis. In order to separate glutenin subunits SDS-PAGE method with 10% gel (W/V) was used. The totals of 11 subunits in three gene location were observed. Null subunit with 75.5% and 6+8 subunit with 4.3% had the highest and lowest frequencies respectively. In the lines studied, several unexpected gene location also observed. Finally lines under investigation were graded for glutenin quality fractions. A number of doubled haploid lines had better quality grades compared to the parents and F1 seeds.

Study of androgenic ability of F3 population of barley (Hordeum vulgare L.) obtained from crosses between different stresses tolerant cultivars.

Khosrowchahli,M.,Naghiloo,M.,Yousefi,A., Bakhtiar,F.,and Bozorgipour,R.
Seed and Plant Journal of Agriculture Research vol.20, No.2 2004 P 199-214

Abstract

Androgenic ability of microspores of F3 Population obtained from crosses between salinity and heat tolerance(Afzal/ Torkman/ kavir), cold and heat tolerance(Boyer/ Rojo),salinity tolerance and disease resistance (Ashar/ Hebe) , salinity and heat tolerance (Arigashar / Matico) and Igri cultivar as control , were studied after pretreatment with 0.3 M mannitol using L1 Modified liquid medium supplemented with 3 mgl-1 phenylacetic acid (PAA) ,1 mgl-1 Benzylaminopurin (BAP), 1 mgl-1 Casein and 65 mgl-1 casein and 65 mgl-1 maltose as induction medium. Murashige and skoog medium supplemented with 1 mgl-1 BAD and 0.5 mgl Naphtalenacetic acid (NAA) was used as regeneration medium. Statistical analysis revealed a significant difference between F3 progenies and Igri cultivar for androgenic ability. Igri cultivar produced on average 566. 75 embryos per microspores of 100 anthers and the F3 Progenies Afzal/ Torkman/ kavir production on average the highest number of embryos (141.5 embryos / microspores of 100 anthers) among the progenies of F3 populations. For green plantlet production per microspores of 100 anthers there was also a significant difference between progenies of F3 populations and lgri cultivar. for this character Ilgri cultivar produced the highest number of green plantlets (65.5 plantlets / microspores of 100 anthers) and the progenies of Ashar/ hebe and Boyer/ rojo with 18.5 and 17.5 green plantlets respectively per microspores of 100 anthers on average produced more green plantlets than the progenies of Afzal/Torkaman/Kavir.. This means that the mechanisms of embryo induction and green plant production may be different. In this study Igri cultivar produced the green plantlet production my be different. In this study Igri cultivar produced the least number of albino plantlets in comparison with other plant materials.

Production of doubled haploid lines of wheat using detached tillering method in cross between wheat and maize, and evaluation of some agronomic characters.

Bakhtiar, F., Bozorgipour, R., and Shahabi, S.
Seed and Plant Journal of Agriculture Research vol.22, No.3 2006 P 351-267

Abstract

In this study, chromosome elimination method was used to develop doubled haploid lines of wheat via crosses with maize The plant materials used in this research were F1 seeds including Kavir/Zagros, Roshan (winter type back cross)/ Zagros and Rsh*^{2} 10120/Zagros along with three maize genotypes as pollinators H1=KSC, H3=KSC301

and H7=SC704.Two methods of haploid production in wheat involving A: conventional technique and B: detached – tiller culture were used and compared. The traits such as seed set percentage, embryo development and haploid seedling development were studied and finally 75 lines of doubled haploid wheat were developed and the results showed that the second method (B) was better than the first method (A). Field traits such as seed number per spike, 1000 grain weight, death of heading and plant height were evaluated and finally 15 doubled haploid lines were selected. These lines are now evaluating in Advance Regional Wheat Yield Trial (ARWYT).

Responses of some Doubled Haploid Lines of Bread Wheat (Triticum aestivum L.) to Yellow Rust and Fusarium Head Blight and Evaluation of some Agronomic Traits

F, Bakhtiar., F, Afshari., M,Seraj Azari., S, Abrahimnejad., H, Allah Soghi., R, Bozorgipoor., S,Shahabi,.

Seed and Plant Journal of Agriculture Research Vol, 25-1, No 1.2009

Abstract

Responses of 189 doubled haploid lines, produced by chromosome elimination method crosses between wheat and maize, were evaluated for yellow rust in Karaj, Gharakhil and Gorgan, and for fusarium head blight in Sari and Gorgan. Yellow rust nursey was inoculated four times and fusarium nursery three times with urediniospores of Pucinia striiformis and macroconidia suspension of Fusarium graminearum in anthesis stage. Data on yellow rust was recorded at flag leaves expended stage for three tims and for fusarium head blight one month after inoculation. For evaluation of resistance to yellow rust at seedling stage the reaction of doubled haploid lines and their parents was also evaluated. The results showed that among 189 doubled haploid lines, 40 lines were resistant in all stations and the others were susceptible, moderately resistant or moderately susceptible to yellow rust. In Sari, 23% of lines and in Gorgan 29% were tolerant to fusarium head blight. Doubeld haploids no. 10, 13, 14, 26, 36 and 37 were resistant to yellow rust and showed acceptable level of tolerance to fusarium head blight diseases both in Gorgan and Gharakhil. Some characters of doubled haploid lines such as days to heading, plant height, cold tolerance and 1000 kernel weight were evaluated. Finally, based on the results, the doubled haploid lines were classified in different groups. Due to high variability in their resistance to diseases and agronomic characteristics, some of them were selected for using in breeding programs.

Training course:

Application of Biotechnology in Agricultural Development 22-27 August 1999. Organized by Iranian Research Organization for Science and Technology (IROST) and organization of Islamic Conference Standing Committee on Scientific and Technological Cooperation (COMSTECH).

Wheat Transformation. 26-30 October 2002. Organized and sponsored by Agricultural Biotechnology Research Institute Iran (ABRI), International Maize and Wheat Improvement Center CIMMIYT,(Mexico) and International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo,Syria.

Tissue Culture 3-14 November 2003. In Republic of China. Organized by the Asian Productivity Organization (APO).
Wheat doubled haploid production using the interspecific hybridization with maize. June 25th 2018 – July 20th 2018 Biotechnology Laboratory of Florimond Desprez, Cappelle en Pevele, France**.**

Research Projects:
Production and evaluation of wheat (*Triticum aestivum L.*) doubled haploid lines with desirable agronomic traits and high bread making quality
In this study, in order to select genotypes with desirable quality and agronomic traits as parental in the Cereal Research Department, SPII s breeding program; quality of seed storage proteins were investigated in 46 different bread wheat lines or cultivars. Haploid breeding methodology was then applied to achieve absolute homosigocity and to increase the selection efficiency. Using the selected parental lines, crosses were n made between wheat and maize resulting in development of 151 Doubled haploid (DH) lines. The DH lines along with their parents and cv.s Alvand and Sayren were then studied for their high molecular weight glutenin sub-unit. . In order to separate the glutenin subunits, SDS-PAG method with 10% gel was used and the totals of 15 subunits in three gene loci were observed. Subunit 5+10 with 57.33 percent and subunit 17 with 0.77 percent had the highest and the least frequency. In the lines studied, several gene loci, which were unexpected, were observed. Finally the lines under investigation were graded for glutenin quality. A number of doubled haploid lines had the highest quality grade compared with their parents and F1 seeds. Additionally, these genotypes were planted under field conditions for screening against diseases and other unfavorable traits.

Production of wheat (*Triticum aestivum L*) doubled haploid lines for Caspian zone.
In this study chromosome elimination method was used to develop doubled haploid lines of wheat via crosses with maize. The plant materials were F1and F3 seeds of wheat with three maize genotypes as pollen source H1=KSC, H3=KSC301 and H7=SC704.Two methods of haploid production in wheat involving A: conventional technique and B: detached – tiller culture were used and compared. The traits such as seed set percentage, embryo development and haploid seedling development were studied and the results showed that the second method (B) was better than the first method (A).Then the responses of doubled haploid lines were evaluated for yellow rust in three research stations at Karaj, Sari and Gorgan.while fusarium head blight evaluating performed at only two research stations of Sari and Gorgan. Yellow rust nursery was inoculated four times and Fusarium nursery was inoculated three times in anthesis stage. The results showed that among of doubled haploid lines, 40 lines were resistant in three stations and the others were susceptible and moderately resistant to moderately susceptible for yellow rust. In Sari 23% of lines and in Gorgan 29% were tolerant to fusarium head blight. On the basis of these results, there is scape for some lines to be released for North part of Iran.

Evaluation of wheat (*Triticum aestivum* L.) doubled haploid lines to agronomic characters and responses to Yellow rust and Fusarium head blight.

In this study the responses of 189 doubled haploid lines, producted with chromosome elimination method - crosses between wheat and maize - were evaluated for yellow

rust in three research stations at Karaj, Sari and Gorgan.while fusarium head blight evaluating performed at only two research stations of Sari and Gorgan. Yellow rust nursey was inoculated four times and Fusarium nursery was inoculated three times in anthesis stage. The results showed that among 189 doubled haploid lines, 40 lines were resistant in three stations and the others were susceptible and moderately resistant to moderately susceptible for yellow rust. In Sari 23% of lines and in Gorgan 29% were tolerant to fusarium head blight. On the basis of these results, there is scape for some lines to be released for North part of Iran.

Preliminary evaluation of grain yield in different spring lines of bread wheat for temperate zone under terminal drought stress conditions

To achieve high yielding, diseases resistant and adapted wheat varieties comparing to grown wheat cultivars, this experiment was carried out in five (5) research stations of moderate zone in 2006/2007 cropping season. One hundred-fifty (176) lines and varieties of wheat along with four check cultivars(M-79-7, Pishtaz, Marvdasht and Shiraz)were planted and compared in systematic design with no replication. These materials have been forwarded by selecting stations in temperate zone and International nurseries as well. During the cropping cycle besides, field management practices, the following notes were taken: Days to heading (DHE), Plant Height (PLH), 1000 kernel weight (TKW) lodging%, reaction to diseases (Yr & Lr) under natural condition, shattering and Days to maturity (DMA). After harvesting, grains of each plot were weighted separately and collected data were analyzed. Based on non-parametric method of ranking (R and SDR), comparing the yield of the entries to checks, favorite morphological characters, Yield Index Ratio (YIR%), and reaction to diseases, thirty-two (32) superior lines were selected to be evaluated/ studied in advanced yield trials(ARWYT) for moderate areas in next crop season

Evaluation of breeding lines and cultivars of wheat in advanced regional yield trials for moderate regions under well watered and terminal moisture stress conditions

In this trial 32 bread wheat advanced lines were evaluated along with four check varieties, Rakhshan, Baharan, M-92-18 and M-92-20 in 5 stations (Karaj, Kermanshah, Zarghan, Neishabour and Isfahan) of temperate zone. These materials have been advanced through evaluation and screening in preliminary regional wheat yield trial of last crop season of temperate zone. Planting of the experimental plant materials was done in Aban, 1395 (November, 2016) and were looked after during winter. Weed control and field records for disease resistance, lodging, heading and maturity dates, plant height, kernel color, and shattering were done in spring. Experiment was performed in Karaj, Kermanshah and Zarghan under normal irrigation management and in Karaj, Neishabour and Isfahan under water deficit conditions from heading stage onward. Finally after harvesting grain yield was measured and using mean rank analysis, while considering all recorded traits and also information of disease nurseries, superior genotypes were selected. From 16 evaluated genotypes of first experiment, entries no 9, 12, 13, 14, 15, and 17, and from second experiment genotypes no25, 26, 27, 28, 29, 30, 32, 33, 34 and 35 (totally 16 genotypes) were selected to be studied in a new stability and adaptation trial in 8 stations of temperate zone during two consecutive crop seasons i.e. 2017-2019.

Key Words: Bread wheat, Yield trial, Drought tolerance, Temperate zone, stability, advanced line

Congress:

13th Iranian Congress of Crop Production and Plant Breeding. July.8., 2014.
Evaluation of virulence of wheat stem rust isolates collected from different parts of Iran on Sr26, Sr42 and SrTr6A genes

13th Iranian Congress of Crop Production and Plant Breeding. July.8., 2014.
Grass-clump dwarfism and its effect on transferring stem rust resistance genes to cultivated varieties of bread wheat

5th Iranian Congress of Crop Production and Plant Breeding. Aug 31.-Sep.4., 1998
The effect of Photoperiodic genes (Ppds) on Adaptability and yield of wheat.

First National Congress of Biotechnology. Tarbiat Modaress University Tehran. Feb 22-24 2000.
Production of doubled haploid lines of wheat through crosses between wheat (*Triticum aestivum* L.) and maize (*zea mayz*).

9th Iranian Congress of Crop Production and Plant Breeding. Aug 27-29, 2006.
Evaluation of (HMW) subunits in wheat doubled haploid lines.
Production of doubled haploid lines of wheat (*Triticum aestivum L*) with detached tiller method.

2th Iranian Congress of weed science.
Assessment of allelopathic capability of barley cultivars and their variation over 60Years selection.

Advisor to M.Sc. Thesis:

1. Study on resistance to yellow stripe rust in wheat doubled haploid lines (wheat × maize). Islamic Azad University, Science and research Branch (M.Sc.) Thesis in plant breeding .2005.
2. Assessment of factors affecting frequency of haploid production in wheat through chromosome elimination. Islamic Azad University, Science and research Branch (M.Sc.) Thesis in plant breeding .2005.
3. Evaluation and production of doubled haploid lines of barley with Detach – Tiller culture method. Islamic Azad University, Science and research Branch (M.Sc.) Thesis in plant breeding. 2006-6007.
4. Comparison of different methods of haploid production at hexaploid genotypes wheat .Islamic Azad University, Science and research Branch (M.Sc.) Thesis in plant breeding. 2008.
5. Synthesis of Autotetraploid and Octoploid Wheat Tehran University (M.Sc.) Thesis in Agricultural Biotechnology 2012