



**IFAR 2008 Professional Development Program  
Completion Report  
[800 words]**

**Instructions:**

Please submit the completion report by email, using this form, through the sponsoring CGIAR Center to [ifar@ifar4dev.org](mailto:ifar@ifar4dev.org) within three months after the completion of the fellowship.

*Please check if Thalwitz Scholarship*

Yes

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**Conservation of wild wheat in Armenia through assessment for disease resistance**

Name of Applicant    ----Nelli Hovhannisyan-----

Sponsoring CGIAR Center

-----Bioversity International-----

### **I. Work Program goals achieved (maximum length: 200 words)**

The project allowed an in-depth study of the genetic diversity and disease resistance of wild *Triticum boeoticum* and *T. urartu* accessions in relation to wheat stem rust. Five accessions of these two species were collected from the wild in Armenia and 65 accessions were received from ICARDA (Syria) and IPK (Germany) genebanks. Five accessions collected from Armenia are being transferred to ICARDA. The protocols for DNA extraction were optimized and products corresponding to two STS markers of resistance gene were successfully amplified. Three markers of resistance gene, namely *Pm1*, *Pm2*, *Lr 28* were found among the studied accessions, while the markers for genes *Pm 13* and *Lr 9* were not found in accessions studied. In RAPD analysis 52.4 % and 51.9 % polymorphic bands were observed among wild accessions of *T. boeoticum* and *T. urartu*, respectively. Similarly, 61.27% and 58.75% polymorphic bands were found in SSR analysis. The results showed promising accessions from *ex situ* collections in the wild that can be used in breeding programmes. It also illustrates the importance of crop wild relatives to breeding activities. The project benefited from collaboration with the international genebanks of ICARDA and IPK which provided germplasm for screening in Armenia, IPK and ICARDA.

### **II. Plans for follow-up (maximum length: 200 words)**

The present study has helped to generate better knowledge on disease resistance characteristics, genetic diversity and potential for crop improvement of wheat wild relatives. These aspects are essential to carry out successful programmes on both germplasm conservation and use. The results of the studies carried out will be written up and submitted to peer reviewed journals. At least two scientific papers arising from this work will be produced. The work has generated good baseline information about genetic diversity in *T. boeoticum* and *T. urartu* populations in Armenia. The work has also helped to identify a series of needs for further research including:

- Assessment of genetic diversity and phylogenetic relationships between wild species of *Triticum* and *Aegilops* genus in Armenia by application AFLP markers;
- Study of wheat domestication in Armenia;
- Broadening of disease resistance assessment of wild species of *Triticum* and *Aegilops* genus;
- Effectiveness and cost of complementary conservation techniques for *Triticum*;
- Varietal improvement and breeding programmes using biotechnology techniques;
- Better knowledge of the floral biology including breeding system and pollination vectors.

**III. Report budget utilization including whether budget was spent as planned (maximum length: 100 words)**

The budget (US\$) was spent according the proposal budget items, as follows:

<b>Item</b>	<b>IFAR</b>	<b>ACTUAL</b>	<b>NOTES</b>
Stipend and subsistence	4000	4000	
Supplies	2360	3760	Per prior agreement with Bioversity International, \$1400 was used from 3 line items (International travel, Monitoring and supervision and Dissemination of information) to purchase additional equipment and supplies (lab plastic and reagents).
Travel			
- International	2000	1265	Funds used for trip to Moscow Institute of Biochemistry (Evrogen Company) and IPK Gatersleben Germany
- Local	200	200	
Books, journals and equipment (up to \$1,000)	1000	1000	Used to purchase equipment
Monitoring and supervision (staff costs)	400	0	
Dissemination of information	300	35	Abstract and membership fees for participation on In vitro biology meeting 2009 (USA) and Annual meeting of the Society for Conservation biology (China)
Office expenses, communications	300	600	\$300 for office expenses was covered from grantees' personal budget
Administrative costs <sup>1</sup>	440	440	
<b>Total</b>	<b>11.000</b>	<b>11.300<sup>2</sup></b>	

<sup>1</sup> Administrative costs retained by Bioversity

<sup>2</sup> Note: \$300 for additional office expenses beyond the \$300 budgeted was covered from grantee's personal budget.

**IV. Assessment of the fellowship experience and general comments.**  
**(maximum length: 300 words)**

This fellowship was a great opportunity for me to undertake this study with international institutions, especially with scientists in Bioversity International. It also allowed me to identify new research needs that will help my University to further their research work. Also the knowledge and experience gained from implementation of this fellowship will be used for my teaching activities and allows me to help my students to understand the importance of wheat wild relatives and to discuss with them more effective ways and methods to conserve and use wild relatives. The major factors influencing the achievements are the good supervision from CG scientists, the very adequate budget to undertake this study and the international collaboration which helped me to link with other institutions or universities to undertake the study. The only weak aspect of the fellowship experience is the short time period of this study.