



Afghanistan National Horticulture Development Organization

ANNUAL REPORT



ANHDO



Afghanistan National Horticulture Development Organization

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Chair's Foreword

On-track towards change; using vulnerable land and water caringly

I genuinely believe that our organization, as the first Afghanistan National Horticulture Development Organization (ANHDO), has key role in improving growth and sustainability in the horticulture sector of the country. We take enormous pride in seeing how Afghan farmers and growers thrive towards improving their performance and capability year by year, facing to the challenges of the climatic change, pest and diseases, water resource issues and challenging logistics. Individuals farmers, orchard owners, some key stakeholders, partners are among those whom we influenced by means of various type of service delivery.

As Managing Director of ANHDO, I have noticed increase of excellent potential skills and experiences of the staff and improvement of project quality over the past year, applying our best practices to deliver our services. I passionately believe we are now progressing tremendously and on track to implement the most recent horticulture technologies in the country. The day-to-day operation of ANHDO reflects the three major priorities, based on which our progress made:

- Intensely work on creation of commodity specific ANHDO Value Chain Promotion Groups
- Overall improvement of organizational development including both developing of people and institution
- Work strongly on revision of long-term sustainable plan

We can achieve these goals, when we shed slight on best practices to conduct our implementation. We aim to uphold and continue our successes of this year by redoubling our efforts in upcoming years, working through partnerships and government support and the national collaboration to help us approach the resilient base group.

I would like to take this opportunity to acknowledge all of our members, academic/non-academic partners, and stakeholders for their significant contribution to eliminate some barriers and overcome the challenges contributors. I would like to extend my sincere and heartfelt obligation towards all the personages, who have provided ANHDO the possibility to accomplish the effectively and efficiently planned activities during the 2017 and dedicated their time and talent to our organization. Without the critical contribution of project leaders, managers and their subordinates, this work would not have been possible.

Special acknowledgments go to ANHDO Board Members and Senior Management, who have invested their full efforts in guiding the team in achieving the goal. I also extend my gratitude to our donors (EU and AFD) for their financial support.

I wish to thank the Ministry of Agriculture, Irrigation and Livestock (MAIL) to closely contribute with ANHDO in both policy making and project implementation in various ways such as identifying targeted areas, selection of beneficiaries (DAIL) and type of training.

Best Regards,

Najibullah Enayat

Glossary of Acronyms

AAIDO	Afghan Almond Industry Development Organization	HLB	Huang Long Bing - Citrus Disease
ACBAR	Agency Coordinating Body for Afghan Relief and Development	HPS	Support to the Development of Agriculture Private Sector
ACCI	Afghanistan Chamber of Commerce and Industry	HVP	Horticulture Value-chain Project
AFD	Agence Française de Développement	IAO	The Istituto Agronomico per l'Oltremare
AfES	Afghanistan Evaluation Society	IDCO	Mercy Corps
ANHDO	Afghan National Horticulture Development Organization	IFRS	International Financial Reporting System
ANNGO	Afghanistan National Nursery Growers Organization	ILO	International Labor Organization
ANSA	Afghan National Standard Authority	IPM	Integrated Pest Management
ARIA	Agriculture Research Institute of Afghanistan	ISO	International Standard Organization
ASRA	ASRA Consulting	MAIL	Ministry of Agriculture, Irrigation and Livestock
BMP	Best Management Practices	MoE	Ministry of Economy
BMP	Best Management and Operating Practices	MoU	Memorandum of Understanding
BoD	Board of Directors	MSN	Mother Stock Nursery
BOP	Best Operating Practices	MT	Metric Tones
CBA	Cost Benefit Analysis	NC	National Collection
CDS	Community Development Authority	NGA	Nursery Growers Association
CGG	Citrus Grower Group	NGO	Non-Governmental Organization
CPG	Citrus Promotion Group	NHLP	National Horticulture and Livestock Program
CPN	Certified Production Nursery	NNGA	Nangarhar Nursery Growers Association
CSO	Central Statistic Organization	NVDA	Nangarhar Valley Development Authority
CTV	Citrus Tristeza Virus	OD	Organizational Development
DAIL	Department of Agriculture Irrigation and Livestock	PAIL	Provincial Agriculture Irrigation and Livestock
DDA	District Development Authority	PBTL	Plant Biotechnology Laboratory
DoE	Department of Economy	PDCs	Provincial Development Council
ELISA	Enzyme Linked Immune-sorbent Assay	PDM	Post Distribution Monitoring
EPAA	Export Promotion Agency of Afghanistan	PHDC	Perennial Horticulture Development Center
EU	European Union	PHDP II	Perennial Horticulture Development Program
FFS	Farmer Field School	PPQD	Plant Protection and Quarantine Department
FH	Field Horticulturist	RI	Relief International
FM	Field Manager	SDGs	Sustainable Development Goals
GA	General Assembly	SPCD	Seed and Planting material Certification Directorate
GA3	Gibberellic Acid	SPS	Sanitary and Phytosanitary
GAP	Good Agricultural Practices	TA	Technical Assistance
GoA	Government of Afghanistan	ToT	Training of Trainers
GRPG	Grape and Raisin Promotion Group	UPOV	International Union for the Protection of New Varieties of
HACCP	Hazard Analysis and Critical Control Point	Plants	
HDTP	Horticultural Development Transition Project	VC	Value Chain

Executive Summary

Afghanistan horticulture had an essential role in the past and will continue to play a substantive role in future of the Afghan rural economy to develop a prosperous society. Responding to the Afghanistan and international horticulture demand, will remain the long-term goal of ANHDO and its donors. Despite huge destruction during the last four decades of conflicts, Afghanistan's highly favorable climate condition for many fruit tree and vegetable species will raise livelihoods and opportunities for a better economy as base for modern horticulture with more emphasize on quality control and increase production. Enhancing Afghan horticulture sustainability and competitiveness is our principal mantra.

The 2018 report reveals the activities, outcomes, major success and impacts of ANHDO on Afghanistan horticulture highlighting its contribution to increase transparency, accountability and to share expertise with key stakeholders, donors and partners. The main focus of ANHDO is on empowering communities to improve the life quality by means of implementation of horticultural practices to enhance agri-enterprises. In order to make our organization more efficient, we are concentrating on introduction of new approaches for best process. ANHDO assists farmers and growers to meet the challenges, enhance productivity, improve market access, reduce crop losses and engaging beneficiaries in resilient Afghan horticulture and how to reduce dependence on donors and ANHDO. ANHDO has also made organizational development and staff learning & development part of its organization culture.

ANHDO activities comprises four main components:

- Supporting the Afghan private sector nursery industry and its associated organizations and institutions meet the nation-wide demand of Afghan farmers for certified perennial plant material to increase planting of modern orchards and vineyards
- Adaptive research and technical development programmes to successfully provide the technical solutions to increase orchard and vineyard

productivity and value to the consumer at household, and national level.

- Pilot demonstrations of enhanced post-harvest management systems and market-driven value chain development for key perennial horticulture crops within target areas and target groups
- The development of a soundly-based and profitable citrus industry in eastern Afghanistan.

Impressive progress reflects milestones in organizational success and policy improvement, which was accomplished through internal and external audit and assessment, on how effective the institution was to bring meaningful achievement. ANHDO services in the past year benefited more than 3500 farmers, with technical horticultural support and market linkages. We are continuously working to translate our vision into reality. ANHDO has focused on improvement of capacity building of both individuals and relevant institutions. The ANHDO annual balance sheet shows a significant increase in the net worth and strong financial position. In upcoming years, ANHDO outlined a way forward that concentrates on a sustainable horticulture and, finalized our long-term strategic plan and creation of promotion groups. Achieving these objectives will confidently support us to contribute to achieve sustainable development goals (SDGs) in both people and organizations.

Objectives in focus for upcoming year:

- reform packaging, processing, storing and sorting systems
- ensuring product quality to meet international standards
- help to build business linkage with potential investors, producers and buyers
- increase the income of producers by introducing new and advanced technology and methodology
- facilitate and coordinate efforts between private and public stakeholders in support of horticulture development
- Design projects for promotion of good practices and standards and building capacities

Background

Afghanistan National Horticulture Development Organization (ANHDO) is a national non-governmental, non-profit and non-political organization registered with the Ministry of Economy and established in April 2009. The development of ANHDO is part of the European Union (EU) and the Ministry of Agriculture, Irrigation and Livestock (MAIL) long term strategy for the development of horticulture sector in Afghanistan. Since then, ANHDO has developed into an important institution for horticulture development by comparing among other skilled and experienced Afghan professional organizations in the horticulture sector. ANHDO is operating in close coordination with the Ministry of Agriculture, Irrigation and Livestock (MAIL) based on separate Memorandum of Understanding (MoU). Hence, ANHDO is a corner stone of the long-term strategy for the development of the horticulture sector in Afghanistan.

ANHDO has implemented successfully many projects such as Support to the Development of Agriculture Private Sector: Perennial Horticulture” (HPS), Horticulture Value Chain development Project (HVP), Support to Afghanistan’s Private Sector “Horticulture Development Transition Project, Global Horticulture Assessment; Herat Pistachio Project (IAO), Trainings for DAIL Extension Staff which were funded by EU, AFD, ILO, Italian cooperation and French Embassy (Pole de Stabilite’) in twenty two provinces of Afghanistan. ANHDO has a five-year strategic plan and is operating under the guidance of board of directors giving a strategic direction to the organization.

Our vision is:

A sustainable and profitable horticulture industry for a better life in Afghanistan.

Our mission is:

To enable horticulture stakeholders to improve horticulture industry by providing technical services, upgrading capacities, and promoting public- private coordination.

Our Core values are:

- Integrity
- Teamwork
- Responsibility
- Partnership
- Professionalism
- Quality

Areas of intervention

Since 2014, ANHDO built on and extended the achievements of the EU Funded Perennial Horticulture Development Program (PHDP) phases I and II (2006 to 2014) through four components or corporate specific objectives:

Value Chain Enhancement: Pilot demonstrations of enhanced post-harvest management systems and value chain development for key perennial horticulture crops.

Citrus Industry Development: developing a soundly-based and profitable citrus industry in Eastern Afghanistan.

Adaptive Research: Providing technical solutions (in coordination with ARIA) to increase productivity and values.

Nursery Development: increasing capacity of the Afghan private sector nursery industry to meet the demand for certified genetic plant material of Afghan fruit farmers.

Through **Value Chain Development**, ANHDO provided support to the all chain actors including producers, traders, processors and exporters, aiming to supply standard horticultural produce to meet domestic and international markets requirements. These objectives were addressed through capacity improvements of quality control structure to introduce traceability, ISO certifications, Global GAP and HACCP concept. Improved standards and market value, income, self-confidence, awareness, increased possibility of export products and public-private partnerships are targeted impact of our value chain initiatives

The **Citrus Industry Development** has been rebuilding the citrus industry in Afghanistan, mainly focusing on rehabilitation and establishment of commercial citrus orchards, introduction of commercial and marketable varieties of

citrus, supporting citrus processing companies, capacity building of producers and traders to meet the increased market demands.

The **Adaptive Research** supported finding technical solutions to serve the development of the Afghan Horticultural Sector and ensure-market driven priorities.

The **Nursery Industry Development** supported the Afghanistan National Nursery Growers Organization (ANN-GO) to open up memberships for large-scale commercial nurseries and provides specific technical support to nurseries in order to promote production of certified fruit saplings and ornamental plants. This will impact on improvement of the business, sustainability, quality and opening up market opportunities.

ANHDO provided support to ARIA in order to enhance the on-going adaptive research in the six Perennial Horticulture Development Centers (PHDC's) in the provinces Kunduz, Mazar, Herat, Kandahar, Kabul and Jalalabad. The main focus is on fruit germplasm development and description, breeding program on almond and apricot, pollination and rootstock trials as well as pomology laboratory

activities determining fruit quality parameters, maturity indices and enhancing shelf life.

ANHDO's Values

In order to achieve our long-term goals, ANHDO invests and strictly follows its values:

- To achieve long-term sustainability of our objectives
- To empower ANHDO's staff and beneficiaries to contribute for positive changes
- To keep ANHDO accountable and transparent for our planned actions
- To respect the national environment protection policy and avoid harmful activities
- To welcome constructive partnership and co-operation from any relevant source

Our Funding

Over the past years, ANHDO's activities have been supported by the European Union (EU), the Agence Française de Développement (AFD), the Italian Development Cooperation in Afghanistan (IDCO), and international labor organization (ILO). See **Annex I**.

GOVERNANCE & ORGANIZATIONAL DEVELOPMENT



Afghanistan National Horticulture Development Organization (ANHDO) is firmly committed towards meeting the international accepted standards required for successful NGO management process; because ANHDO believes that the organization can only provide better services when it has developed organization-wise, including staff learning and development. Thus, ANHDO has made organizational development part of its organizational structure and culture in order to continuously develop to be able to provide high quality services, compete in tough non-profit world for its sustainability; and achieve its mission and vision in the long term.

During this year, ANHDO made a significant progress towards its organizational development process. It developed its Organizational Development Model, the Organizational Development Assessment (ODA) was conducted for the whole organization, based on which, the annual Organizational Development Action Plans (ODAP) were developed for all departments.

As a result of the ODA implementations, a number of major achievements were made as such; development of a five-year strategic plan, program management guideline, including project management tools (action planning template, best practices and lessons learnt template, planned vs. actual form, change request form, defining project responsibilities form, risk analysis form, milestone chart, milestone report, project issues log, stakeholder analysis form, project review meeting standard form, resource management plan format, etc.), development of organization succession plan, revising operational policies and procedures, including admin/HR, finance

and logistics, development and revision of different forms and templates as such; succession planning tool, reporting templates, goods issue notes etc. to improve the procedures as a measure towards improvement of procedural quality, development of M&E operational policy; and Gender policy.

In terms of system development, the organization successfully revised its organization structure to improve the governance and reporting system, established its Monitoring and Evaluation and Gender Departments. These departments have already commenced their activities to support the achievement of organizational strategic goal and objectives. Meanwhile, this organization has been able to significantly improve its membership management system in order to provide better services for its members.

As part of organizational development responsibilities towards staff learning and development, the Organizational Development Department, in collaboration and coordination with the Human Resources Department of ANHDO, developed an annual Capacity Building Plan (CBP) for the whole organization. A number of trainings were conducted, as such:

Business ethics awareness

The main purpose of this training was to raise the awareness among ANHDO staff members related to business ethics - acceptable and unacceptable behaviors in the office. This training was attended by fifteen employees of ANHDO (10 male and 5 female). This training was conducted in three batches to cover all ANHDO employees.

Effective Business Communication

The main purpose of this training program was to enhance the knowledge, skills and abilities of ANHDO staff related to effective business communication and interpersonal behavior so that they could improve their performance by communicating effectively. This training was participated by nineteen employees of ANHDO, including some stakeholders and partners. (13 Male & 6 Female).



Monitoring and evaluation

The main purpose of this training program was to enhance the knowledge, skills and abilities of ANHDO staff in monitoring and evaluation in order to enable them measure the impact of their projects/programs and improve the program management quality. This training was participated by twenty one employees, including stakeholders and partners (14 Male & 7 Female).



Career counselling

The main purpose of this training was to help ANHDO interns learn about their career, career path and career

development so that they could better manage their career, for the future. There were nineteen interns participated in this training session (16 male and 3 female, Total: 19).

Human resources management

The main purpose of this training program was to enhance the knowledge, skills and abilities of ANHDO and RI staff in the field of Human Resource Management. Ten employees from ANHDO and two employees from Relief International (RI) participated in this training program. This training was attended by seventeen employees, including partners. (10 Male & 7 Female, Total = 17).



In addition to the above, ANHDO has also conducted some training and awareness programs ,on periodic basis, related to gender awareness, workplace harassment and work place diversity so that ANHDO has a suitable working environment and working culture for all its employees.

Moreover, in terms of organizational development from view point of technology, a number of achievements as such; Electronic Attendance System, Training Database, Membership Management Database, and Human Resources Information System (HRIS) have been developed and implemented for management effectiveness and efficiency purpose during the current year.

VALUE CHAIN DEVELOPMENT



ANHDO supports all value chain actors including producers, traders, processors and exporters to supply high standard horticultural produce to meet domestic and international market requirements. The overall objectives of value chain department are to:

- Contribute to the uplifting of horticulture (yields, quality standards and market value).
- Enhancement of capabilities of the private sector, through specific pilot actions in target areas.
- Establish pilot demonstrations of enhanced post-harvest management systems.
- Market-driven value chain development for key perennial horticulture crops within target areas and target groups.

Capacity improvements of quality control protocols and laboratory practices, introduced traceability concepts, ISO certifications, and increased awareness of Good Agricultural Practices (GAP), HACCP certification processes and value chain studies of the fruits (apricot, pomegranate, prune, sweet cherry, almond, raisin processing and marketing) were conducted to address these objectives. This has improved standards and market value, income, awareness, increased potential of export products and the establishment of public-private partnerships. The value chain department has established and implemented its activities in close coordination with government entities such as MAIL, PAILs, DAILs, DoE, PDCs, DDAs, CDS and civil societies.

Achievements of year 2018

Meetings and Coordination:

1. The Value Chain Department conducted the GRPG 7th, 8th, 9th and 10th meeting in Baghrām district of Parwan province aimed to strengthen the co-ordination and communication of group with government officials, project partners and other stakeholders. A guide was prepared in Dari language and printed in forty copies, and the English version of GRPG operation manual printed in twenty copies and disseminated among the group and to PAILs and DAILs aimed to make them familiar with the group role and responsibilities. The below pictures show the events.



2. Initial meeting was held with almond, sweet cherry, apple, apricot and prune growers aimed the formation of promotion groups.



3. Facilitated the meetings with government officials and beneficiaries aimed that they were aware of project plan and activities for 2018.



4. Attended the agriculture sectorial meetings and represented ANHDO in the meeting.



5. Facilitated the PAILs and department of economy's officials field visits to monitor the project activities and impacts in Samangan and Parwan provinces.



Capacity Building:

1. Conduct technical trainings for 376 newly- selected beneficiaries of sweet cherry ,apple, al-mond producers and raisin processors in targeted areas on harvest and post-harvest best practices through usage of FFS module.



2. Facilitated the participation of project beneficiaries to Kabul international Ag- Fairs.



3. A workshop under the title of (challenges of raisin industry) launched jointly with Tabasoom Raisin processing factory in Kabul industrial park with the total of 150 red raisin producers and representative of ARF&VEPA, EPAA, MAIL and CARD-F.

4. A study tour to Uzbekistan was conducted in Nov 2018, with total number of 11 participants including ANHDO technical team, BOD members, MAIL staff and ANNGO staff, among the team, a technical member of the Value Chai also participated in this event.

Infrastructure:

Almond pack house constructed and handed over to Ba-har –E-Kunduz almond producers co-operative (BKAPC) with 50 % ANHDO contribution. This pack house has the capacity of 5 metric tons.



Toolkits Distribution:

Identification and selection of 374 new beneficiaries including, 30 sweet cherry growers and 70 apple growers in Paghman district of Kabul province, 74 raisin producers in Bagram district of Parwan province and 200 almond producers in Samangan and Kunduz provinces. The harvest-ing tools were provided and distributed to these beneficiaries.



Apple Allocated Toolkits for 70 selected beneficiaries in Paghman district of Kabul province -2018

Items	Unit	# of items for each beneficiary	Number of Package
Aluminum Ladder 3.7M	Pc	1	70
Fruit Harvesting plastic basket with 14 kg capacity	Pc	10	70
Cloth Tarpaulin (3.5x5 M)	Pc	2	70
Plastic Tarpaulin (4x5 M)	Pc	2	70
Local Harvest Basket	Pc	5	70
Wheel barrow	Pc	1	70

Sweet Cherry Allocated Toolkits for 30 beneficiaries in Paghman district of Kabul province -2018

Items	Unit	# of items for each beneficiary	Number of Package
Aluminum Ladder 5 M	PC	1	30
Fruit Harvesting plastic basket with 14 kg capacity	Pc	10	30
Harvesting Scissor Felco 310	Pc	1	30
Local Harvest Basket	pc	5	30
Wheel barrow	Pc	1	30

Raisin drying Allocated Toolkits for 74 beneficiaries in Bagram district of Parwan province -2018

Items	Unit	# of items for each beneficiary	Number of Package
Bulk Shade cloth with 4M wide	m	50	74
Fruit Harvesting plastic basket with 14 kg capacity	Pc	4	74
Plastic Bag with 50 Kg capacity	Pc	50	74
Wheel barrow	pc	1	74
scissor Felco 310	Pc	2	74

Allocated equipment for red raisin safe sides for 5 beneficiaries in Bagram district of Parwan - 2018

Items	Unit	# of items for each beneficiary	Number of Package
Fence with 6.5x6.5 MM hole, 2.5 mm thickness and 1.5 M wide	M	100	5
Pipe 2 Inch, with work steel, 2 M Height and 2 mm thickness	Pc	50	5
Local Made handle Auger	Pc	1	5
Labor for Land preparation and fence installation	MD	10	5
Plastic Basket with 14 Kg capacity	Pc	6	5

Allocated tools for almond for 200 selected beneficiaries in Samangan and Kunduz provinces -2018

Items	Unit	# of items for each beneficiary	Number of Package
Plastic Basket with 14 Kg capacity	Pc	10	200
Plastic Bags with 50 Kg capacity	Pc	50	200
Parachute Tarpaulin 5Mx5M	Pc	1	200
Electronic Scale 40 Kg	Pc	10	200

Publications:

The following publications developed, printed and disseminated to project beneficiaries, P, AILs, DAILs and other stakeholders.

- Raisin marketing, almond, prune and sweet cherry value chain studies
- Apple post-harvest (1,000 sheets)
- Prune processing methods (1,000 sheets)
- Red Raisin processing methods (1,000 sheets)
- Sweet cherry post-harvest (1,000 sheets)
- Dry apricot processing methods (1,000 sheets)
- Fruit tree's pollination (1,000 sheets)

Surveys:

Production surveys conducted by the hired ToTs to know about the volume of grape and raisin, almond, apple, prune products in target area, the result is as follow:

Kabul

S/N	District	Province	Producer group name	# of trees / Jerib	Total# of trees of the group	Average yield of / tree in Kg	Average yield / Jerib in Kg	Total products in Kg
1	Farza	Kabul	Grape	300	25125	12	3600	301500
2	Mirbachakoot	Kabul	Grape	300	40818	14	4200	571452
3	Qarabagh	Kabul	Grape	300	27500	21.77	6531	598675
4	Qarabagh	Kabul	Raisin	300	48063	21.77	6531	
5	Farza	Kabul	Dry prune	220	13860	1.011	222.42	14012
6	Paghman	Kabul	Apple	82	49875	34	2788	1695750

Parwan

S/N	District	Province	Producer group name	# of trees in Jerib	Total# of trees of the group	Average yield of / tree in Kg	Average yield / Jerib in Kg	Total products in Kg
1	Bagram	Parwan	Grape	300	56110	14	4200	785540
2	Bagram	Parwan	Raisin	300	64977	14	4200	909678

Kapisa

S/N	District	Province	Producer group name	# of trees in Jerib	Total# of trees of the group	Average yield of / tree in Kg	Average yield / Jerib in Kg	Total products in Kg
1	Mahmood Raqi	Kapisa	Grape	300	53970	14.8	4440	798756
2	Mahmood Raqi	Kapisa	Raisin	300	29226	14.8	4440	432544

Kunduz

S/N	District	Province	Producer group name	# of trees in Jerib	Total# of trees of the group	Average yield of / tree in Kg	Average yield / Jerib in Kg	Total products in Kg
1	Chardara	Kunduz	Almond	50	25316	4.4	217.8	101696

Samangan

S/N	District	Province	Producer group name	# of trees in Jerib	Total# of trees of the group	Average yield of / tree in Kg	Average yield / Jerib in Kg	Total products in Kg
1	Aybak	Samangan	Almond	45	12292	7	315	86079
2	Hazrat Sultan	Samangan	Almond	54	14497	7	378	187558

ADAPTIVE RESEARCH



The adaptive Research department objectives are to:

- Develop technical solutions to facilitate the improvement of the Afghan Horticultural Sector by ensuring market-driven research priorities and
- Introduce commercial, climate adapted and marketable varieties of fruits.

ANHDO supported ARIA capacity establishment and building to enhance the on-going research activities and programmes in the six Perennial Horticulture Development Centres (PHDC's) and Agri-climate zones, located in Kunduz, Mazar, Herat, Kandahar, Jalalabad and Kabul. Capacity building of producers and traders was carried out in collaboration with ARIA to meet the competitive market demands and to meet increased demand for horticultural adaptive research.

The activities focus on mainly supporting ARIA to:

- Characterize the national collection by description and publication of fruit germplasm according to UPOV standard.
- Conduct agronomic and pollination trials, concentrating mainly on compatibility of varieties, identifying self and cross-pollinated varieties, and optimum dosage of Giberillin (GA3) on grape.
- Continue almond and apricot breeding programs to develop new varieties by late-flowering, self-pollinated and non-terminal bud in almond and in apricot the production of high quality fruit.
- Define fruit maturity and harvesting indices, suitability and shelf-life of varieties, physiochemical characters (fruit weight, height, diameter, firmness, pH, brix, acidity) against international standard

pomology and laboratory protocols.

ANHDO impact clearly manifests in:

- Established ARIA's staff capacity and preparing them for the continuation of the national horticultural adaptive research program
- Improving the value chains' beneficiaries' lifestyle in close cooperation with ARIA, assisting the local community to use the new horticultural technologies
- Preparing the portfolio of highly commercial and marketable of different fruit varieties following the above-mentioned research

Achievements of year 2018

Adaptive Research team of ANHDO provides continuous daily on-the-job theoretical and practical trainings to ARIA and EU-MAIL transition project staff and fresh graduate of agriculture faculty students regarding the pollination trials, agronomical trials, almond and apricot breeding programme, UPOV characterization; and Pomology Laboratory tests.

Furthermore, trainings for capacity building of PHDCs and ARIA staff of Herat, Balkh, Kunduz, Jalal Abad, Baghlan, Takhar, Badakhshan, Paktya, Kunar, Helmand and Kandahar on pomology lab activities have been held in Kabul and Balkh provinces.

Under almond and apricot breeding programme, we did 8 crosses and back crosses, and as the results we gained were 135 seeds of almond and 182 seeds of apricot.

Shelf life study of more than 60 high commercial and recommended varieties of 6 main species including,

(Apple, Apricot, Cherry, Peach & nectarine, Plum and Grape) has been done successfully. Characterization of fruits national collections for developing the register books and description of the national collections to identify duplicates, off types according to the UPOV standards, has been done.

As per ANHDO Adaptive Research action plan for the preparation and publication of the National Register Books, Pomology Lab quality manual and brochures, the Adaptive Research department successfully published the below-mentioned books, manual and brochure. It is worth mentioning that the publication of the Peach National Register Book is delayed; because of the unavailability of proper pictures of 10-12 varieties, therefore; the register will be published next year.

Major Activities Accomplished

1. On the Job Training:

The Adaptive Research team of ANHDO provides continuous daily on- the- job theoretical and practical trainings to ARIA and EU-MAIL transition project staff and fresh graduate of agriculture faculty students regarding the pollination trials, agronomical trials, almond and apricot breeding programme, UPOV characterization; and Pomology Laboratory tests. During this reporting period, the team conducted two practical capacity building trainings for more than 30 ARIA, MAIL, and DAIL as well as transition project staff in Mazar and Kabul regarding pomology laboratory activities, post-harvest practices, and breeding program of almond and apricot as well as adaptive research trails.



Meanwhile, the team provided technical solutions for the national collection of fruits in a three-day review of the national collections procedure held by ARIA. In addition to that, the team also provided and presented technical presentations about orchard management and post-harvest trainings held by the Value Chain Department in Badam Bagh, Kabul. Moreover, the team provided and presented a presentation about pomology laboratory role during the value chain training held in MAIL.

2. Apricot and Almond Breeding Program:

Under almond and apricot breeding programme, we did 8 crosses and back crosses and as the results we gained was 135 seeds of almond and 182 seeds of apricot. All the gained seeds are stratified in Jan 2019.

Also, all of the collected samples of apricot should go to Pomology Lab for physiochemical characterization and differentiation among the different lines and selection/



3. Apple, Plum, Peach & nectarine, Grape, Cherry and Apricot Shelf Life Trails

Shelf life study of more than 60 high commercial and recommended varieties of 6 main species including, (Apple, Apricot, Cherry, Peach & nectarine, Plum and Grape) has been done successfully. The shelf life trials are important for the purpose of storage and marketing. The shelf life trials were conducted to measure series of changes, which occur on quality of the fruits during the

storage life and to determine the difference between varieties and how much the shelf life period is of the single variety. The data was recorded as per species requirements. The complete reports of the trial will be published in the first quarter of 2019.



4. Characterization of Fruits National Collections in the Laboratory

Characterization of Fruits National Collections for developing the register books and description of the National Collections to identify duplicates, off types according to the UPOV standards, has been done on missed clones of the following National Collections in Kabul which are list as below:

- Plum National Collection- 18 clones.
- Cherry National Collection- 13 clones.
- Apple National Collection- 30 clones
- Apricot National Collection- 12 clones

5. Publications

As per ANHDO Adaptive Research Department action plan for the preparation and publication of the National Register Books, Pomology Lab quality manual and brochures, the department successfully published following books, manual and brochure.

5.1 Three Register Books (Grape, Plum and Pomegranate).

The data compilation and collection of the missed clones

were coordinated with transition project, and the review and translation of the Register Books were facilitated by ANHDO Adaptive Research Department.

5.2 Published three technical brochures on role of pomology laboratory on research activities, apple quality parameters and apple and pomegranate maturity indices.

6. Pomology Laboratory Data

Developed a Database for data collection on quality, maturity; and shelf life data was collected on apple, cherry, plum, peach/nectarine, grape apricot; and pomegranate, which will help ANHDO Research Department as well as ARIA to have a proper data management system.

7. GA3 on Seedy Varieties of Grape

The trial was conducted on three grape varieties (Hussaini, Taifi and Loghi), which are seedy varieties in order to make them seedless, so the trial had 9 treatments, each with 2 replications. The result was not much better, but it could be a good start for next years until gaining success with changing of dosages of gibberellin.

Meetings

The Adaptive Research team of ANHDO had normal meetings with ARIA and Transition Project staff regarding research, UPOV, breeding programme and Pomology Lab activities. Meanwhile, the team participated in several meetings regarding the handover of the collected data during PHDP-I & II and ANHDO. We have also maintained close collaboration with ARIA and EU-MAIL transition project regarding developing a plan for the above mentioned part.



CITRUS INDUSTRY DEVELOPMENT



The primary goal of the Citrus Development Team was the development of a National Afghanistan Citrus Strategy to resuscitate the industry in the Eastern Regions Provinces - Nangarhar, Laghman and Kunar.

The four decades of conflict effectively destroyed the Afghan citrus industry in the Eastern Region. The local production (of predominantly Sour Orange, mainly used for garnishing and flavoring food) satisfies less than 1% of the 200,000 tons citrus market demand. The once (1960-70) flourishing state-owned citrus farms in Nangarhar now under the control of the NVDA (The Nangarhar Valley Development Authority) were decimated and little remains of the citrus production capacity originally created to export citrus to the USSR.

Impact on citrus capacity was inhibited by the prevalence of CTV (Citrus Tristeza Virus). The risk mitigation strategy of destroying infected trees reduced available germplasm and delayed sapling production. Five years' international laboratory tests are only now yielding initial results. The prevalence of CTV was confirmed, but the tolerance and resistance of the Afghanistan Sour Orange to CTV are unfortunately still inconclusive. The anticipated tolerance and or resistance of the Afghanistan Sour Orange holds significant potential for the Afghanistan Citrus Industry in potentially presenting an alternative locally adapted rootstock, which is resistant to CTV as well as Phytophthora Gummosis.

Recent (July 2017) discovery of prevalence of Huanglongbing (Citrus greening), a citrus disease caused by a vector-transmitted pathogen, will demand a multi-sectorial mitigation and management strategy. The disease was first described in 1929 and first reported in China in

1943. The African variation was first reported in 1947 in South Africa, where it is still widespread. Eventually, it affected the United States, reaching Florida in 2005. Within three years, it had spread to the majority of citrus farms. The rapid increase in this disease has threatened the citrus industry not only in Florida, but the entire US. As of 2009, 33 countries have reported HLB infection in their citrus crop.

A Disaster Preparedness Response Team to react to this and similar pest and disease crises was established and coordinated by an ANHDO national consultant. Risk mitigation and management procedures will be researched and coordinated with all stakeholders.

Achievements of year 2018

1. Establishment of one Jerib Citrus Net House Nursery and one plastic tunnel for Nangarhar NVDA line department in summarkhel Nursery farm which have the capacity of 40,000 citrus sapling productions per one life cycle and beside that, during the period, the opening ceremony was organized, too.



2. Based on MOU which has been signed with NVDA, one hectare of citrus commercial orchard established to improve the varieties (Sanguinello Moscato and Taroccocalo) in Summarkhel nursery farm. so far, one hundred and sixteen jerib of citrus commercial orchard has been established and beside that, a comprehensive package of (Fertilizer (DAP and Urea) pruning tools as (pruning saw and lopper) and Agro chemical input has been provided to Nangarhar DAIL and NVDA department, as well.



3. A top grafting program in Nangarhar, Laghman and Kunar provinces has been conducted, in the result 508 trees grafted/replaced from sour orange to Eureka lemon and sweet orange.



4. A number of 512 people received theoretical and practical training regarding citrus orchard on citrus nursery establishment, citrus orchards best management and best operating practices, citrus IPM, chemical hazards to environment, citrus common pest & disease management

and citrus top grafting. Meanwhile, the comprehensive package of technical training was delivered to Nangarhar, Laghman, Kunar and NVDA line department extension worker, citrus growers, Nursery growers, NVDA and DAIL line department citrus operators.



5. Four exchange visits to Nangarhar, Laghman, Kunar has been conducted for NVDA employees and forty-nine extension workers, who were involved in citrus production. The overall objective of the activity was to transfer the best experiences of the citrus running activities supported by ANHDO; and facilitate the exchange of knowledge with each other.

6. Two net-houses has been established to improve the virus-free citrus seedling and sapling production in nurseries. These net-houses surrounded by a fence wall installation which includes a comprehensive package of supported pillar, door and Nail wire.

7. A study tour to Iran has been conducted for staff capacity building purpose and exchange of knowledge.



NURSERY INDUSTRY DEVELOPMENT



The private sector nursery industry development, its associated organizations and institutions aim to meet Afghan producers' nation-wide demand for certified perennial planting materials to increase the establishment of commercial orchards and vineyards. ANHDO supported the Afghanistan National Nursery Growers Organization (ANNGO) to open up membership for large scale commercial nurseries. Specific technical support e.g. monitoring, exchange, trainings, publicity, etc. was provided to the economically viable nurseries and promoted production of ornamental and certified fruit saplings. The cooperation will also lead to improve business oriented approaches, sustainability, diversification, qualification and opening market opportunities.

Achievements of year 2018

Capacity Building

1. A one-day IPM capacity building training was held in Srubi DAIL Department Hall under the subject of Integrated Pest Management of Pomegranate Training. This event was participated by 28 participants from NGA members, DAIL, orchard growers and NHLP.
2. A one-day IPM capacity building training was held in Kapisa DAIL Department Hall under the subject of Integrated Pest Management of Grape pre-harvest and control methods. This event was participated by 29 participants from NGA members, DAIL, Orchard growers, NHLP.
3. The Nursery Department of ANHDO recruited Nursery consultant with two assistants to run capacity building trainings for SPCD Inspector plus ANNGO field inspectors and NGA Field managers. Thus, it conducted capacity

building trainings on certification scheme planting material held in Kabul, Jalalabad, Mazar-e-Sharif & Kunduz provinces. As result 199 participants were trained on above mentioned topics.

4. An Exposure visit was organized for Kapisa, Alberoni University students and professors to visit Paghman NGA office, MSN, CPN, stool bed and to see NGA Office filing system. The main purpose of this exchange visit was to exchange their knowledge to each other.
5. a four-day ornamental industry promotion workshop was organized by HVP and held at MAIL Conference hall, Jamal meena, Kabul and an ornamental workshop was conducted to six NGAs /ornamental companies' owners and thirty MAIL horticulture technical staff members.
6. A study tour to Uzbekistan, was conduction with 11 participants including ANHDO technical team, BOD members, MAIL staff, ANNGO staff; and among the team there was also a technical member of the Nursery Department participated, as well.
7. Facilitated and supported ANNGO's participation and ornamental companies in the national Ag- fair, which took place in Kabul province.



Toolkits Distribution

The Nursery Department had two distributions of plastic bags to Eastern NGAs (Laghman, Kunar & Nangarhar) provinces for citrus producer of NGA members to enhance their products high quality of the citrus certified saplings for the recommended new varieties - The first distribution was 3300 kg and second one was 5612 Kg.

A total of 8,912 kg plastic bags was procured and distributed to NGAs in eastern provinces to produce 891,200 certified citrus saplings true to type, vigorous, resistance against pest and diseases (Free virus) according to ANNGO standards.



Publications

1. The Nursery Department prepared and printed out 2500 IPM brochures (Agro-chemical combination and way of usage methods.) and 2500 ornamental plant (Judas tree) brochures which were distributed to NGA members, ANNGO, PHDCs, DAIL, MAIL ; and the effectiveness of these brochures used as a best tool for awareness of NGA members and others.

2. A number of 35 IPM stand banners have been published and distributed to 28 NGA offices. These banners helped field managers in identification of pest and diseases, methods of control, as well as in decreasing the number of pest and diseases in the target areas.

3. Published 500 volumes of training manual and distributed/handed over to ANNGO office.

4. A documentary film on ANNGO certification scheme was produced and disseminated to ANNGO & project beneficiaries and stakeholders.

5. In close coordinating with Horticulture Directorate of MAIL, Kabul University, Horticulture Department, Faculty of Agriculture, the Nursery Department prepared and published a number of 1,000 volume ornamental plant catalogues and handed over to the Horticulture Directorate of MAIL to distribute to beneficiaries, ornamental companies, 6 PHDCs, Kabul and provincial universities, 29 NGAs in 22 Provinces, stakeholders, MAIL, DAIL and related NGOS.

6. In close coordinating with SPCD MAIL, the Nursery Department of ANHDO prepared and published a number of 135 volume certification scheme planting materials guidance manual and handed over to SPCD Directorate to distribute for SPCD field inspectors, ANNGO field inspectors, as well as for 29 NGA field managers.

These effective manuals guided field inspectors to properly monitor and inspect the certified production nurseries, MSNs, Stool beds and other certification scheme planting materials true to type, vigorous, and free of virus.

7. An inclusive manual for Organic Certification Scheme in Afghanistan has been developed. This manual describes how we can extend the organic certification in Afghanistan, what the guidelines are and how to implement a proper scheme.



Success Story



Success Brief:

For the first time in horticulture sector, the Maturity, Quality and shelf life of more than thirty Apricot and Pomegranate best commercial varieties have been studied in order to help farmers produce the best quality fruits. Producers consider quality standard of the fruit and traders export best varieties according to the standard demand of the international markets.

1. Apricot

- a) Quality: 10 varieties
- b) Maturity: 7 varieties
- c) Shelf life: 11 varieties

2. Pomegranate

- d) Quality: 6 varieties
- e) Maturity: 9 varieties
- f) Shelf life: 10 Varieties

Problem:

No information was available on (quality, maturity and shelf life) characters of the best varieties of apricot and pomegranate and their standard production. Due to lack of knowledge about fruits maturity, our orchard growers were harvesting over-mature; or sometimes, immature fruits. Producers were unaware of the quality characters of fruits and traders storing fruit for more than its normal

shelf life period. This lack of information will cause damage to the whole chain of apricot and pomegranate.

Solution:

ANHDO, through its projects conducted a three years' trial on maturity, quality and shelf life of apricot and pomegranate from 2016 to 2018. In 2016, maturity trials were conducted on apricot and pomegranate commercial varieties, and in 2017, beside the maturity, quality parameters of the apricot and pomegranate commercial varieties had been studied. In 2018, apricot and pomegranate commercial varieties shelf life was studied in cold storage. The bellow listed characters were collected under the trial.

1. Quality & Maturity

- Flowering Time
- Repining Time
- Maturation Date
- Weight (gr)
- Height (mm)
- Grade
- Firmness (kg)
- TSS or Sugar Content (Brix)
- PH

2. Shelf life

- Harvesting date
- Observations date

- Total weight of one specific clamshell with fruits
- Picture
- Total weight of fruit in (gr)
- Firmness (kg)
- Total weight of juice in (gr)
- Total content of sugar (brix degree)
- Fruit damage/ presence of rot
- Growth of Molds
- Browning and drying of stem in cherry



Impact:

The above data, for every commercial variety of Apricot and Pomegranate, will help the orchard growers and producers, traders to focus on production, and exporting of the best quality fruits to National and International Markets. In the meanwhile, it will give the necessary knowledge to the traders, who are going to store fruit in cold storages for supplying of the product during the off-seasons. Also, students and researchers, who are working on apricot and pomegranate, will use the above data on their analysis, which will help them make their studies valuable and valid.



An international market has its own standards for the physical and chemical characters of fruits. That's why these trials have a huge impact on production of fruit to a new whole level, and according to the market demand in Afghanistan. The Maturity, Quality and Shelf-life trials have been conducted for the first time in Afghanistan, and the benefits of these trials results will directly go to the private companies, traders, juice processing factories, producers, university teachers and research students; and all those organizations, who are working on Apricot and Pomegranate production through brochures, manuals and online on the website of ANHDO. During recording of the different above-mentioned characters in the pomology laboratory, more than fifteen fresh graduate students hired for theoretical and practical learning on quality, maturity and shelf-life tests.



Success Story



Top -Grafting

Sour orange has been introduced in Afghanistan as a rootstocks long time ago and besides utilizing this species as rootstock, some people used it as an ornamental tree. At the same time, some people like to have sour orange fruit as substitute to lemon. After some time, many people started to utilize sour orange fruit as substitute to lemon and the demand increased, which resulted in huge establishment of sour orange orchards in Eastern Afghanistan.

Since the demand for the sour orange fruit is limited to a few provinces of the country, thus the supply surpluses over the demand and the prices have dropped down in the past couple of years. Due to lack of market for their sour orange fruits, some of the sour orange producers started to uproot their sour orange trees.

When the Citrus team of ANHDO received the information regarding uprooting the sour orange trees, the team immediately intervened and made the growers aware that there is another option rather than uprooting the readily established trees.-That option was “ top-grafting” of the sour orange trees with other required species such as; sweet orange, lemon and others.

The top- working (top grafting, re-working) establishing citrus trees to a different variety is sometimes necessary to meet changing market demands, and correct the wrong variety. Top-working should only be carried out on healthy

trees using good quality bud wood, which is free of pests and diseases, especially viruses.

Before we recommend this method to sour orange growers, we practiced it, and got good results. So now, we are ready to recommend this method of grafting to sour orange growers to graft their trees to a different high value variety on their sour orange trees rather than uproot them. so far, we top grafted twenty-three (23) sour orange orchards and wrong orchard on lemon and sweet orange in Nangarhar and Kunar provinces, and beside the citrus growers from Laghman, Nangarhar kunar, provincial DAIL extension workers and kunar province Nursey growers also received technical training regarding top-grafting so that they have the capacity to do the top working technique and practice in citrus (sour orange and wrong variety orchard), in addition to the above, the same practice was done on the rest tree as mull berry, fig, ornamental plant and persimmon as well .



Success Story

Success Brief:

It is a great honor to present the two register books of (Apricot and Pomegranate) published under Afghanistan Fruits National Collection/Germplasm. It's a major event in the history of perennial horticulture development in Afghanistan, which comes as a result of persistent and tireless endeavor of many years of perennial horticulture development project implemented by Afghanistan national horticulture development organization (ANHDO) through the continued technical and financial support of European Union.

Problem:

In the past, Afghanistan was unable to collect the fruits tree germplasm of national fruit varieties due to war and conflict. The fruit variety and genetic resources of Afghanistan was unknown and the perennial horticulture sector was paralyzed. Farmers were producing low quality fruit for local markets. They were facing many challenges including varieties selection, low fruit productivity and lack of market. Academic centers and experts in perennial horticulture sector were unaware of available varieties of single species of fruit in Afghanistan. Research institutes and organizations were unable to develop research protocols and activities for the main problem of the fruit producers.

Solution:

Perennial Horticulture Development Project (PHDP) started the collection of the varieties of deferent fruit species from all over the country in 2006 and in 2009. Establishment of the National Collections started in all six perennial horticulture development centers. After three years of survey, data collection and bud-wood form different varieties, the National Collections / fruit germplasm was established in 2009. The idea behind establishment and collection of the varieties were to collect as much from the commercial varieties as possible, so more than nine hundred (900) accessions of deferent

fruit species like: Apple, Plum, Peach, Pomegranate, Pear, Cherry, Grape, Almond and Apricot as well as Citrus varieties, which included some imported varieties from European countries, as well.

Impact:

After the establishment of the National Collections of fruit varieties, we start for the characterization process according to UPOV standards. The process of the UPOV characterization for Apricot National Collection has been finished on late 2014, and the first edition of the Apricot Register Book was published in February 2015. This great achievement was the endeavor of PHDP, which is strictly followed by ANHDO under technical and financial support of European Union. The evaluation on yield per tree, flowering time and re-opening time, market price of the apricot varieties of National Collection allowed technical teams to introduce the best commercial varieties of apricot to ANNGO, Agriculture faculties; and partner organizations.

The Pomegranate National Collection characterization finished in 2015, and the first edition of the Pomegranate Register Book was published in 2016.



Annexes

Annex 1. ANHDO's past and present projects and donors

I. Support to Afghanistan Private Sector Horticultural Development Transition Project (HDTP)

Project Name	Support to Afghanistan Private Sector Horticultural Development Transition Project (HDTP)
Donor	European Commission Kabul, Afghanistan
Contract no	DCI-ASIE/2012/295-864
Grant amount	1,298,320 Euro
Contract duration	28 Aug 2012 to 27 Aug 2015
Project status	Completed
Specific Objective	The private sector perennial horticulture (fruits & nuts) industry profitably exploits markets at home and abroad with a range of fresh and added value fruit and nut products that meets market demands of quantity and quality, and leverages the natural advantages of the favorable Afghanistan climate for production of fruits and nuts.

II. Kapisa and Surobi horticulture survey

Project Name	Global Horticulture Assessment in Kapisa province & Surobi district, Kabul
Donor	French Embassy (Pole de Stabilite'), Kabul
Grant amount	30,000 Euro
Contract duration	Nov 2012 to Feb 2013
Project status	Completed
Specific Objective	<ul style="list-style-type: none"> • Improve agricultural production by strengthening the value chain • Enhance the local economy by developing the food industry • Increase provision of adequate technical training • Improve access to safe drinking water for the residents of Surobi
Main activities	<ul style="list-style-type: none"> • To provide an overview of the horticulture value chain • To provide SWOT analysis of the horticulture value chain in Kapisa and in Surobi

III. Support to the Development of Agriculture Private Sector: Perennial Horticulture (HPS)

Project Name	Support to the Development of Agriculture Private Sector – Perennial
Donor	European Commission Kabul, Afghanistan
Contract no	DCI-ASIE/2012/295-864
Grant amount	7,336,840 Euro
Contract duration	Dec 2013 to Dec 2018
Project status	Completed
Overall Objective	Contribute to the improvement of horticulture and the capacity of the private sector
Specific Objective	<ul style="list-style-type: none"> • Increase capacity of the Afghan private sector nursery industry to meet the demand of Afghan farmers. • Adaptive research provides the technical solutions to increase productivity and value. • Pilot demonstration of enhanced post-harvest management systems and value chain development for key perennial horticulture crops. • A strong and profitable citrus industry in eastern Afghanistan is developed.
Implementing partners	ANHDO as Head of consortium & Relief international co - applicant

Annexes

Annex 1: Continued

IV. Horticulture Value Chain Development Project (HVP)

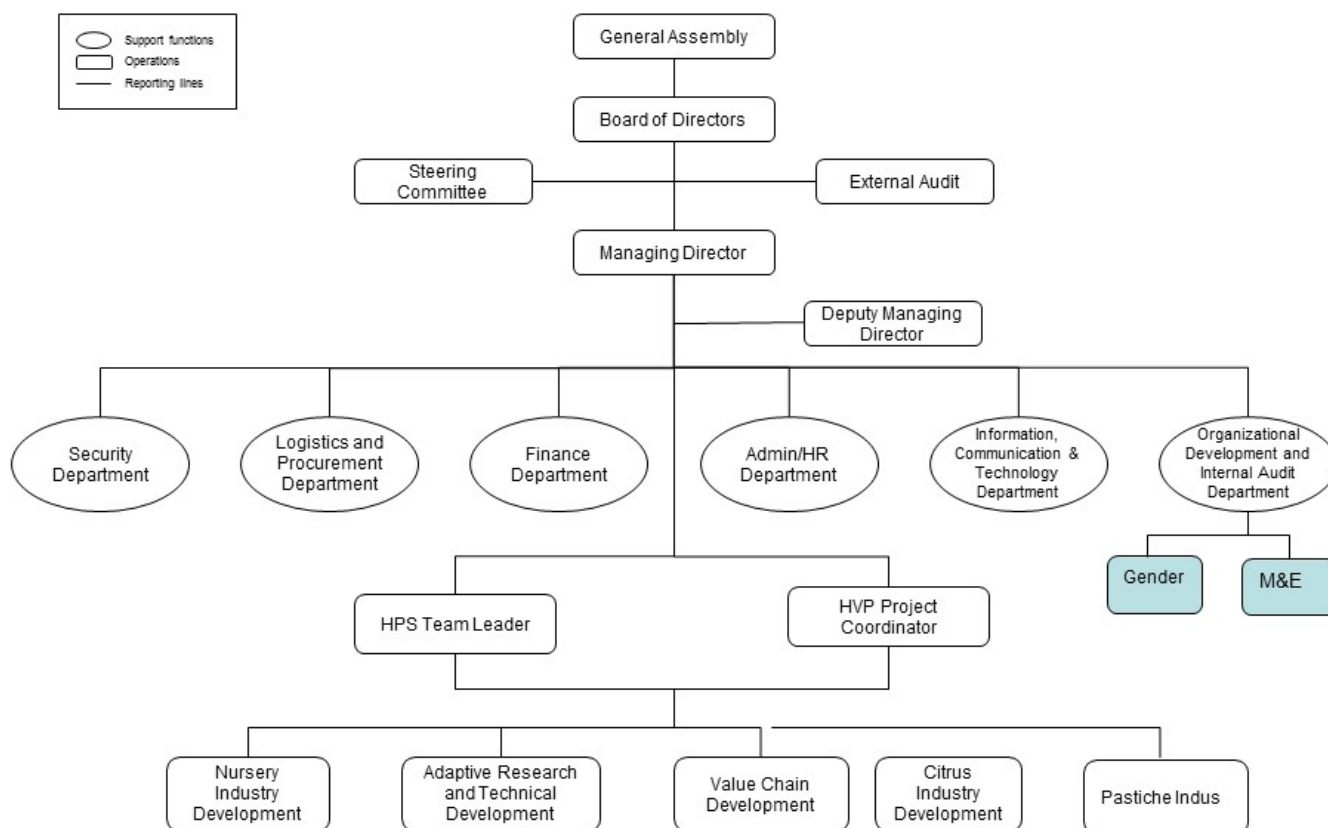
Project Name	Horticulture Value-Chain Development Project (HVP)
Donor	Agence Française de Développement
Contract no	AFD Contract n.12/CAF10490
Grant amount	2,200,000 Euro
Contract duration	Nov 2014 to Dec 2018
Project status	Completed
Overall Objective	To contribute to the uplifting of horticulture (yields, quality standards, market value) and enhancement of capabilities of the private sector, through specific pilot actions in target areas.
Specific Objective	<ul style="list-style-type: none"> • Support to the nursery industry in a specific area • Adaptive research to find commercially viable clones of apricot, pomegranate and citrus & post-harvest laboratory activities for pomegranate, apricot, citrus • Market driven value chain study and establishment of private value addition pilots & Pilot actions to improve pomegranate and apricot value chain • Support development of robust citrus industry in eastern Afghanistan & specific activities to improve the citrus value chain • Enhance the management capacity of ANHDO in good governance

V. Pistachio project in Herat

Project Name	Pistachio Promotion Project
Donor	The Istituto Agronomico per l'Oltremare - Italian Ministry of Foreign Affairs
Grant amount	112,000 Euro
Contract duration	Nov. 2014 to July 2016
Implementing Partner	Herat Directorate of Agriculture (MAIL) & Agriculture Faculty of Herat
Project status	Completed
Specific Objective	<ul style="list-style-type: none"> • Training of technicians and farmers • Technical support for the setting-up of production lines on farms and promotion of pistachio grower associations • Setting up and consolidating growers' associations • Quality test • Creating Added Value for local germplasm • Support to production through promotional activities

Annexes

Annex 2. ANHDO's organizational structure





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