International Relief and Development

Southern Regional Agriculture Development Program (SRADP)

RAISIN DRYING SURVEY REPORT
(Kandahar Region)

October 2011

Compiled and Written by: Ayaz Khan

Edited by: Kenneth Swanberg

Table of Contents

Table of Contents ii

List of Acronyms iii

1. Historical Perspective 4
2. Raisin Production 4
3. Raisin Exports 5
4. Raisin Consumption 6
5. Kandahar Raisin Drying Sheds 7
5.1 Sun-Dried (*aftabi*) Production: 8
5.2 Shed (*kishmish khanas*) Production: 8
6. AVIPA Plus Initiative 9
7. Drying Sheds Survey 11
7.1 Ownership and Communal Use: 12
7.2 Usage Satisfaction Levels: 12
7.3 Dried Grapes Comparison of Two Seasons – By Weight: 12
7.4 Comparison of Drying Conditions: 13
7.5 Comparison with Previous Year: 14
7.6 Grapes and Raisin Prices – Comparison: 14
7.7 Grapes Shrinkage: 16
7.8 Design Improvements Suggestions: 16
8. Raisin Drying Symposium – Kandahar University 17
9. Findings 19
10. Recommendations 20
11. Conclusions ..... Error! Bookmark not defined. 20

Annex "A" SURVEY OF RAISIN DRYING FACILITY OPERATORS IN KANDAHAR 21

List of Acronyms

AVIPA+	Afghanistan Vouchers for Increased Production in Agriculture+
Ag-V	Agriculture Voucher
Ag-T	Agriculture Training
CFW	Cash For Work
CSO	Central Statistics Organization
DAIL	Director of Agriculture, Irrigation and Livestock
DST	District Stabilization Team
GoIRA	Government of Islamic Republic of Afghanistan
FAO	Food and Agriculture Organization
IRD	International Relief and Development
IP	Irrigation Package
m	Meter
cm	Centimeter
MAIL	Ministry of Agriculture, Irrigation and Livestock
M&E	Monitoring and Evaluation
SRADP	Southern Region Agriculture Development Program
QAQC	Quality Assurance and Quality Control
USG	United States Government
USAID	United States Agency for International Development
USAIDGC	USAID General Contractor

1. Historical Perspective

Owing to abundance of grape crop, historically this region has been famous for raisin drying, which has also been serving the population as a food substitute in the winters. At the same time, the surpluses have also been used as a source of additional family income. With the improved means of mechanized communication, farmers started enhanced raisins sale where a sizeable part trickled down to international markets.

Raisins have a distinguished history in Afghanistan and remain an important high value horticultural product and Afghanistan's number one agricultural export by value. Prior to the Soviet invasion Afghanistan produced 10 percent of the world's raisins and was a major player in international markets. According to the UN Food and Agriculture Organization (FAO), production peaked at 86,000 metric tons in 1981. However, by the end of the 1980's production had declined 75 percent due to war and civil strife. At present, Afghan raisins account for 3 % of the world production with production rebounding in the last ten years. Production remains well below pre-Soviet invasion levels.

2. Raisin Production

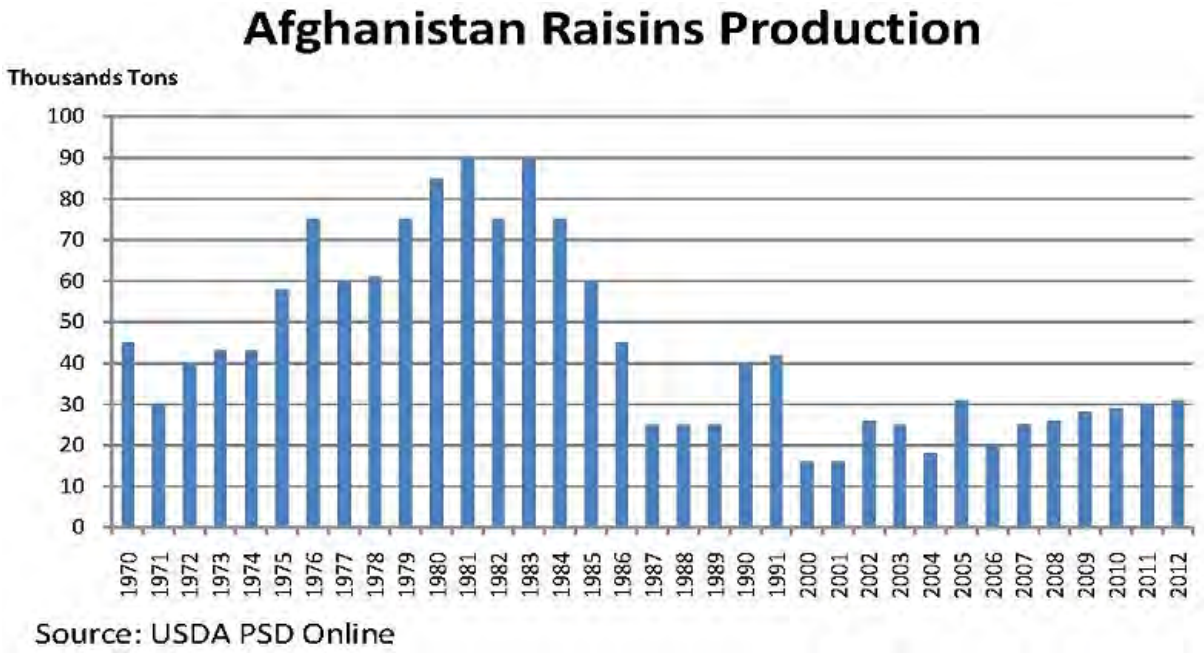
Grapes are grown widely throughout Afghanistan, most without trellising or other vine support, covering an estimated 60,832 hectares. The area under grape is 34 % of the total fruit crop area. The central provinces (Kabul 22 %, Parwan 15 %) are the major grape producing area accounting for 37 % of total production. Poor harvest techniques and post-harvest handling are responsible for an estimated 15% to 25% annual losses. Afghanistan produces two main types of raisins. Green raisins (*Kishmish*) are dried in shaded and ventilated houses while red and dark-brown raisins (*Aftabi Kishmish*) are type of sun-dried on the ground and roofs. Raisin production tends to track grape production closely each year.

Production estimates for Afghan grapes are quite disparate; FAO estimated grape production 389,000 tons in 2009 while Afghanistan's Central Statistics Organization (CSO) estimate for the same year was 912,000 tons. Post believes the CSO statistics significantly overstate grape production. The wide divergence of estimates for grape production makes it difficult to estimate the quantity of grapes used for raisin production. Taking the common grape - raisin conversion ratio (450 kg of grapes produce 110 kg of raisins) and derive an estimate for grape utilization for raisin production. Based on this conversion an estimated total 126,818 tons of grapes will be used for raisin production during 2011 – 12, producing about 31,000 tons of raisins.

Forecast for 2011 – 12 raisin production is 31,000 metric tons 3 percent higher than 2010 marketing year and 20 percent higher than the ten year average. The 2010 – 11 crop suffered due to excessive rain and hail storms.

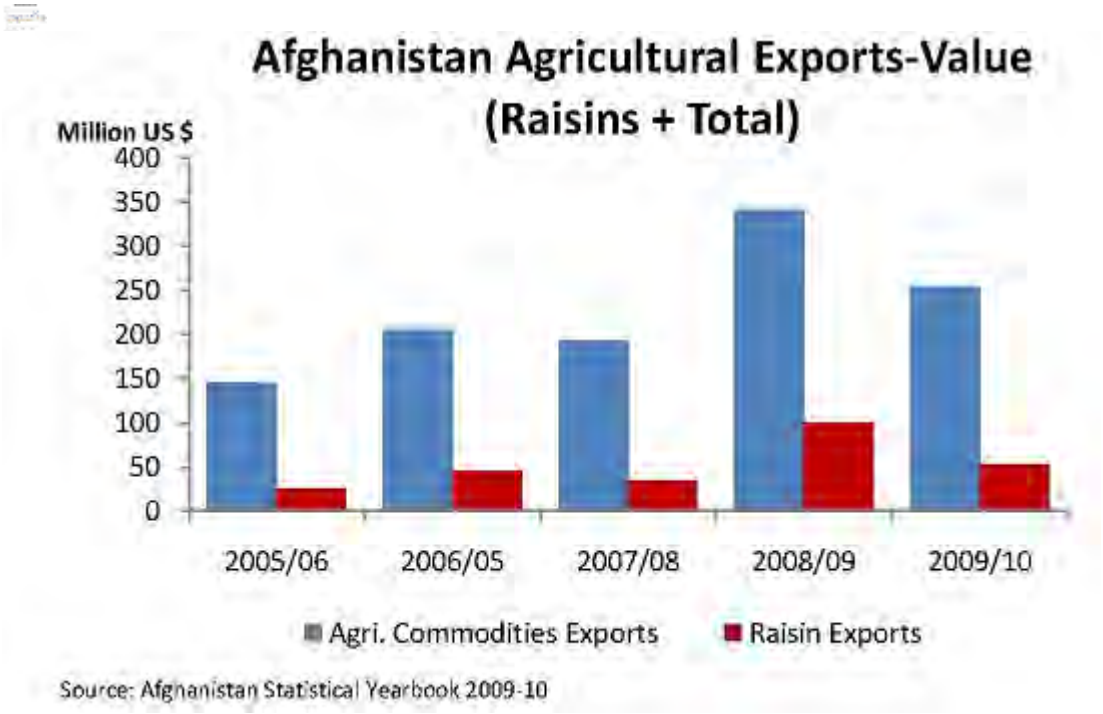
Despite the 2004 and 2006 droughts, overall raisin production has doubled in the last decade as productivity improves and area expands. This can be attributed, in part, to the involvement of the international development community which has devoted substantial attention to the grape and raisin sectors since 2001[1].

[1] 2011 Raisin Annual, GAIN Report No.2011-11

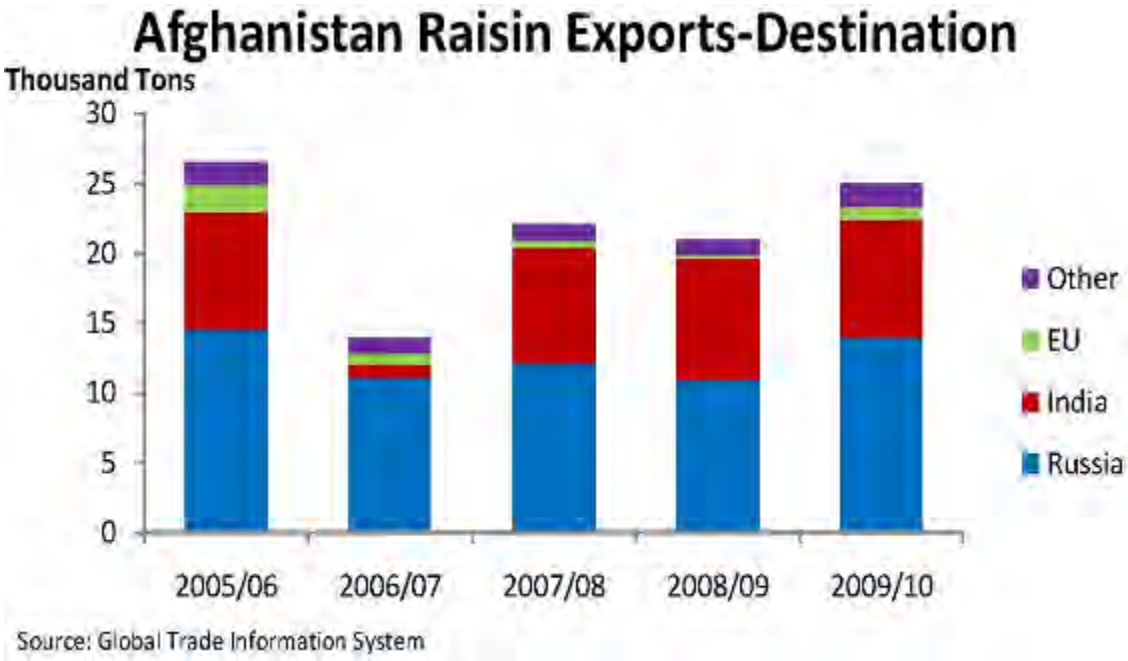


3. Raisin Exports

Despite the turmoil over the past 30 years, Afghanistan has kept their position in the top ten raisin exporters and is responsible for four (4) percent of the total raisin exports to world markets. Raisins are the number one agricultural export commodity of Afghanistan and contribute 17 percent of the total agricultural export value. The best export markets for Afghan raisins are Pakistan, India, and Russia where consumers still remember the quality of Afghan raisins from the 1970's. Different raisins have different export destinations; green raisins have a good market in India and Pakistan while red raisins are exported to Russia and Eastern Europe.



In regional markets Afghan raisins are famous for their better taste and organic nature. First tier countries such as United States and European Union are complicated export destinations for Afghan raisins exports due to the poor quality and lack of adherence to international food standards by raisin processors. However, Afghan exporters have sent shipments to both the U.S. and European Union in recent years with the European Union proving to be major growth market. Through the first six months of 2010 – 11 (October – March) exports to the European Union grew 527 percent to 1,952 tons when compared to the first six months of the previous year. At this pace exports to the European Union could total 5,000 tons in 2011 – 12. The graph below outlines the destinations of Afghan raisin exports but excludes exports to Pakistan for which there is not a reliable data source.



Afghan raisin exports also face difficulties during transport to their final destination when compared to regional competitors (Iran and Turkey) because of poor transportation, improper loading and unloading, and lack of modern custom equipment in the clearance process. Additionally, there is a history of origin adulteration where Afghan raisins are shipped to Pakistan or Iran and labeled as Pakistani or Iranian product for export to a third destination. Quantifying transshipment of mis-labeled raisins is difficult but will likely decline in the near future as a result of the improvement of customs clearance processes and the processing and packaging practices of Afghan raisin companies.

4. Raisin Consumption

Raisins are an important ingredient in the Afghan dish *Qabili Pulao,* a rice and lamb dish that has raisins sprinkled within the rice. Raisins are also used as a snacks with with other dry fruits in daily tea and during festivals like *Eid*, *Nawrooz* (1st day of the Zoroastrians solar year) and other special occasions. Raisins are also used in the *Haft Mewa,* a fruit salad made from seven different nuts and dried fruits in during the *Nawrooz* festivities. In fact, domestic demand for raisins and for dry fruits increases during *Nawrooz* and *Eid*. Despite these unique uses, Afghanistan is not a large

consumer of raisins and only about 14 percent (4,000 MT) are consumed locally. Food industry utilization, such as bakeries and confectionary, is limited in Afghanistan at present with the majority of raisins being consumed directly by consumers. Green raisins are consumed in the domestic market more than red raisins. The majority of Afghan raisins are exported to the regional countries like Pakistan, India, and Russia where they are used in a variety of products such as biscuits, cakes, chocolates, and ice cream.

5. Kandahar Raisin Drying Sheds

Besides a large variety of different fruits, Kandahar Province is most famous for the abundance, diversity and multiplicity of grapes. It is due to this reason that Kandahar has been making considerable contributions towards raisin production.

Traditionally, raisins have been produced by two techniques. The red *aftabi* grape is usually sun-dried (and the green *kishmish* grape is dried in the mud-brick shed (*kishmish khana*). Owing to sunlight exposure, *aftabi* is a dark-brownish or black raisin, often used in cooking dishes and bakery products, whereas, the shed dried raisin is often yellowish-green. The shed dried greenish raisin generally has a higher market acceptance and fetches a better price. It is often made from the long, seedless *Shindoo Khani* variety of grapes, which are the most expensive. Kandahar and its surrounding districts are famous for this variety.

Photo 1: Traditional *kishmish khana drying shed*.

5.1. Sun-dried *aftabi* production: Sun-dried raisin production is always the last choice of the farmers. It is mostly comprised upon 20 – 30 % of the crop after trimming the waste, sorting out the shattered berries, eliminating the wasp-damaged grapes, and throwing out the spillage and left-over fruit after the end of the fresh grape harvest.

These grapes are sun-dried on any available surface with minimum inputs. Semi-dried raisins are often mixed with dust to help them dry. The extreme dryness of the air – relative humidity of 15% is common in August and September – causes the raisins to dry down to 12-13% moisture. They then can easily be shoveled without clumping. Their cap-stems become very brittle and can be readily rubbed off.

Due to the way that they are produced, and their status as a third product in the production process, Afghan *aftabi* raisins are not of the highest quality. They require double washing and careful hand picking to render them acceptable for a discriminating market.

5.2. Drying Shed (*kishmish khanas*) Production:

In this technique raisins are produced by drying the green *kishmish* grapes in simple mud-brick structures, with lattice sides. The buildings are oriented to catch breezes, mostly 3 meters wide and variable length. By September, night time temperatures are quite cool and so the fruit is not subjected to constant intense heat nor are they in direct sunlight. Generally, one linear meter of the *kishmish khana* will hold one *kharwar* (400kgs) of fresh grapes, which will ultimately yield about 100kg of green *kishmish* raisins.

Photo 2: Grapes hanging on wooden sticks in kishmish khana.

When the grapes are harvested and their bunches trimmed, they are hung on sticks that are placed in sockets drilled in the mud walls on the inside of the *kishmish khana*. A gentle, lateral air flow is necessary. If too many grapes are hung in part of the house restricting airflow, the respiring grapes can actually create pockets rich in carbon dioxide. Hapless vineyard workers who try to escape work by hiding in the *kishmish khana* and fall asleep there sometimes never wake up.

Grapes are placed in the traditional adobe drying sheds for about 30 – 35 days to dry. - As a result the traditional adobe drying sheds are used for one batch per season. There is usually not enough harvest remaining for a grower to plan on a confirmed double batch.
Given this situationt in the beginning of 2010, farmers of Nagahan Village, Arghandab, approached AVIPA Plus and requested the building of the new raisin drying sheds, as shown in the picture above. Their request was based on their observations of the two such sheds constructed by Central Asian Development Group (CADG) during 2006 – 7. The new drying sheds, referred to as the kishmish khanas, could dry the raisins in 15 days, thereby allowing them to dry two batches of raisins per season.

6. AVIPA Plus Initiative

After receiving Nagahan Village farmers' request through Arghandab District *Shura* and District Stabilization Team (DST), engineers from Cash for Work (CFW) visited the CADG built sheds. Besides checking the dimensional details, they also consulted the

local users who displayed their total satisfaction. Based on this data, construction drawings and other related documents were developed and after seeking approval, work commenced in March – April 2010.

Up to the present, CFW has constructed 270 raisin drying sheds, with following two distributions:

- Arghandab District – 100.
- Rural surroundings of Kandahar City District No.5 – 170.

An average shed has cost US$ 20,000. Local contractors erected the sheds.

Photo 3: Piped-frame grapes hanging structure, along with passage on either side.

Photo 4: Farmer inspecting the wire-sag and grape droppings on floor.

7. Drying Sheds Survey

During the follow up period of AVIPA Plus, by which time some of the sheds have been under farmers / owners use for almost two raisin drying seasons, the following feed back has been received. The vast majority of the farmers / owners expressed deep satisfaction for the new drying facilities.

It is in this perspective that AVIPA Plus decided to conduct a brief survey of their newly built facilities, having the following objectives:

- A structured feed-back from the farmers / owners, using the new raisin drying sheds.
- Comparison with the traditional adobe green *kishmish* drying sheds, with respect to the time period for drying a batch of raisins.
- Conversion ratio of grapes to raisins under both drying techniques.
- Status of market acceptability of raisins produced by the new drying sheds, including the impacts on price.
- Potential of future replications, including any suggestions for design modifications.

For meeting these objectives, M&E Department took a lead and designed a brief, but practical questionnaire, where they were adequately supported by QAQC. The survey questionnaire is attached as **Annex "A"**.

Four focus-group interviews were conducted inShurandem and Is-haqai at Kandahar City District 5, and in Nagahan and Mashkoray of Arghandab District. In this way 48 facility owners / users were interviewed, representing a sample size of about 18 %. The survey results revealed interesting, and highly encouraging results.

7.1 Ownership and Communal Use:

The respondents were 100 % sole owners, who displayed their:

- Total satisfaction with the new sheds.
- A vast majority shared their sheds with non-owners, who were either their relatives, extended family members or neighbors.

7.2 Usage Satisfaction Levels:

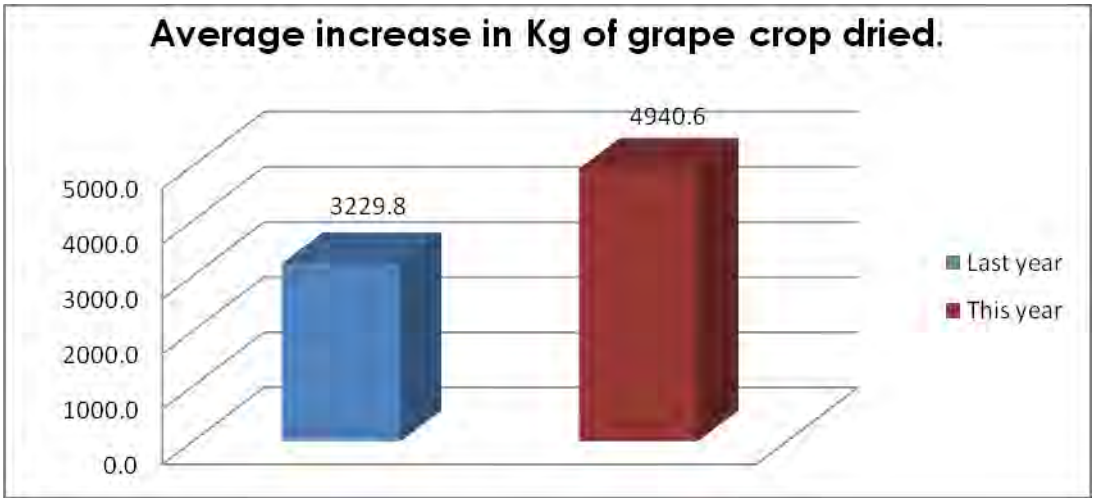
The key survey results revealed that:

- 100% of the respondents dried grapes for the past two seasons.
- 100% of the respondents reported that their drying capacity increased.
- 100% reported that AVIPA Plus sheds were an innovative improvement as compared with traditional ones.
- 100% stated that the new sheds were easier to use, dried faster, and increased drying capacity.
- 100% reported quality improvements to their raisins.

7.3 Dried Grapes Comparison of Two Seasons – By Weight:

Respondents were asked, based on their experience of two years with AVIPA Plus sheds, to draw a comparison with their traditional facilities. Their response is summarized below:

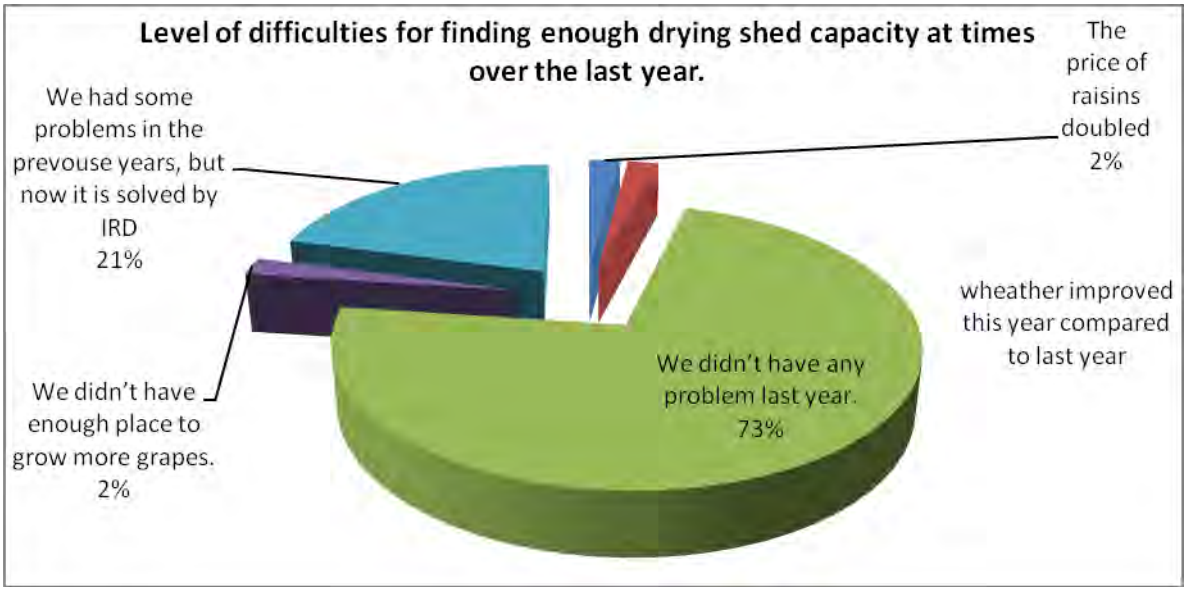
- On the average, the farmers reported a 65% increase in the volume of grapes dried for raisins compared to the year before.
- From the 48 respondents, the volume of drying per season varied from 400 kg to 13,500 kg, resulting in an average of 6,000 kg per shed per drying cycle.
- The drying cycle in AVIPA sheds was 13 – 15 days, as compared with 30 – 35 days in the traditional adobe sheds.



7.4 Comparison of Drying Conditions:

Farmers were asked if they had enough drying capacity prior to AVIPA sheds. They were also questioned for drawing the difference of their raisin drying experiences vis-à-vis finding enough drying sheds over the last year. The mixed response was:

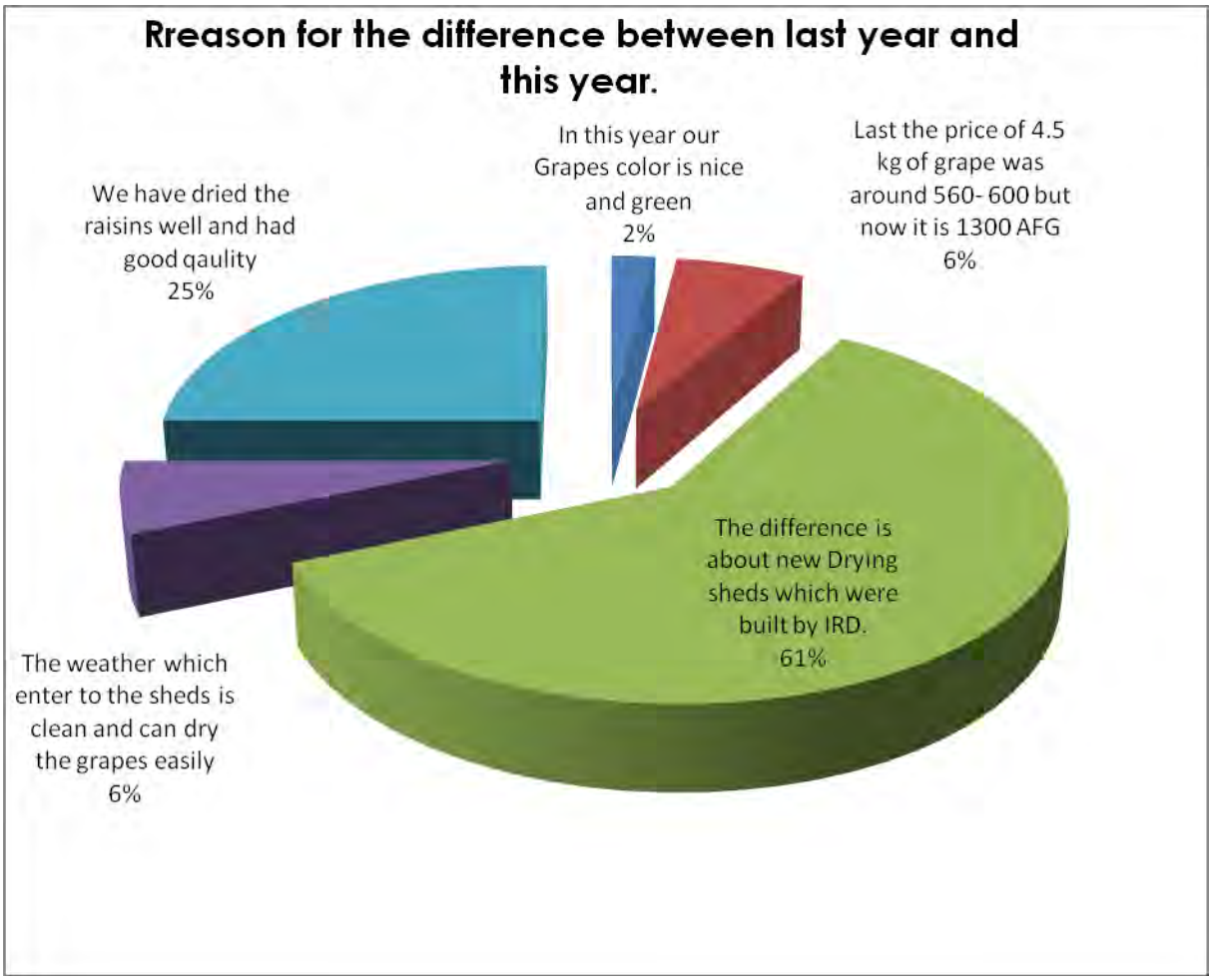
- 21 % responded that paucity of drying capacity always existed, which has greatly been curtailed now due to AVIPA sheds.
- 2 % stated that raisin prices had doubled, which attracted the majority towards grape drying.
- Owing to this reason, 2 % stated that they wanted to grow more grapes but did not have enough land.
- 73 % said that they did not face any problems in the previous year. They also responded that during this year climatic conditions have been more favorable for raisin drying.



7.5 Comparison with Previous Year:

The last statement from the above question leads to yet another inquiry, comparison between this year and the last year. Following was the response:

- 2 % said that in this year dried raisins had attained an attractive greenish-yellow tinge, which is greatly favored in the market.
- 6 % were of the view that drying environments in AVIPA built sheds is clean, almost dust free and better air circulation. This has facilitated a better production of raisins.
- 25 % responded that accelerated drying results in faster turn over and better quality.
- 61 % stated that it is due to good and improved design of new sheds, where IRD-AVIPA gets all the credit.



7.6 Grapes and Raisin Prices – Comparison:

Inquiries were also made about the raisin prices and the grapes shrinkage into raisins. Despite being an indicative survey, this information will provide an information base for any potential initiatives in the raisin drying sector. In this context survey results revealed following variations:

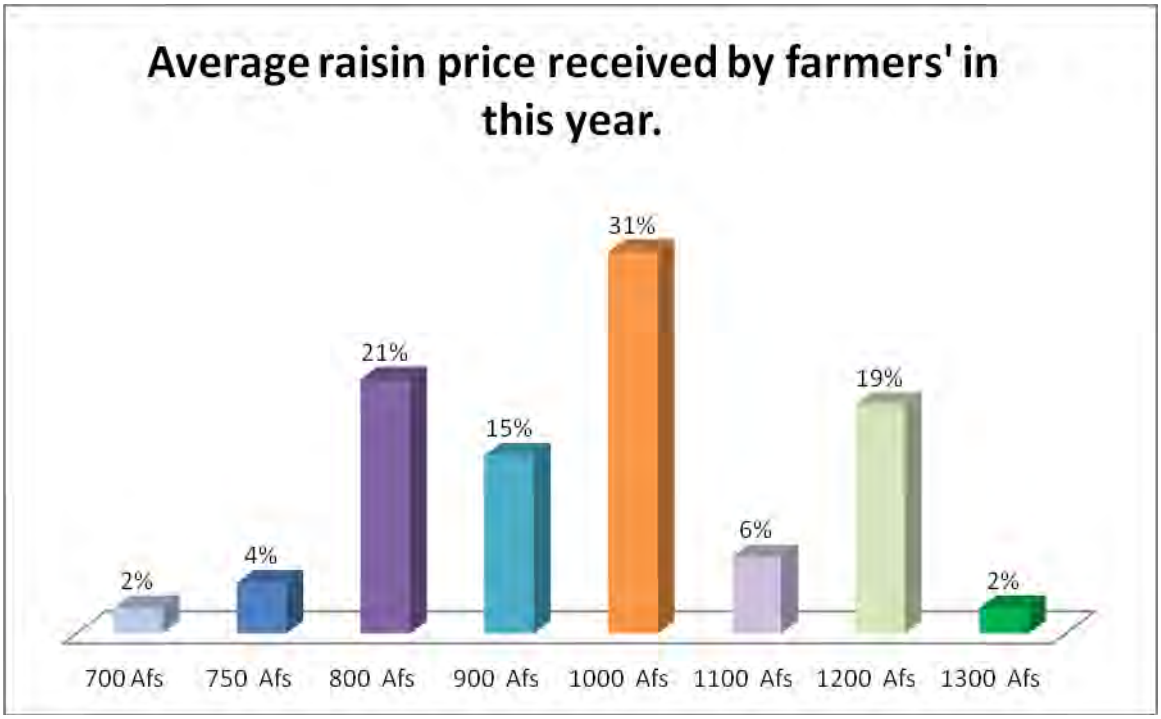
Grape Prices this season

- A vast majority (63 %) reported 100 Afs/maan = 22 Afs/kg.
- 31 % responded having received 110 Afs/maan = 25 Afs/kg.
- 4 % had fetched a price of 120 Afs/maan = 27 Afs/kg.
- The highest price of 130 Afs/maan = 29 Afs/kg has been received by a small minority of 2 %.

Raisin Prices

A considerable oscillation in the prices of dried raisins has been reported, with the following fluctuations:

- 6 % responded for having received a price of 725 Afs/maan = 168 Afs/kg.
- 21 % reported a price of 800 Afs/maan = 178 Afs/kg.
- 15 % stated to sell their raisins at 900 Afs/maan = 200 Afs/kg.
- A vast majority of 31 % reported taking a price of 1,000 Afs/maan = 223 Afs/kg.
- 6 % responded their sale price of 1,100 Afs/maan = 245 Afs/kg.
- 19 % stated a price of 1,200 Afs/maan = 267 Afs/kg.
- A small group of 2 % quoted the highest price of 1,300 Afs/maan = 289 Afs/kg.



Based on above results, a mean average price of grapes and raisins stands at 104.58 Afs/maan = 24 Afs/kg = $.49/kg and 977.08 Afs/maan = 217 Afs/kg = $4.62/kg, respectively. Details of these results are reflected in the following table:

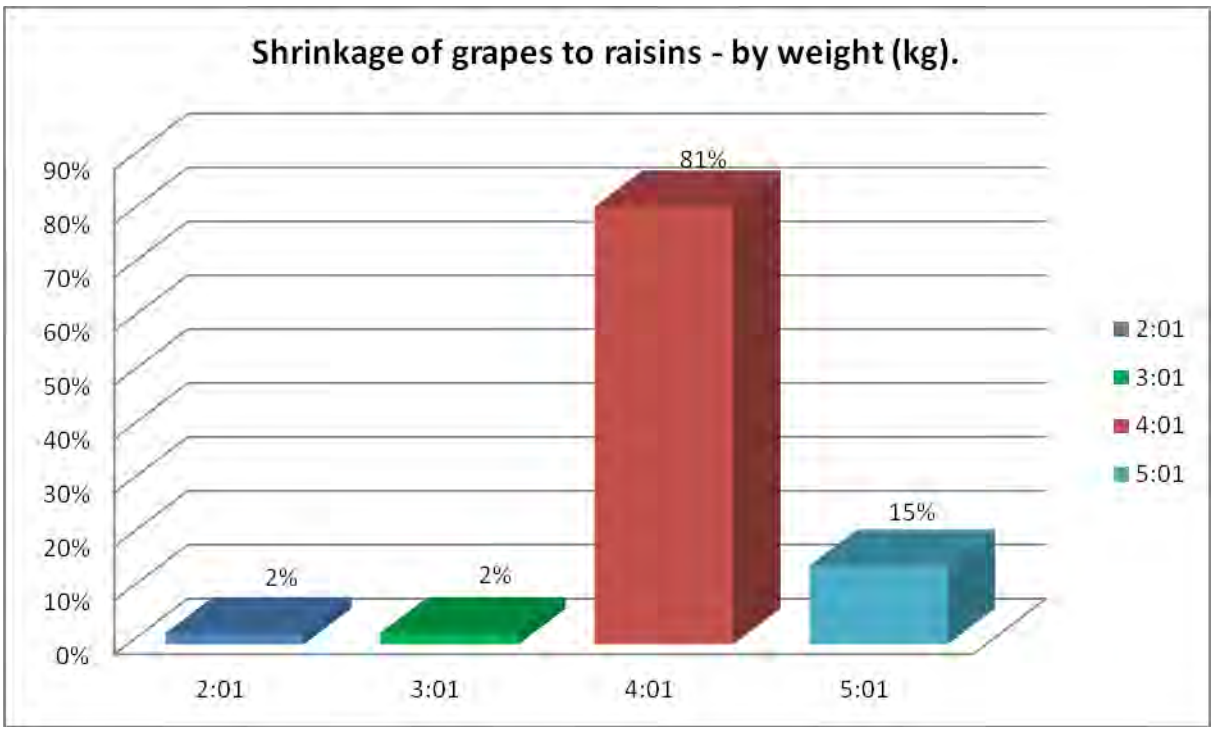
Average Prices for Grapes and Raisins (Afs/maan)

Currency	Grapes			Raisins		
	Min	Max	Mean	Min	Max	Mean
Afghani	100	130	104.58	700	1300	977.08
US$[2]/maan	$2.13	$2.77	$2.22	$14.89	$27.66	$20.79
US$/kg	$.47	$.61	$.49	$3.31	$3.31	$4.62

7.7 Grapes Shrinkage:

During the course of survey, farmers were asked about the shrinkage factor of grapes, while converting them to raisins. Following was the feed-back:

- 4 % responded it to be 2.5 times.
- A majority of 81 % said that it was 4 times.
- 15 % were of the opinion that shrinkage was five times.



Based on these results, the mean average shrinkage is about four times.

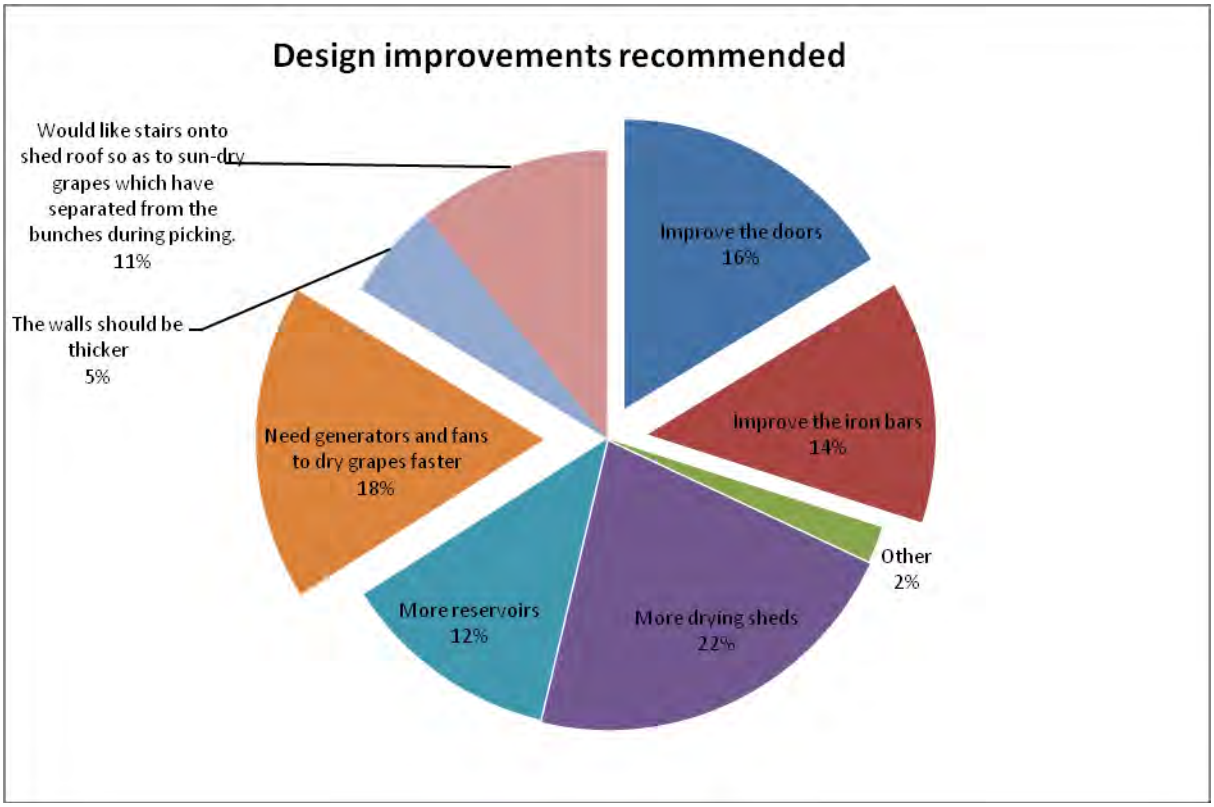
7.8 Design Improvements Suggestions:

In view of potential opportunities for replicating the drying sheds, respondents were also asked for suggesting design refinements and modifications, for improving the quality and quantity, along with reduction in labor inputs and drying time. All made an active and enthusiastic contribution, suggesting followings:

- 22 % wanted more drying sheds.
- 18 % expressed an urgency for generators and fans, which will accelerate the drying process still further.

[2] Exchange rate Afs 47/US$

- 16 % were critical of the large door openings, which were not safe as children could enter and were stealing raisins.
- 14 % stated that the steel frames were weak, and that the grape hanging wires were developing a sag and were giving way under the load.
- 11 % desired external stairs, leading to the roof for occasional maintenance work and sun-drying of grape droppings.
- 6 % desired for more sheds, with improved grapes hanging bars and better doors.
- 5 % were of the view that walls should be thicker, having double bricks, as burnt bricks transfer heat.
- 2 % expressed desire for still larger sheds which would dry faster and a need for further training in raisisn drying.



8. Raisin Drying Symposium – Kandahar University

On October 9, 2011 a raisin drying symposium was held at Faculty of Agriculture, Kandahar University, Kandahar. Following groups of professionals participated in the symposium:

- University academicians, mostly senior teachers from the faculty, comprising upon horticulturists, fruit scientists and food sciences.
- Traders, solely dealing with sale and export of raisins.
- Farmers and users of AVIPA built drying sheds.
- Farmers and users of traditional drying sheds (*kishmish khana)*.

A small team of AVIPA staff participated in the symposium as facilitators and observers. They also took along seven (7) raisin samples, prepared under varying conditions. The samples were displayed with pre-arranged code numberings. All the traders were briefed to inspect the samples and make their individual gradations. They inspected the samples, one by one, and expressed their opinions, which were recorded against the given codes. At the end, number coding was disclosed and the results were presented to the participants, which revealed the following:

- 1st, 2nd and 3rd category raisins, AVIPA sheds.
- 4th category raisins, traditional sheds.
- 5th and 6th category raisins, AVIPA sheds.
- 7th category raisins, sun-dried.

About 10 participating farmers were also asked to share their experiences and express their opinions about the new sheds, which are summarized as follows:

- Nine expressed their total satisfaction with AVIPA sheds.
- Some also stated that raisins produced from new sheds were clean and free from grit, which fetched better prices as compared to traditional *kishmish khanas*.
- Only one expressed his dissatisfaction and preferred the traditional sheds.
- A vast majority made following comments about design aspects of AVIPA sheds:
    - Walls should be thicker, having double bricks for better heat resistivity and insulation.
    - Trainings to be arranged for raisin producing farmers.
    - Air circulation holes are too many, which need to be decreased.
    - Due to excessive holes, drying grapes get direct sunlight which needs to be reduced.
    - Framed pipes structures for grapes hanging are weak, which need to be reinforced.
    - A tight wire mesh 10 – 15 cm above the floor level, just beneath the piped frame, will help the grape droppings from dirt contaminations.
    - Some suggested a veranda on either sides, which will act as a weather-shield gallery against heat and light.
    - A few also suggested an external brick-built staircase for accessing the shed roof, primarily for maintenance purposes and for sun-drying of the grape droppings.

All the participating farmers unanimously stated that AVIPA built sheds are almost free from maintenance. Almost every year the traditional sheds collapsed during rains, and required either total reconstruction or heavy renovations, which entails heavy labor costs.

Towards the end, a senior academician with extensive experience in fruit processing, addressed the gathering and concluded the symposium by stating that:

- AVIPA certainly made an innovative beginning by constructing new sheds, with better air circulation and enhanced grapes hanging capacities due to framed steel structures.
- It certainly resulted in relatively quicker drying, great turnover ratio and increased raisin production.
- Increased internal heat and more air vents in the sheds facilitate quicker drying, thereby enhancing the turnover.
- This professor mentioned that raisin color change towards darkness is due to increased light. Light acts as a catalyst to color oxidation. In this context he also quoted several practical examples, including the sun-dried raisin having dark brown color, as well as the apricot that has not undergone sulphur treatment.
- Afghan farmers are unaccustomed to such modern facilities, mainly due to lack of education. Hence, AVIPA should have sensitized them by imparting training about raisin drying.
- Raisin drying time has a direct bearing on crop watering cycle. Raisin producing farmers should stop watering close to grape harvesting.
- Besides light and fruit-water contents, the type of fertilizer and its usage time also has a great bearing upon raisin color.
- Such innovative interventions are always welcomed. However, it must not be done in isolation. For better future results and long-term sustainability, it is imperative to make a consultative collaboration between development project, facility users and concerned academic institutions.

9. Findings

In the light of this brief survey, symposium at Kandahar University, general consultations with the farmers and experiences of AVIPA implementation team, some interesting findings have been made. A summary fpllows:

- At an average, traditional sheds complete the drying cycle in 30 – 35 days. Whereas, the newly built AVIPA shed completes the same cycle in 13 – 15 days. In this way new sheds reduce the drying cycle by half, ensuring the turn-out to be double.
- The informal statistics display that due to this reason, raisin production with AVIPA intervention districts has almost been doubled.
- AVIPA sheds are almost free from maintenance, ensuring considerable labor savings which can be diverted to other useful farm activities.
- A vast majority of the raisin producers, almost comprising upon 99 %, have displayed their total contentment and satisfaction from the new sheds and have requested for replicating more.
- Besides accelerated drying process, the new sheds also produce better and clean quality raisins, free from dirt, grit or other contaminations.
- AVIPA has built these sheds only in two districts. Consideration should be made to expand into other grape growing districts. Drying sheds have been constructed upon individuals' properties without formal, informal or cooperative arrangements for extending the benefits to others.
- No study has been conducted about wind-direction and dispersal arrangements, which determines wind directions as it plays a significant role in grapes drying process.

- Some raisin producers have asked for installation of exhaust fans. According to their perception, the drying process will get further accelerated.
- More training is necessary.

10. Recommendations

AVIPA Plus has built 270 raisin drying facilities in Arghandab District and rural parts of Kandahar City District No.5. The results of this survey have revealed that there is an ever higher demand for more sheds. Hence, the following recommendations are being made:

- More raisin drying sheds should be constructed.Drying sheds should be considered for other grape growing regions.Formal or informal cooperative arrangements should be made for the drying sheds, so that more farmers can use them.

- The current shed design needs minor modifications and readjustments for meeting the users' demands and making improvements. The new design may also take into consideration wind direction, reduced light, mud insulation, better piped-frame structure, and external staircase etc.

- More farmer training is required.

Annex "A"

SURVEY OF RAISIN DRYING FACILITY OPERATORS IN KANDAHAR

Name of Respondent: _____ Position: _____

Owner/User Name: _____

Location: Village _____, District _____

Interview date:

Facility Completion Date: _____

In use: Yes / No.

i. If yes, since: _____

ii. If No, Why: _____

Ownership and previous use	
Do you own the drying shed by yourself?	Yes…… No……
If no, how many other farmers do you share it with?	
Do you share the shed with other farmers, who aren't co-owners?	Yes…….. No……
If yes how many?	
Did you dry your produce last year?	Yes…… No……
With drying facilities you owned	Yes…… No……
If no, what drying facilities did you use?	Neighbor/friend for free…… Rented facilities……

	Cooperatives or Associations……..
Have you had difficulty finding enough drying shed capacity at times over the last year?	

Amount of produce dried	
How much of your produce did you dry last year (kg)?	kg
How much produce will you dry in your new shed this year(kg)?	kg
What is the reason for the difference between last year and this year?	
Do you think you will change the amount of produce you will dry next season?	Don't know…… Will increase…… Stay the same…… Decrease……
What are your reasons for the above answer?	

Comparison the previous drying experience		**Reasons**
Is the new shed an improvement on how you dried your produce previously?	Yes…… No…… Not sure……	

Is drying your produce easier now with the shed	Easier…….. More difficult……. No difference……	
Can you dry your produce faster than previously	Faster……. Slower…… No difference…..	(Can prompt with more consistent drying temperature?)
With the new shed is your capacity for drying produce	More…… Less…… No difference……	
With the new shed is the quality of your product?	Better…… Worse……. The same……	(Can prompt with how produce is spread out in the shed?)

Only ask the below questions if the respondent can give an accurate answer as to prices he receives for grapes

Price information	
What was the price of grapes you received this season? (on average)?	Afs per kg
What is the shrinkage of (kg) grapes to raisins (kg)?	2:1…… 3:1…….. 4:1…….. 5:1…… Other……(……)

What is the price of raisins you are receiving ?	Afs per kg
What percentage of your grape crop did you dry in the shed?	%
If not dried in the new shed, what did you do with the rest of grape crop (include % proportions)?	……% ……% ……% ……%

Are there any design improvements you would recommend?

i. _____
ii. _____
iii. _____
iv. _____

Would you like to have more drying sheds? _____

If yes/No, Why: _____

Any other comments: _____