

LIST OF ON-GOING SUB-PROJECTS UNDER RADP (MAY-2016)

S. No.	Project Title	Cost Rs. Mil	Period	Objectives	Achievements/Outputs
CROP SCIENCES					
1	Development of Clean and True to Type Horticultural Crops Nursery in Islamabad Capital Territory (ICT) Dr. Khalid Mahmood Qureshi, Senior Director HRI,NARC	9.890	01-10-2013 To 30-06-2017	<ul style="list-style-type: none"> • Establishment of clean plants Nursery Facilities for horticultural crops. • Development of mother blocks of selected fruit crops for planting material. • To impart training to nurserymen to adopt optimum protocols in advanced propagation and nursery management techniques. • Provision of healthy fruit and ornamental plants, focusing on disease-free true to type and use of rootstocks suited to varied soil conditions. • Provision of clean fruit & ornamental plants seedlings through sterilized media. 	<ul style="list-style-type: none"> • High Density Planting (HDP) enables higher regular yield and improved farm management practices leading to higher productivity with better quality and profitability. In this regard High Density Demonstration block established in P-9 field area NARC. The following is the plantation pattern: • Four hundred and thirty seven olive plants of 5 varieties (Koroneiki, Coratina, Chetoi, Arbequina and Megaron), 161 almond plants of 4 varieties (Karishma, Lajawab, Frost star, Non-Perial and Blank row), 115 Pomegranate plants of 3 varieties (Qandhari, Sultan and Tarnab Gulabi), 990 Peach plants of 4 varieties (Florida King, Early Grand, Spring Crust and Flame Crust). Mother block of citrus varieties (Torocco 20 plants, Tangor 14 plants, Hockney 20 plants, Hamlin 20 plants, Beyenda Valencia 20 plants), Acocado 40 plants, Guava 200 plants and Mexican lemon 224 plants was established at farmer field with high efficiency drip irrigation system at Sargodha. Mother block at farmer field near Sutra Meel on Express Way Murree was also established with fruit plants (olive 100 plants, grapes 70 plants, peach 50 plants, citrus 50 plants, pomegranate 50 plants, strawberry 3000 plants). • The kiwi fruit (<i>Actinidia deliciosa</i>) is a perennial, deciduous, woody vine native to south China. Kiwi Plants (1000) of Hayward Variety were received from Nepal with collaboration of ICIMOD (NARC) and (500 plants) were distributed to BARI, Chakwal and NTHRI, Shankiari, Mansehra for plantation during the month of February 2015. Five hundred Kiwi plants were shifted in pots (peat

					<p>moss media) kept under control condition at HRI, NARC for testing the performance.</p> <ul style="list-style-type: none"> • 100 plants of two avocado cultivars (Fuerette, cyclone purple) were propagated through cleft grafting and tongue grafting technique during 1st week of April 2015. Best result were obtained in cleft grafting (80% success) whereas in tongue success rate was 60% • 36 plants of Tanzanian varieties and 700 plants of Feurett variety were raised through seed • Olive cuttings were planted in green house under mist of different cultivars. Maximum rooting percentage was (70.8 %) in Coratina followed by Picholino (61.34 %) whereas lower rooting percentage was found in Uslu (34.4%) and Nocellera del Belice (22.22%). • 6000 Citrus rough lemon rootstock seedlings were raised in open field. • 2500 true to type plants of Mexican lime were through cuttings. • 2000 Peach seedling were raised through seed and shifted in nursery beds. • 5500 Pomegranate cuttings were planted for propagation in field. • 10000 Grapes cuttings were planted in nursery beds for propagation. • 1250 Cuttings were planted in nursery beds. • 1750 Plants of Japanese loquat were sown in nursery bed. • 1500 Falsa plants were produced through seed. • Gladiolus: 3000 bulbs of four different varieties (magma red, white prosperity, pink rose supreme and yellow were planted for comparison in two different locations. These plants were maintained and data on qualitative and quantitative parameters are being collected. • Iris: Planted 500 bulbs of three varieties of iris i.e; Blue, yellow and white and 578 bulbs of white, 789 bulbs of yellow and 573 bulbs of blue were produced. • Coleus: Planted more than 300 cuttings in polythene bags,
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					<p>pots.</p> <ul style="list-style-type: none"> • Chrysanthemum: 600 plants of chrysanthemum prepared from cutting and transplanted in polyethylene bags and clay pots. Pure line selection of different varieties of chrysanthemum was made and their plantation was completed in specific beds. Fifty eighty different classes (Shapes, colors) of chrysanthemum were identified and maintained. One thousand and five hundred cuttings of Chrysanthemum were prepared in polythene bags and pot and were sold through PATCO. More than 200 cuttings of Coleus were prepared and sold through PARCO. Different varieties of Amaryllis, Tuberose and Day-lily were sold through PATCO. Recorded video on Flower production technology titled ‘ Pholonkikasht’
2	Adaptability Studies of Economically Important vegetable Lines under different Ecological Conditions Dr. Hidayat Ullah, PSO, Vegetable Crops, HRI, NARC	9.565	01-03-2014 To 30-06-2016	<ul style="list-style-type: none"> • Establishment of mother blocks of promising hilly fruit species at NTHRI. • Production of nursery plants of hilly fruit species. • Establishment of display centre. • Seed production in field and nursery management of high value off season’s vegetable crops at NTHRI. • Human resource development 	<ul style="list-style-type: none"> • Transplanting of 4 tomato lines (NARC Tomato-1, NARC Tomato-2, NARC Tomato-3 and NARC Tomato-4) along with Roma check variety and six chilli lines (NARC Chilli-1, NARC Chilli-2, NARC Chilli-3, NARC Chilli-4, NARC Chilli5, NARC Chilli-6) along with check hybrid big daddy for adaptability trial completed at BARI Chakwal, AARI, Faisalabad and vegetable Program, NARC. • Transplanting of tomato and chilli adaptability trial on ARS, Swat completed during first week of May, 2014. • Transplanting of tomato and chilli lines had been carried out at NARC for seed multiplication.
3	Provision of accredited laboratory testing services to comply with WTO requirements in the domestic and international trade Dr. Saeeda Raza, PSO/PI, product	8.770	01-06-2014 To 31-05-2016	<ul style="list-style-type: none"> • To sustain the testing and accreditation (ISO 17025) activities of GQTL • To provide world class food quality testing facility within Pakistan to private & public sector • To continuously improve the Quality Management 	<ul style="list-style-type: none"> • Grain Quality and Testing Laboratory, NARC (GQTL) re-gained its accredited scope to ISO 17025 by Pakistan National Accreditation Council (PNAC) on 03-04-2015. Testing facilities were provided to public & private sectors (Approx. 1.0 Rs. Million were earned). Analytical methods were re-verified through the use of certified reference standards from Bipea, France. In-house training of laboratory personnel was conducted to comply ISO 17025 standards.

	development program, FSPDI, NARC			System as per ISO 17025	
4	Determination of Golden cyst nematode free zones for export of potato from Pakistan (component-I: CDRI, NARC) Component-II: CDRI, SARC Karachi), Dr. Anjum Munir, PSO, CDRI, DPEP, NARC	2.800	01-07-2014 To 30-06-2016	<ul style="list-style-type: none"> To study the incidence and distribution of potato cyst nematode in potato growing cluster of Pakistan To study the technological profiles of potato farmers in different parts of Pakistan Delimitation of PCN free potato growing areas for the creation of export zones 	<ul style="list-style-type: none"> Incidence of Potato Cyst Nematode (PCN) in the potato growing areas of Pakistan, were studied in Punjab, Sindh, Khyber Pakhtunkhwa and Gilgit Baltistan. Golden Cyst Nematode was found in all potato growing areas of Pakistan except Sindh with different frequencies. In Punjab out of 180 fields visited 24% were found positive with golden cyst nematode. In Khyber Pakhtunkhwa survey was conducted in 7 districts and among 129 samples collected 70% samples were found infested with cyst nematode. This could be possible rout of cyst introduction to main potato growing areas of Pakistan. In Gilgit Baltistan the survey was conducted in 5 districts and out of 63 samples collected almost 55% were found positive with potato Cyst Nematode. This area is mainly used for seed production and could possibly become source of spread to main potato growing areas. Farmers should grow Cardinal or Sante potato varieties which are resistant to PCN. Exporting consignments should regularly be monitored against PCN
5	Adaptation and commercialization of a tractor PTO operated Wood Chipper Shredder Liaqat Ali Shahid, PE/PSO, ABEI, NARC	1.550	01-07-2014 To 30-06-2016	<ul style="list-style-type: none"> The purposed study will be conducted with the following specific objectives Adaptation of available wood chipping and shredding technology Development of first prototype unit at ABEI Prototype Development Workshop and/or through local manufacturing industry Introduction of adapted 	<ul style="list-style-type: none"> Field testing of Tractor PTO Operated Wood Chipper Shredder was carried for processing of Eucalyptus tree-top trimmed material with heavy biomass and clean stems without leaves & branches at farmer's field in Chotti Zareen Area, district Dera Ghazi Khan. Parameters studied included unit processing capacity, fuel consumption, output quality, labor requirement, cost of operation and other factors affecting the machine performance. Total operational cost of wood chipper shredder consisted of fixed costs and variable costs. The estimated fixed and variable costs were found to be 75 and 504 rupees per hour of machine operation, respectively. Total hourly operational cost of machine was found to be 579 and 1151 rupees per ton of tree-topped trimmed material processed

				technology through field demonstration(s)	by the machine.
6	Management of Fusarium Wilt of banana (Panama wilt) in Sindh Dr. Shahzad Asad, PSO, CDRI, NARC	3.400	01-07-2014 To 30-06-2016	<ul style="list-style-type: none"> • Incidence and distribution of Panama disease in different banana growing area of Sindh singly and in combination with nematodes. • Investigation of Race spectrum of Fusarium oxysporium f.sp. cubens and molecular characterization of pathogen (Foc) population to determine its biodiversity • Testing of GMP (good management practices) at farmer field for the management of this disease & identification of sources of resistance in Banana against Panama disease 	<ul style="list-style-type: none"> • Surveys for the management of Fusarium wilt of banana (Panama wilt) in Sindh completed. The disease was evident/ restricted only in Thatta orchards with 100% prevalence, the incidence ranged from 1.1% to 5.1% and the disease index from 0.01% to 1.1%. There was no evidence of the disease in any orchards in Tando Jam, Naserpur, Matiari, Sukrand, Khairpur and Benazirabad. There is need to observe the strict quarantine measures for the movement of the sucker from Thatta district to other parts of the banana growing areas of Sindh province to avoid its dissemination in the areas free from this disease.
7	Integrated Management Strategies for Fruit Flies (Component-I, IPMP, NARC) Dr. Ehsan-ul-Haq, PSO, IPMP, DPEP, NARC	17.120	01-07-2014 To 31-12-2016	<ul style="list-style-type: none"> • To demonstrate management of fruit flies in fruit and vegetable crops by using different management strategies at selected clusters and ICT urban • To train service providers for sustainable management of fruit flies at farm level • To disseminate fruit fly management strategies through knowledge sharing and technology transfer 	<p>Fruit fly population monitoring and its management in ICT by Male Annihilation Techniques (MAT)</p> <ul style="list-style-type: none"> • Fruit fly traps having cotton soaked with Methyl Eugenole were installed at more than 50 sites in Islamabad Capital Territory (ICT). More than 25000 male fruit fly adults were trapped. This minimized egg laying of female. Fruit fly species in ICT identified as Bactrocera Zeonata and B. Dorsalis and B. curbitae. Bait Application Techniques (BAT) application along with MAT and paper bags succeeded to produce healthy Bitter Gourd in selected site. <p>Population monitoring and management of fruit fly in citrus area (Sargodha Region) by MAT and orchard sanitation.</p>

					<ul style="list-style-type: none"> • Ten clusters were made by involving exporters/growers. • Fruit fly management strategies (MAT, BAT and Sanitation) were demonstrated at 10 acres in each cluster. • Fruit fly traps were installed at 10 sites for trapping male fruit flies and more than 60000 male were trapped. • The fruit fly species in Sargodha region identified as B. Zonata and B. Dorasalis. • Ten field days were organized for creation of awareness. Three hundred farmers trained for orchard management of fruit flies in citrus. Four services providers trained for sustainable management of fruit flies in citrus areas. <p>Population monitoring and management of fruit fly in Guava (Kohat Region) by MAT and orchard sanitation.</p> <ul style="list-style-type: none"> • Six clusters were made by involving exporters/growers. • Fruit fly management strategies (MAT, BAT and Sanitation) were demonstrated at 5 acres in each cluster. • Fruit fly traps were installed at 5 sites for trapping male fruit flies to minimize their population. • Prevalent species identified in Kohat region as B. Zonata and B. Dorasalis. • Six field days were organized for awareness and 200 farmers were trained for orchard management in Guava. <p>Population monitoring and management of fruit fly in Bitter Goured (Charsadda Region) by MAT, BAT and orchard sanitation.</p> <ul style="list-style-type: none"> • Four clusters were made by involving exporters/growers. • Fruit fly management strategies (MAT, BAT and Sanitation) were demonstrated at 5 acres in each cluster. • Fruit fly traps having cotton soaked with Cue Lure were installed at 5 sites for trapping male fruit flies to
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					<p>minimize population.</p> <ul style="list-style-type: none"> • Prevalent species identified in Charsadda region as B. Cucurbitae. • Four field days were organized for awareness and 100 farmers were trained for orchard management in Bitter Goured.
Integrated Management Strategies for Fruit Flies (Component-II, PRTS, Multan) Mr. Amir Hamza, PSO, PARC Research and Training Station (PRTS) Multan	4.67	01-07-2014 To 31-12-2016	<ul style="list-style-type: none"> • To demonstrate management of fruit flies in fruit and vegetable crops by using different management strategies at selected clusters • To train service providers for sustainable management of fruit flies at farm level • To disseminate fruit fly management strategies through knowledge sharing and technology transfer 	<p>Population monitoring and management of fruit fly in Mango area (Multan Region) by MAT, BAT and orchard sanitation.</p> <ul style="list-style-type: none"> • Eight clusters were made by involving exporters/growers. Demonstrated fruit fly management strategies over 8 locations (total 1667 acres). Surveillance data from eight locations were collected. The fruit fly species in Sargodha region identified as B. Zonata and B. Dorasalis. Six field days/seminars were organized for awareness and total 1047 farmers were trained. Total 1927 farmers were trained in 39 corner meetings and fruit fly control brochures were also distributed among 400 farmers. 8 service providers were trained for sustainable management of fruit flies in Mango area. Fruit fly control traps along with Methyl Eugenol were distributed among 5657 farmers. Three Television programs were recorded in local language to create awareness between mango growers for orchard fruit fly management. 	
Integrated Management Strategies for Fruit Flies (Component-III, Mansehra) Mr. Abdul Waheed, PSO, NTHRI, Mansehra	1.000		<ul style="list-style-type: none"> • To demonstrate management of fruit flies in fruit and vegetable crops by using different management strategies at selected clusters • To train service providers for sustainable management of fruit flies at farm level • To disseminate fruit fly management strategies through knowledge sharing 	Newly added component, activities are not yet started.	

				and technology transfer	
8	Off Season Onion Production through Sets at Farmer's Field Dr. Hidayat Ullah, PSO, Vegetable Crops, HRI, NARC	3.600	01-07-2014 To 30-12-2016	<ul style="list-style-type: none"> • To develop and demonstrate a protocol for nursery raising under hot summer condition. • To develop a schedule for onion set production in site areas (Multan & D. G. Khan). • To develop and demonstrate mechanical seed sowing for uniform set production. • To develop and demonstrate the best storage practices for onion set from harvest to next plantation. 	<ul style="list-style-type: none"> • Raised (with less germination %age) onion seedling of variety 'Phulkara' at D. G. Khan & NARC under hot summer condition (26-07-2014 & 06-08-2014 respectively) and transplanted at all locations (Multan farm (29-09-2014); D. G. Khan farm (01-10-2014) & NARC research area (09-09-2014) for off season bulb production along with onion sets produced during Feb., 2014 for comparison. • Results showed that crop through seedlings was not successful at Multan and D. G. Khan and mortality percentage was higher due to high temperature. However, at NARC crop raised through seedlings took more time (almost two months later) for maturity as compared to crop raised through sets. Also 75 % bulbs were split or doubled. • To develop a schedule for onion set production in site areas, seed sowing was done on four different dates (December 20, 2014 to Feb. 05, 2015). Crop is still in the field (June 10, 2015). Mechanical Seed sowing was also completed at Multan & D. G. Khan during 3rd week of February, 2015. Sets crop is in healthy condition at Multan while at D. G. Khan seed failed to germinate (because of less irrigation)
9	Mechanization of Tea Production and Promotion of Green Tea to Improve Profitability Dr. Farrukh Siyar Hamid, Director, National Tea & High Value Crop Research Institute (NTHRI) Shinkari,	8.770	01-01-2015 To 31-12-2016	<ul style="list-style-type: none"> • To process the different kinds of green tea from bushes grown under different agro-climatic zones of potential tea areas. • To evaluate and assess the tea quality produced in different agro-economical condition. • To serve as model for local manufactures to develop the 	<ul style="list-style-type: none"> • Fabricated new drying pan for green tea processing, now fully functional at the Institute. Managed both the tea processing plants (Former Green tea Proc. Plant and new one). Procured the tea plucking and pruning machine. Process approx 1 ton green tea. Overhauled processing old former processing plant. Prepared different boards mounted/sample for generation of awareness among tea growers. Contacted PATCO in response to sale produce of green tea.

	Mansehra			<p>new technology for green tea production.</p> <ul style="list-style-type: none"> • To purchase the raw material from tea growers for processing of green tea. • To introduce the green tea as product of PARC through PATCO 	
10	<p>Achieving self sufficiency through seed production and improved tomato cultivation practices</p> <p>Mr. Taj Naseeb Khan, PSO, Vegetable Crops, NRI, NARC</p>	33.371	01-01-2015 to 31-12-2016	<ul style="list-style-type: none"> • To produce high quality parental line seed of tomato hybrids. • Demonstrate Package of improved production technology for determinate tomato. • Develop a cadre of service providers for farmer to farmer technology transfer. 	<ul style="list-style-type: none"> • Trained 37 farmers from four provinces from targeted districts. Nineteen researchers were also trained during the three months training commenced from April – June, 2015. The trainees were given comprehensive lectures and practical demonstration on all the aspects of improved tomato cultivation practices. Twenty females from Rawalpindi /Islamabad were also trained especially on hybrid development technique in tomato during April – May, 2015 (two months, summer session). However, winter session for females will be taken into account in October – November, 2015 (two months). One acre nursery of determinate tomato was established in Bar-Khan, Baluchistan in May, 2015. In June the crop was successfully transplanted in the field, moreover 25 farmers of UC-Baghao and UC-Eshani were given 4 days training regarding nursery management, compost preparation and transplantation technique at district Bar-Khan. Two days farmer’s field workshop was conducted at Thoha Mahram Khan about compost preparation, media preparation and sowing of nursery in multi pots and also given training on tomato transplantation in the field with novel techniques. Concluding session was held at NARC auditorium and service providers of 40 districts and the researchers from PARC establishments in the provinces and Provincial Agricultural setup and 20 female trainees were given certificates on completion of three months and two months training session by the federal minister and Secretary MNFS&R. Produced 12

					kg seed of two parental lines of determinate tomato. Line 95017 (11 kg) and Riagrande (1 kg).
11	Quality Seed production and promotion groundnut and soybean in northern Punjab and Khyber Pakhtunkhwa Dr. Muhammad Ayub Khan , Program Leader/ PSO, Oilseed, NARC	7.630	01-04-2015 To 30-3-2016	<ul style="list-style-type: none"> • Quality seed production of groundnut and soybean varieties developed by oilseeds research program through farmers participatory approach • Provision of quality seed of groundnut and soybean varieties with improved production technology and its demonstration on farmers' field. • Promotion and maximization of groundnut and soybean varieties on commercial scale with the collaboration of NRSP and Lok Sanjh 	<ul style="list-style-type: none"> • Pothowar groundnut variety is locally developed by Oilseeds' Scientists. Variety has been approved by the Variety Evaluation Committee (VEC). Variety is bold seeded and very good taste. Its seed multiplication has been managed under RADP so that the said variety may be promoted on larger scale. Therefore, during current season the variety has been planted on 18 acres at five different locations. • Soybean: the second most important oilseed crop in the world has been neglected in Pakistan. PARC took initiative for the revival and promotion crop. Seed multiplication of the four approved varieties was done by Oilseeds Research Program in 2013 and 2014 through financial support of PATCO. Now seed is available and there is need for further seed multiplication and promotion of crop in Pothowar and Northern KPK. Financial resources for this purpose have been made available from RADP for a period of 12 months (April 01, 2015 to March 31, 2016). • Seed cleaning and grading has been almost completed. • PATCO is making arrangements for packaging of seed material for distribution among farmers. • Solvent and poultry industries, PODB, NRSP and LOK Sanjh are being taken on board for the promotion of crop in Northern Punjab, KPK and AJK. • Demo plots were planted at 10 different locations to identify suitable areas for soybean planting during spring season. • Distribution of soybean seed among growers of Pothowar, Punjab rice area and Khyber PakhtunKhwa is

					in progress
12	Conservation, Propagation of indigenous Mango Germplasm of Nalient Valley, Gwadar/ Turbat and introduction of high yielding cultivators Mr. Nazeer Ahmed, SO, ARI, Turbat (CS-88)	11.000	01-07-2015 To 30-06-2016	<ul style="list-style-type: none"> • To document the current Mango production, cultivation and marketing in Nalient Valley (Gwadar), Turbat and Lasbella Balochistan. • To establish clean mango plants nursery facility at Nalient Valley (Gwadar), Turbat and Lasbella, Balochistan and provide healthy disease free plants, to the farming community. • To introduce different mango varieties of Sindh and Punjab in project areas and to test adoptability. • To introduce water harvesting techniques and high efficiency irrigation system on the farmers mango orchard. 	<ul style="list-style-type: none"> • Purchased one thousand Kg of Nalient Valley Mango Fruit variety (Katar,Dodo,Kalmi) and established three thousand Mango nursery at ARI Institute Turbat (1000 of each cultivar) • Conducted Survey of District Turbat different Union Councils and information collected about mango production and cultivation; 50 farmers have participated in the survey
13	Promotion of Kiwi Fruit In Mansehra Area Dr. Noorullah Khan, SSO, NTHRI, Shinkiari (CS-89)	7.170	01-07-2015 To 30-06-2016	<ul style="list-style-type: none"> • Establishment of mother blocks of kiwi plant and promotion of germplasm at NTHRI • Production of nursery plants of kiwifruit through cutting, germplasm import and seed. • Human resource development (capacity building) • Introduction of kiwifruit as a new cash crop to the farmers of the area. 	<ul style="list-style-type: none"> • Selected site for mother block and nursery raising • Approached PARC HQ for arranging purchase of exotic kiwi seed and seedlings. • Managed the existing 300 Kiwi plants at NTHRI • This activity depends on the arrival of appropriate time. • Availability of seed and seedling • Training of six progressive farmers/ nominated in PC-1 is in progress. • They also participated in a one day training work shop

14	Introduction and Evaluation of Coffee Cultivation in Pakistan Dr. Farrukh Siyar Hamid Director Incharge, NTHRI, PARC, Shinkiari, Mansehra (CS-90)	10.562	01-07-2015 To 30-06-2017	<ul style="list-style-type: none"> • Establishment of nursery for the development of coffee plants at NTHRI • Import and screening of different exotic coffee varieties • Survey of potential coffee growing areas • Small scale plantation of coffee in cluster of 2-3 farmers in three locations 	<ul style="list-style-type: none"> • Approached and contacted different countries for procurement of coffee seed i.e Zimbabwe, Rwanda, Myanmar, Ethiopia, Nigeria • The activity will be initiated whenever seed arrived at institute • Survey has been conducted for collection/purchase of Soil
15	Off-Season vegetable and seed/seedling production at NTHRI, Konsh, Kunhar valleye of District Mansehra Abdul Waheed PSO NTHRI (CS-91)	9.858	01-10-2015 To 30-06-2017	<ul style="list-style-type: none"> • Survey different villages for cluster formation/value chain activity of both off season and open field off season vegetables 	<p>Raised health onion seedlings successfully at Multan, D.G Khan and NARC, Islamabad following the protocol as below:</p> <ul style="list-style-type: none"> • Best time for Onion seed sowing for autumn onion crop in last week of July. • Activity performed under green net shade with the side open up to 3-4 ft high especially during germination.in light of results of last year field testing of machine the following modification and improvement have been incorporated in the machine. • Power transmission system to metering unit has been changed from belt to gear system to overcome the issue of belt slippage. • Rear tyre of the machine had also been replaced with the larger one and rectified accordingly • The major objective of the seminar was to find out suggestions of participants about promoting species/varieties of cut flowers in project areas
16	Promotion of exotic Cut-flowers in High areas of Baluchistan Mr. Ahmad Aziz Kurd, SSO,	7.642	01-10-2015 To 30-06-2017	<ul style="list-style-type: none"> • Promotion and induction of exotic cut flowers species/varieties in project areas. • Development of production 	<p>..</p> <p>A seminar on “Promotion of Exotic cut flowers in Highland Areas of Balochistan” was conducted by cut flowers project (PECFHAB) on November 30, 2015 at</p>

	<p>BARDC, Quetta (CS-92)</p>			<p>technology for flower production as early crop.</p> <ul style="list-style-type: none"> • Farmer’s skill improvement through field days, seminars and farmer trainings. • Development of Broachers. 	<p>BARDC, Quetta. The seminar chief guest was Mr. Abdul Salam Baloch Ex. Secretary Agriculture Balochistan. More than 50 participants have participated in the seminar.</p> <p>In this regard following important suggestions made by the cut flowers growers and wholesalers:</p> <ul style="list-style-type: none"> • At present Gladiolus, Marigold, Statice, Chrysanthimum and Carnation are most profitable cut flowers in the project areas and it was further suggested that in case of new species/varieties Lilly, Gerbera, Tulip, Carnation and Lisianthus may be introduced in project areas. Therefore, more focus may be given to the above mentioned varieties. • An important point also discussed that the cut flowers farming has been found to be highly capital intensive and risky. It may not be possible for an ordinary farmer to bear the risk of crop failure that may lead him to complete ruin/economic disaster. Therefore first-time growers are advised that before they start flower farming; receive training to improve their floricultural knowledge in order to minimize risk of failure. It is further recommended to start on small scale then expand, as experience and financial positions become stable, in this regard seminar participants have suggested that more focus may be given to the old cut flowers growers in project areas and a maximum of two to three new growers may be included project growers. The old growers have shown their willing they will also provide technical guidelines to the new growers. The PI, of cut flowers project mentioned that the above mentioned point has already discussed in PEC meeting of the project at PARC Islamabad and it was suggested in that meeting more focus will be given those farmers who are already involved in this
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					<p>business and farmers training will be conducted on cut flowers farms in different districts of the project areas.</p> <p>At the end of the Seminar, Chief gusted was invited on stage and he appreciated all of the participants suggestions and project staff for the conducting seminar on cut flowers. He further suggested that such type of seminars may be conducted time to time in order to give project to the floriculture field in Balochistan.</p>
17	<p>Surviellance and Monitoring Wheat rust disease and Their management Dr.Javed Iqbal Mirza, PSO, Crop disease Research Institute, PARC Substation, Sunny Bank, Murree. (CS-93)</p>	12.060	<p>01-10-2015 To 30-06-2017</p>	<ul style="list-style-type: none"> • To establish early warning system for incidence for new stem, yellow and leaf rust virulences in wheat growing areas of Pakistan through TRAP plots. • To identify stem, yellow and leaf races in disease samples collected from wheat growing areas of Pakistan and update rust culture collection. • To screen breeders genetic stocks against most prevalent races of the three wheat rusts under glasshouse and field conditions. 	Project activity just at initial stage
18	<p>Production of Certified Seed (Wheat & Rice) in irrigated Areas of Baluchistan Zulfiqar Ali Rahujo, SSO/Incharge ARI</p>	18.52	<p>01-11-2015 To 30-06-2017</p>	<ul style="list-style-type: none"> • To improve productivity of wheat and rice crops through use of improved and certified seeds in irrigated areas of Balochistan. • To provide farmer's training on certified and 	Project activity just at initial stage.

	Jaffarabad (CS-94)			quality seed production.	
19	<p>Promotion of Vegetable production in Peri-Urban and Rural Areas of Quetta and Jaffarabad</p> <p>Component-I Mr. Abdul Latif, SO, BARDC, Quetta</p> <p>(CS-95)</p> <p>Component-II Jaffarabad Mr. Zulfiqar Ali Rahujo, SSO, Incharge, ARI Jaffarabad</p>	15.912	01-10-2015 To 30-06-2017	<ul style="list-style-type: none"> • To encourage and propagate awareness of growing fresh and disease free vegetable in Peri-urban & rural masses. • To provide production technology through tunnel farming as early as season crop. • Farmer's skill improvement through training field days and seminars. • To establish vegetable growers club VGC to provide technical assistance to the vegetable farmers at their door-step. • As above 	Project activity just at initial stage
20	Development of PARC botanical conservatory for native and exotic plants of economic importance at NARC theme park site, Dr. Amir Sultan, SO,	6.279	20-02-2016 To 30-06-2017	<ul style="list-style-type: none"> • Development of PARC botanic conservatory for research, education, conservation and recreational purposes. • To strengthen existing repository with additional plant collection from under 	Project activity just at initial stage.

	PGRI, NARC			<p>represented areas of Pakistan.</p> <ul style="list-style-type: none"> • To develop protocol for multiplication for native plant for high economic value. 	
21	<p>Prevention of economic losses in poultry farming through rodent pest management in Sindh Province, Dr. Amjad Pervez, D.G, SARC, Karachi</p>	4.227	<p>01-04-2016 30-06-2017</p>	<ul style="list-style-type: none"> • To determine the mode of rodent pest infestation to poultry farms. • To document damage and economic losses inflicted by rodent pest. • To identify the prevalence of ecto-endo-parasite associated with rodents found in poultry farms. • To undertake rodent control trials based on developed IPM model. • To transfer latest rodent pest control technology to poultry farmers in selected areas of Sindh, increasing their awareness and motivation to control rats on farms and in turn increasing egg and poultry production. 	Project activity just at initial stage.
22	<p>Diagnosis and management of Citrus bacterial canker (CBC) in Pakistan, Dr. Muhammad Zakaria, PSO, CDRI, DPEP, NARC</p>	8.765	<p>11-04-2016 30-06-2017</p>	<ul style="list-style-type: none"> • To assess the current status of citrus disease in Pakistan. • Molecular based identification of <i>Xanthomonas Citri</i> pv. <i>Citri</i>. • To develop a reliable and 	Project activity just at initial stage.

				<p>sensitive protocols to screen infected foods/orchards for export purposes.</p> <ul style="list-style-type: none"> • Management of CBC using cultural and bordeaux mixture sprays in Kinnow orchids. • To characterize the copper resistance determinants in <i>x.citri</i> pv. <i>Citri</i>. 	
NATURAL RESOURCES					
23	<p>Development of Protocols for Toxic Free Cultivation of Vegetables in Arid and Semi-Arid Regions Utilizing Efficient Water Resources</p> <p>Dr. Attaullah Khan, PSO/Director, Arid Zone Research Institute (AZRI), PARC</p>	7.160	01-03-2014 To 28-02-2016	<ul style="list-style-type: none"> • To monitor the nature of insect pest infestation in different vegetables grown in rural and urban areas. • To assess the pesticide and heavy metal residues in vegetables cultivated in urban and rural areas • To develop optimum packages for the organic cultivation of vegetables in rural and urban areas utilizing bio-fertilizer, bio-pesticide, bioremediation and efficient use of water • To utilize alternate energy sources for efficient water management through sprinkler and drip-irrigation systems for arid areas • Capacity building program for non-toxic vegetable 	<ul style="list-style-type: none"> • Sites were selected for four demo plots on farmers field in this quarter.

				cultivation	
24	Fertility Management and Nutrient indexing for Optimizing Productivity of Deciduous Fruits in Gilgit Region Mr. Sher Ahmed, PSO/PL, NRP, MARC Post Office Juglote Sai District Gilgit	2.868	01-03-2014 To 28-02-2016	<ul style="list-style-type: none"> Identify nutritional problems and suggest measures for increased fruit productivity in Gilgit-Baltistan Develop accurate nutritional program for the deciduous fruit trees to insure optimum growth and yield. Determine the nutrient availability status of the fruit trees at various locations and provision of soil & plant advisory services to the farmers and other relevant stakeholders. 	<ul style="list-style-type: none"> Experiment for critical levels of Potash and Nitrogen in soil and leaves of almond under climatic conditions of Gilgit and Ghizar was carried out in two locations in Damas Ghizar and Chakarkot Sai Gilgit. Leaf samples were obtained in July from every treatment sample were prepared as per standard scientific methodology and analyzed for leaf N and P concentration Yield was obtained in August when the crop was matured. Yield and yield parameters like 100 Kernel wt, yield per tree and yield per hectare were determined The effects of farmer managed orchard system and scientific managed system on yield, soil chemical properties and leaf nutrient content of Apricot and Apple was studied in Ghizar and Gilgit. The results of the experimented orchard was compared with the farmer managed orchards to compare the yield and other chemical properties of soil and nutrient concentration in the leaf content between the two orchard systems. The data of first year have been completed and the same study will be continued for the next year at two other locations.
25	Rehabilitation of Degraded Rangeland through Interventions and Community Participation Mr. Hamz Ali Samoon, PSO, AZRI, Umerkot	3.600	01-01-2015 To 31-12-2015	<ul style="list-style-type: none"> To strengthen Marvi nursery for multipurpose tree species of Thar at AZRI, for development of various agro-forestry models Develop permanent enclosure to study the ecological recovery of desert flora over time Awareness of local stakeholders through training programs to sustain the activities 	<ul style="list-style-type: none"> The nursery of native plant species strengthened at AZRI (PARC) Umerkot, Sindh. More than 10,000 plants are raised at AZRI nursery and mature nursery plants were planted at AZRI farm. Six thousand plants of different species were planted at three selected villages (Kerlo , Marooharand Ratnore) through community participation. Twenty five farmers of selected villages registered for capacity building program. Sites for agro forestry is selected in three villages namely KerloRahimoo, Maroohar, Ratnore. Four acres land was developed for agro forestry at AZRI farm. Three hundred and twenty plants of eight forest species were planted at AZRI farm

26	Farmer's Training and Demonstration of Innovative Practices for Farmers of Lesser Cholistan and Bahawalpur Division Mr. Malik Muhammad Yousaf, PSO/Director Arid Zone Research Institute (AZRI) PARC, Bahawalpur	3.150	01-01-2015 To 31-12-2015	<ul style="list-style-type: none"> Capacity building of the farmers through trainings and demonstration of innovative practices by dissemination of knowledge based technologies to create awareness among farmers to minimize the yield gap 	<ul style="list-style-type: none"> Survey was conducted to assess the current issues of the farmers and to select the farmers for various training courses. Training course on Effective IPM techniques in pest and diseases control of major agricultural crops to boost up the yield of agricultural crops was held during April 06-10, 2015 at Khairpur, Tamewali. A large number of farmers participated in the session and 60 farmers were registered. Scientists and resource persons from RARI, Bahawalpur, Agri. Extension Departments, BZU, Multan, AZRI, Bahawalpur were also delivered lecturers on various topics of IPM. The second training course was on strategies and measures to improve the fertility status and productivity of low productive arid/ desert lands by proper and timely management at Mauza Habib Missin Khan Kah Sharif during 27-31, May, 2015. The training was arranged with the collaboration of a local NGO, Kissan Welfare Association (KWA), Bahawalpur. Dr. Nazim Hussain, Professor of Agronomy Dept. College BZU, Multan was the Chief Guest and resource person of the Training.
27	Rainwater Harvesting and Crop Productivity Enhancement through Stored Water Application at NARC Engr. Abdul Ghafoor Mangrio, PSO, Climate Change, Alternate Energy and Water Resource Institute(CAEWRI), NARC	38.320	01-01-2015 To 31-12-2016	<ul style="list-style-type: none"> To develop reservoirs through rain water harvesting for irrigation at NARC. To devise strategies for efficient use of stored water for water productivity enhancement 	<ul style="list-style-type: none"> Elevation Survey: Detail elevation survey was conducted from the start of back of NARC officer's colony to Korang River, the elevation difference was found about 14 meters and total length of channel is about 4100 meters (RD 0+00 to RD 4+100).The work of drainage channel is divided in two sections as Section 1-(RD 0+527 to RD 2+100) –Stone pitch and Section 2-(RD 2+100 to RD 4+100) –earthen. Designing and layout of drainage channel: The Channels were designed in two sections as: Section 1: Bed width 3 meters, Drain depth 1.5 meters (average), Drain Slope 0.002, Side Slope (Z) 2, Carrying capacity 13 cumec, Free Board 0.30 m, Length of Channel 1600 m (approx..)

					<ul style="list-style-type: none"> • Inlets from field 9 nos. (RCC pipes with different diameters, stone apron +Stilling basin). Section 2: Bed with 4 meters, Drain depth 1.5 meters (average), Drain Slope 0.002, Side Slope (Z) 2, Carrying capacity 16 cumec, Free Board 0.30 m, Length of Channel 2000 m (approx.), • Inlets from field7 nos. (RCC pipes with different diameters, stone apron +Stilling basin) • Designing and layout of culverts with costing: Section 1: Gravel Road Bridge (GRB) 4 nos, RCC pipes¹ with PCC material, Asphalt Road bridge (ARB) 2 nos as Aqueduct 20 meter length of each (RCC and PCC material). Section 2: Gravel Road Bridge (GRB) 4nos, RCC pipes with PCC material,Road Cross pipe culverts (RCC) 6 nos. • Designing and layout of reservoirs (ponds) with inlet and outlet structures and geo-membrane: The pond was designed as per sub-project, Width of pond 100 m, length of pond100 m, depth of pond3.5 m, Free Board 1 m, Side slope (Z) 2, Rainwater harvested 40,000 cu-m • The Geo-membrane lining, HDPE (0.5 mm) thickness, quantity 160,000 SFT was procured through tender, after completion of pond the company bound to install as per standard procedure. The civil works divided in three packages as Development of drainage channel, Development of Pond and Development of RCC culverts. • Excavation, construction/development, of reservoirs: The whole activities of project were executed after the completion of tender formalities in the last week of May, 2105. All the activities were carried out accordingly and work is in progress.
28	Performance of Horticultural Crops Under Drip Irrigation System in Arid and	4.290	01-01-2015 To 30-06-2016	<ul style="list-style-type: none"> • To develop production technology of horticulture plants under drip irrigation system in water-scarce 	<ul style="list-style-type: none"> • Solar and drip irrigation system installed at AZRI Umerkot on four acres and grafted ber high density plantation is under progress. The plant to plant and row to row distance is kept 10x10 feet and there will be 435

<p>Semi-Arid Area of Pakistan, Coordinated Project (Component-I AZRI (PARC) Umerkot, Dr. Attaullah Khan, Director/PSO, Arid Zone Research Institute (AZRI) PARC, Umerkot</p>			<p>areas of Umerkot</p> <ul style="list-style-type: none"> • To improve water productivity under high efficiency irrigation systems for Grafted Ber, and Banana plants • To determine the performance of high density Grafted Ber, Banana using high efficiency irrigation method powered by solar energy 	<p>plants/acre. Another two acres graded ber plantation with drip irrigation (20x20 feet) is under progress at Umerkot. Installed drip irrigation system on 4 acres at Abdul Majeed Nizamani Farm Nangarparkar. Two acres planted with Banana and two acres with grafted ber.</p>
<p>Performance of Horticultural Crops Under Drip Irrigation System in Arid and Semi-Arid Area of Pakistan, Coordinated Project Component-II AZRI (PARC) Bahawalpur Malik Muhammad Yousaf, Director/PSO, Arid Zone Research Institute (AZRI) PARC, Bahawalpur</p>	4.290	01-01-2015 To 30-06-2016	<ul style="list-style-type: none"> • To introduce drip irrigation system on different horticultural crops in the Cholistan desert. • To increase crop productivity through efficient use of available water. • To disseminate the High Efficiency Irrigation System in Cholistan area on farmer's field. 	<ul style="list-style-type: none"> • There are two demonstration sites of this project, one at Cholistan farm of AZRI, Bahawalpur (16DRB, Sullah Wala Distt. Bahawalpur) and other at farmer's field in Cholistan area. Each site comprises of 5 acres of land. The installation of solar pump and drip irrigation and plantation is under progress. Grated ber and Citrus plantation is also under progress.
<p>Performance of Horticultural Crops Under Drip Irrigation System in Arid and Semi-Arid Area of Pakistan, Coordinated Project Component-III BARDC Quetta) Mr. Nadeem Sadiq,</p>	4.440	01-01-2015 To 30-06-2016	<ul style="list-style-type: none"> • Introduction of efficient water utilization techniques and nutrient application to obtain maximum irrigation efficiency by propagating locally fabricated drip irrigation systems. • To determine water 	<ul style="list-style-type: none"> • Installed drip irrigation system on already planted arid horticulture plants (grapes, almond, olive) on 5 acres and 4 acres new plantation (2 acres olive, 2 grapes) completed. Three acres drip irrigation system along with solar pump and panels was completed at Tomagh, Ziarat. Two acres olive and one acre almond plantation was completed. Four hundred new Grape plants (5 improved varieties: Autumn Royal, Kings Ruby, Red Globe, Aayeta, Kishmishi) were planted at BARDC farm.

	SSO, (BARDC)			<p>productivity of almond, grapes, pistachio & olives under drip irrigation system.</p> <ul style="list-style-type: none"> • Introduction of solar electric technology to run drip irrigation system on ground water resources. 	Whereas 200 improved variety olive plants (from Olive project POCEDPA, BARDC) and 100 almond plants (Talwar, and Katha) were planted at Tomagh farm Ziarat.
29	Nutrient Indexing and Integrated Nutrient Management for Major Crops & Establishment/Upgradation of Soil Chemistry Lab, BARDC Quetta Mr. Liaqat Ali, SO (BARDC)	19.700	01-01-2015 To 31-12-2015	<ul style="list-style-type: none"> • Investigate the nature content, and severity of nutrient disorders in Jaffarabad and Naseerabad districts of Balochistan. • Determine nutrient management strategies for enhancing and sustaining Wheat/ Mung/Mash productivity. 	<ul style="list-style-type: none"> • Up gradation of existing soil chemistry lab. has been completed and various equipment has been installed. • Soil sampling of the study districts is completed and initial soil analysis tests (pH, EC, O.M, % N, texture etc) are being carried out in soil chemistry lab. In the mean while sowing of wheat experimental trials of (Biozot and Humic Acid) on 8 different locations of Jaffarabad and Naseerabad districts completed. • Soil samples collected from the study area are going through the process of analysis.
30	Production Value Addition and Introduction of Selected Medicinal Herbs to the Farming Community of Balochistan Dr. Abdul Hanan, SSO (BARDC)	5.660	01-01-2015 To 30-06-2016	<ul style="list-style-type: none"> • Management, maintenance, and expansion of mother blocks of medicinal herb garden at BARDC, Quetta; • Promotion, production, value addition and marketing of selected herbs; • Introduction of selected herbs to the farming communities. 	<ul style="list-style-type: none"> • Managed, maintained and expanded the medicinal herb garden from 0.5 to 1.5 acre for establishing mother block of medicinal herbs at BARDC, Quetta. Seeds of some twenty medicinal herbs were collected from Karkhasa, Quetta and Ziarat valley. • Nine thousands saffron bulbs were planted for further multiplication and promotion in Balochistan. • Approximately, 15, 20, 10, and 20 kg of dry chamomile, oregano, thyme, and rosemary harvested and dried, respectively for further sale through PATCO. Nine thousands corms of Saffron imported from Iran and planted as a mother block for further propagation. • Survey in the fennel growing areas of Naseerabad division (Villages: Dhadhar, Gandawah, Fazilabad, Haji

					M. Yaqoob Pandrani and Habibullah Bugti) was carried out to select the farmers for fennel production.
31	Establishment of soil & water testing laboratory at National Tea & High Value Crops Research Institute Shinkiari, Mansehra. Dr. Basharat Hussain Shah, PSO, NTHRI, Mansehra	13.030	24-03-2015 To 25-03-2016	<ul style="list-style-type: none"> • To equip the soil science laboratory with latest research equipments for the physicochemical properties of soil & water in District Mansehra. • To survey the study area for the determination of soil physico-chemical properties. • To conduct organic and inorganic fertilizer trials on tomato. • Capacity building of the scientists and laboratory officials. 	<ul style="list-style-type: none"> • For the establishment of soil & water testing laboratory at National Tea and High Value Crops Research Institute Shinkiari, Mansehra supply order for various soil lab has been placed. After receiving the equipments, survey for soil collection and capacity building of scientists and Lab works will be started. An experiment on comparative effect of organic and inorganic fertilizer on soil fertility, yield and quality of tomato (<i>Lycopersion esculentum</i>) was conducted. One month old seedlings (Var. SAHIL) were transplanted. The experiment was laid out in RCB design with 3 replications and eight treatments. Plot size was 5 x 10 sq. ft. Row to row Distance was kept as 4 feet while plant to plant distance was 1 foot. • Composite soil sample collected before the start of experiment and analyzed for soil pH (5.65). Soil texture was determined as Sandy loam.
32	Promotion and Preparation of Single Super Phosphate from Indigenous Hazara Rock Phosphate Dr. Matiullah Khan, PSO, LRRI, NARC (NR-37)	9.090	01-07-2015 To 30-06-2017	<ul style="list-style-type: none"> • Small scale single super phosphate (SSP) production unit development and installation at NARC and product commercialization through PATCO. • Formulation of increased phosphorous content SSP and compound fertilizer enriched with micro-nutrients. 	<ul style="list-style-type: none"> • Designing for SPS unit has been completed and casting of the Machinery is in progress. • Manually produced 50 bags of single super phosphate for field testing at NARC on wheat crop(4 acres) • Assessment was made for the availability of phosphorus from various Hazara rocks phosphate and its effect on the wheat crop. • Isolated phosphate solubilizing bacteria from the vicinity of rock phosphate mines (Hazara) for the preparation of bio-fertilizer.
33	Arsenic in Rice – Assessment and Remediation Dr. M.	6.150	01-10-2015 To 30-06-2017	<ul style="list-style-type: none"> • Assess as concentration in paddy soil and rice. • Develop link between 	Project activity just at initial stage

	Mahmood-ul-Hassan, PSO, LRRI, NARC (NR-38)			translocation and accumulation in paddy rice. • Mitigate arsenic contaminated soil for food safety	
34	Operationalization of processing unit for commercial exploration of seabuckthorn in Gilgit Baltistan Sher Ahmead PSO, Program Leader NRRP, MARC, Jahlote(Sai) District, Gilgit (NR-39)	2.640	10-09-2015 To 30-06-2017	<ul style="list-style-type: none"> • To make functional the seabuckthorn oil extracting and product preparation unit for research and development. • Tsting the multiplication of Chinese Seabuckthorne variety. 	Project activity just at initial stage

SOCIAL SCIENCES

35	Digital archive of PARC research and scholarly work, Mr.Faheem Akbar, Librarian, NARC	12.765	1-07-2014 To 30-06-2016	<ul style="list-style-type: none"> • To capture, digitize and create full-text repository of PARC and PARC scientists publications for improving their accessibility, availability and use by scientific community, planners, policy makers, student and farmers • Electronic preservation of PARC publications for future generations 	<ul style="list-style-type: none"> • The project was started on the recommendation of PARC Third Partly Evolution Committee keeping in view the importance of organized record of research work conducted by PARC scientists. The first task of the project was collection of research publications from PARC scientist for this purpose letters were sent to all centers/institute/programs of PARC for sending their publications to Directorate of Scientific Information in either soft or hard format. Apart from that scientists of NARC/PARC contacted individually for providing there research publications for digital archive, retired PARC scientist were also contacted in this regard and Balochistan Agricultural Research and Development
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				<ul style="list-style-type: none"> • Development of awareness in Pakistani librarians and scientific community about digital preservation of literature and its use 	<p>Centre (BARDC) visited for collecting the research publications. During the year 2076 publications were collected for digital archive and about 900 publications were in soft format while the remaining were available only in printed format which were scanned, formatted and converted into pdf format.</p> <ul style="list-style-type: none"> • For Organization of research publications and crating Digital Archive search was made for selecting of suitable software. After searching internet and consultation with IT experts Dspace, Eprints, and Greenstone software were studied in detail, tested on local server and feature of all those software's were explored and compared with each other and finally Dspace software was selected for creating PARC Digital Archive on the following basis. • Dspace is Open Source Software • It is freely available on internet • It's easy to install and flexible for customizing. • It is most widely used for creating digital Archive • It is compatible with existing DSI Database and technology used for PARC Website. • It has the capability to provide web based access to database. • Working with Dspace and modification of its modules is very easy. • Latest available version of Dspace along with required software's were downloaded from interned and installed and configured on local server. Meta data structure of Dspace and Data input forms were customized according to PARC requirements. Pilot database was created and different features of the software were tested. A well sequential procedure was developed for data entry in database, classification, allotment of keywords and abstracting. It was decided that FAO AGRIS database standards and classification scheme would be used for classification and entry of data in the Digital Archive and AGROVOC thesaurus would be used in addition of using
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					<p>local terms because most of NARC/PARC scientist are familiarly with these schemes.</p> <ul style="list-style-type: none"> Initially bibliographic data was entered in INMAGIC based database with same data structure for facilitation in spell check and avoiding duplication and after finalization data was converted into XML format. For conversion of data from INMAGIC to xml a small program in JAVA language was created which convert data from INMAGIC to Excel and then from Excel to XML by creating Dublin_core.xml. During the reported year for data of 2079 records was entered in INMAGIC based database and the converted into xml for inclusion in Digital Archive. Advance search filter for searching data from different fields was customized according to PARC requirements. Display format was designed for display of full record from PARC Digital Archive by developing xmlui Module Interface in Dspace. For Home page display banner was designed in Adobe Photoshop and included in default-header.jsp. Adjusted Main Menu position set width of “carousel” for dspace slider for display of 10 recent records from digital archive. Computer server running dspace was configured with PARC Local Area Network and access was provided on PARC LAN. Digital Archive can be access through PARC network on http://10.2.30.213:8080/jspui.
36	Capacity Building of Youth in Agricultural Entrepreneur for PMYBLP Roshan Zada, Director/PSO, Directorate of Outreach, NARC	3.131	01-07-2014 To 30-06-2016	<ul style="list-style-type: none"> Knowledge and skills development of youth in agriculture entrepreneurs Provide Technical Assistannce and backstopping to PMYBLP enterpreneurers, ensuring their sustainable productivity in business 	<ul style="list-style-type: none"> Prime Minister’s ‘Youth Business Loan’, for young entrepreneurs between the age group of 21 - 45 years, is designed to provide subsidized financing at 8.0% mark-up per annum for one hundred thousand (100,000) beneficiaries, through designated financial institutions, initially through National Bank of Pakistan (NBP) and First Women Bank Ltd. (FWBL). Small business loan with tenure up to 8 years, with first year grace period, and a debt : equity of 90 : 10 will be disbursed to SME beneficiaries across Pakistan, covering; Punjab, Sindh, Khyber Pakhtunkhwa, Balochistan, Gilgit Baltistan, Azad

					<p>Jammu & Kashmir and Federally Administered Tribal Areas (FATA). It has a 50% quota for women and 5% quota for families of Shaheeds, Widows and Disabled persons.</p> <ul style="list-style-type: none"> • Two thousand, five hundred and forty six candidates were successful in the 1st ballot while 2655 succeeded in 2nd ballot for agriculture related business in which only 8 % persons were illiterate while 42% are matriculate and 11 % having master level education. More interestingly, 95 % loans responding to livestock sector consist 72 % (Dairy), 5% (sheep/goat farming), 9% (calf fattening), 7 % (poultry) and 2 % (fish farming) while only 4 % loans relate with 1% (bee keeping), 1% (vegetable growing) and 1 % of crop farming (MNFS&R/PARC,2014). • Ministry of National Food Security and Research, Islamabad, had taken up the responsibility to develop feasibility business plan and provide agri-business related backstopping to beneficiary stakeholders regarding setting-up their businesses on sustainable basis. • Pakistan Agricultural Research Council, Islamabad (PARC) under the guidelines of Ministry of National Food Security and Research Islamabad facilitating the successful applicant by imparting technical assistance and trainings. Training of 671 persons related to livestock business of different area of Punjab i.e. Mianchannu, Kabirwala, Rawalpindi, Attock, Chakwal, Fatehjang, Bhaira, Ahmad Pur Sial, Mianwali have been completed so far, while remaining person would be trained later on. These trainings inspired the youth for adoption of improved production technologies in Agriculture & Livestock sector. These occasions provided an opportunity to the youth to improve their technical knowledge & skills which would certainly play an important role in improving their farm productivity. This also helped to establish linkage between youth and scientists of public institutions for enhancing co-
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					operation in future.
37	Skill Development of the Farmers of Balochistan Mr. Muhammad Yousaf Marri, API, NARC (SS-25)	42.241	01-09-2015 To 30-06-2016	<ul style="list-style-type: none"> • To produce skilled manpower for the existing and changing demands of agriculture sector. • To provide experiential training to agriculture and livestock graduates in new profitable agricultural techniques to act as service providers. • To provide opportunity to the graduates to get training in employable skills as useful citizens of Pakistan and become effective individuals for self income generation. 	1 st badge of 103 farmers from various districts of Balochistan has completed one month training at API NARC
38	Advocacy and Projection of PARC, R&D activities to the stake holders and in Electronics and Print Media. Sardar Ghulam Mustafa, Sr. Director PR&P, PARC (SS-26)	17.760	01-10-2015 To 30-06-2017	<ul style="list-style-type: none"> • Advocacy of proven agro-livestock technologies, new innovations, natural hazardous and other R&D activities of PARC to stake holders. • Accelerate the pace of information dissemination and projection of Agricultural R & D activities and technologies 	Project activity just at initial stage

				<p>generated by PARC as well as other organizations through Mass Media(Electronic & Print)</p> <ul style="list-style-type: none"> • Strengthen the capacity of Directorate of Public Relations and Protocol (PR&P) PARC with provision of appropriate physical, financial and human resources for effective working and sustainability of its activities. 	
39	<p>“Documentation and Sharing of Innovative Agricultural Information through Electronic Media. Dr. Qurat-ul-Ain, Director (AVC), NARC (SS-27)</p>	9.90	<p>01-10-2015 To 30-06-2017</p>	<ul style="list-style-type: none"> • To improve the agricultural production by continuous induction of new technologies based on the research results through efficient knowledge sharing and communication system. The target is: • To document PARC/NARC research achievements/technologies and innovations and achieve them in the form of video. • To disseminate the technologies that can raise productivity of agriculture through radio/TV and made available on Internet e.g. dailymotion, facebook, PARC website 	<p>Project activity just at initial stage</p>

				<p>etc.</p> <ul style="list-style-type: none"> To create appreciation for agricultural research achievements of PARC by sharing results on electronic media. 	
40	<p>Livelihood strategies of Dwellers along the route of Pak-China Corridor in Balochistan Mr. Jumo Khan, SSO, SSRI,SSD,Quetta (SS-28)</p>	4.640	<p>01-11-2015 To 31-06-2017</p>	<ul style="list-style-type: none"> To assess the quantity and quality of human, physical, financial and social capitals possessed by the dwellers of the districts falling on PCEC route in Balochistan. To gauge the nature of Short and Long term development expectation of the dwellers of the districts falling on PCEC route in Balochistan To suggest guidelines/recommendations for the policy pioneers and development related institution for boosting improvements in the livelihoods of the dwellers particularly the poor ones. 	<p>Project activity just at initial stage</p>
41	<p>Provision of Agriculture in Livelihood Strategies of Rural Youth in Punjab Dr. Arshad Bashir, Principal Scientific Officer.</p>	2.260	<p>01-11-2015 To 31-10-2016</p>	<ul style="list-style-type: none"> To assess the quantity and quality of human, physical, financial and social capitals possessed by marginal, small sized farming and landless households across 	<p>Project activity just at initial stage</p>

	Social Sciences Research Institute, PARC, Faisalabad			<p>agroecological regions of the rural Punjab.</p> <ul style="list-style-type: none"> • To analyze future development plans/aspirations of rural youth in pursuing livelihood strategies at small sized farming and landless households across agroecological regions of the rural Punjab. • To suggest guidelines/recommendations for the policy practitioners and development planners based on research findings of this exercise. 	
42	An analysis of Food Consumption diversity and demand for Food in Azad Jammu Kashmir Ghulam Sadiq Afridi, Principal Scientific Officer, Social Sciences Research Institute, PARC Agricultural Complex, Muzaffarabad, AJK (SS-30)	3.345	11-11-2015 To 31-06-2017	<ul style="list-style-type: none"> • To examine and estimate the dietary/consumption diversification and dietary diversification score of food variety score for different food groups at the level: • To estimate demand of different food groups at state level. • To extend policy recommendations for researchers and policy makers. 	Project activity just at initial stage
43	Establishment of Urdu Directorate, Mr. Aslam Alwri, Director Urdu	1.770	15-03-2016 To 30-06-2017	<ul style="list-style-type: none"> • To implement Supreme Court of Pakistan and Federal Government directives to increase use 	The project activities are at initial stages.

	<p>Directorate, PARC</p>			<p>of Urdu language for office and other purposes as required under Section 251 of the Constitution of Islamic Republic of Pakistan.</p> <ul style="list-style-type: none"> • To development of PARC Urdu website and produce useful research based information. • To enhance communication skills of research scientists in national language for increase exposure on print and electronic media. • To gradually train and enable PARC employees to make all kinds of office correspondence in Urdu. • To strengthen the Urdu Directorate of PARC. 	
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ANIMAL SCIENCES

44	Development of Rapid Field Diagnosis and Homologous Vaccine Against Avian Influenza H9 through Molecular Biology Tools Dr. Naila Siddique, SSO/PL, National Reference Lab for Poultry Diseases (NRLPD) ASI, NARC	8.70	01-03-2014 To 28-02-2016	<ul style="list-style-type: none"> • To determine the extent of antigenic and genetic diversity of AIV H9N2 affecting poultry • To standardize highly sensitive loop-mediated isothermal PCR (LAMP) diagnostic tests for detection and sub-typing of AIV H9. • To standardize a reverse genetic system for the most prevalent Pakistani isolates of AIV and generate an effective live-attenuated vaccine against H9N2 via reverse genetics. 	<ul style="list-style-type: none"> • Surveillance setup was revived at Provincial Level in VDRL-Abbotabad, PRI-Karachi, PRI-Rawalpindi, -VDL, Quetta and VDL, <u>Peshawar</u>. Field sampling through collaborating labs in provinces was carried out from different ecological zones. Field sampling was also completed from poultry populated areas of Islamabad and Rawalpindi by NRLPD staff. Sampling <u>was taken</u> from non vaccinated birds specie s(backyard poultry, broilers, domesticated birds, fancy birds, wild birds etc. In this regard 9153 clinical specimens (1331 tissues, 3515 swabs, 4267 sera & 40 environmental samples) were collected from different regions of Pakistan through provincial collaborating units and by NRLPD staff (Table 1). However, 1877 samples were collected from KPK, 1727 from Punjab, 823 from Balochistan, 1417 from Sindh, 435 from AJK, 1115 from ICT & 1769 from Gilgit. • Tissue samples were processed and evaluated for virus isolation through in-ovo-inoculation. In total 55 H9N2 viruses were isolated and sub typed through virus neutralization test. In this regard highest number of isolations has been recorded from KPK province (33.90%), followed by Punjab province (26.78%), while Sindh province & ICT contributed 21.42% and 17.80% of total isolations respectively. However, no isolations have been recorded from Balochistan, AJK & Gilgit (Fig 5). Serological techniques including ELISA & HI have been standardized. In total 4267 serum samples were received and evaluated for seroconversion against AIV H9N2 through ELISA and HI test. The titer range observed was 0.00-10.00 which indicated exposure for AIV H9N2 in birds population of Pakistan. Greater seroconversion rate was observed in the birds species of KPK followed by Punjab. The percentage seroconversion against AIV
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					<p>Pakistani viruses revealed eight sites at positions 29, 82, 105, 141, 298, 305, 492 and 551. Two potential glycosylation sites at positions, 206 and 218 were lost compared with representative reference strains of the G1-lineage which indicated genetic diversity. The loss of potential glycosylation sites may represent a selected adaptation of H9N2 within poultry and alteration in glycosylation pattern has been suggested to influence adaptation of avian influenza viruses to poultry. The amino acid responsible for preferential binding to SA a2,3-linked to galactose found in avian hosts and is a major host range determinant for influenza A viruses was conserved. On the other hand the amino acid substitution responsible for efficient replication of 2 H9N2 viruses in human cell in culture was also present which indicated mammalian receptors binding specificity. In addition to this a number of point mutations have been observed in HA & NA genes might be responsible for vaccine failure. Thus phylogenetic comparison revealed that the current viruses under study are the progeny of the early reported Pakistani AIVs and their phylogenetic relatedness to AIVs from neighboring countries indicated the role of wild birds movement and poultry trade across the borders.</p> <ul style="list-style-type: none"> • To find out the pathogenic potential , intravenous pathogenicity index was determined for selected 20 H9N2 isolates and the range was found to be 0.00-0.07 which indicated that these viruses are low pathogenic. Cartography experiment has been conducted to find out the antigenic & immunogenic potential of selected AIV H9N2 isolates. In this regard 25 AIV H9N2 selected isolates have been propagated and treated accordingly for vaccine preparation. 25 vaccines have been inoculated via sub cut rout into 120 birds (as group of four bids for one vaccine). Homologous & hetrologous HI has been done to determined antibody titers against H9N2. Cartography checker board has been completed and will be further
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					<p>evaluated using Cartography software. The data revealed the exposure of birds species for AIV H9N2 viruses in different areas of Pakistan. Moreover, the greater isolation and seronversion rates against AIV observed in bids species of KPK and Punjab & Sindh provinces indicated the role of wild, migratory bids for the dissemination of AIV H9N2 in backyard poultry , and then onward transmission to other bird species in Pakistan. The reason might be the hilly areas & the attractive birding sites along with water bodies/reservoirs in KPK & Punjab provinces & coastal belt in Sindh Province provide opportunities for frequent movements of migratory waterfowls, wild migratory birds and their intermingling with the local poultry. The data also indicated the genetic diversity in the Pak -H9N2 viruses with the passage of time. Low Pathogenic serotype H9N2 appears to have become endemic and despite regular vaccination numerous new outbreaks have resulted in mortality among young chicks and significant decline in egg production among laying flocks. Some of the Pak-H9N2 isolates showed highest rate of point mutation in surface glycoproteins (HA & NA). Although, the effects of these unique point mutations were not reported earlier, the possibility of their involvement in failure of H9 vaccine cannot be ignored.</p>
45	<p>Pilot Project on Fish Processing and Cold Chin Development Dr. Muhammad Afzal, PSO/PL Aquaculture and Fisheries Program, NARC</p>	40.740	01-06-2014 To 30-05-2016	<ul style="list-style-type: none"> • Study of fish quality, shelf-life and price structure in local fish markets. • Development of a Cold-Chain and fish processing facility for product development and quality improvement. • Training and Technology transfer for promotion of 	<ul style="list-style-type: none"> • Survey of six fish markets of Rawalpindi (Banni, Saidpur, Shamsabad, Pindora and Sunday Bazar and Sadiqabad) and six fish markets/vendors of Islamabad (Abpara Market, Rawal Dam Chowk, Melody market, I-10 Mandi ,Kohsar Market and Karachi Company) were conducted on weekly basis for the months from September, 2014 to December, 2014 and collected diseased/infected samples of different fish species (Tilapia, Sliver, Rohu, Mori, Grass & Chinese carp etc) to observation the fish conditions under unhygienic environment. Microbiological and water quality experiment was another aspect of the field activity to

				<p>quality and hygiene in fish products.</p>	<p>identify the microflora (bacteria) associated with various fish species that might be one of factor effect adversely on fish quality.</p> <ul style="list-style-type: none"> • During survey, physical fish condition that were being sold in mentioned market are not so much good but satisfactory. The deterioration of fish quality in the market may be the one of reason to not adopting the hygienic measures. The infected fish samples have been processed under “Disease Diagnosis Lab, Aquaculture and Fisheries Program (AFP), National Agricultural Research Centre, Islamabad. Apparently, no prominent disease symptoms or infection were found after Fish body was opened up by dissection. • Existing building of Fisheries Development Board was modified into a small fish handling and processing facility and installed refrigerating units, fish processing machinery, like Descalling Machine, De-heading Machine, Bone Remover, Skinning Machine and Vacuum Packing Machine. Processing Plant was inaugurated by Federal Minister for MNFS &R on 27-11-2014. Developed supply chain linkages with tilapia, trout and carp farmers of Punjab and KPK. Fish fillet product of Tilapia, Trout and Rohu was developed in Fish Processing Plant and sold at PATCO, NARC and outlet at Gate NO.2 NARC. A total of Rs.800.000
46	<p>Standardization and Application of Diagnostic and Surveillance Procedures to Encounter Emerging Novel Strain of Zoonotic Influenza H7N9 Dr. Naila Siddique, SSO/PL, National Reference</p>	4.970	<p>01-01-2015 To 31-03-2016</p>	<ul style="list-style-type: none"> • To standardize the internationally approved diagnostic and molecular characterization techniques for AIV H7N9. • Preliminary investigative surveillance for the prevalence of AIV sub-type H7N9. 	<ul style="list-style-type: none"> • Surveillance setup was revived at Provincial Level in VDRL-Abbotabad, PRI-Karachi, PRI-Rawalpindi, VDL, Quetta and VDL, Peshawar & Gilgit-Baltistan. Field sampling through collaborating labs in provinces is in process. Field sampling has also been done from non vaccinated birds (backyard poultry, commercial poultry, domesticated birds, pigeons, Waterfowls, Pheasants, Peacocks, Dove, guinea fowl and Parrot etc) from various poultry populated areas of Islamabad and Rawalpindi by NRLPD staff. In this regard 5485 clinical specimens (579 tissues, 2559 swabs, 2307 sera & 40 environmental

	<p>Lab for poultry Diseases (NRLPD) ASI, NARC</p>				<p>samples) were collected from different regions of Pakistan through provincial collaborating units and by NRLPD staff. Total 777 samples were collected from KPK, 1327 from Punjab, 673 from Balochistan, 505 from Sindh, 39 from AJK, 639 from ICT & 1535 from Gilgit-Baltistan.</p> <ul style="list-style-type: none"> • Tissue samples were processed and evaluated for virus isolation through in-ovo inoculation. In this regard no isolation has been recorded. Serological techniques including ELISA & HI have been standardized using local and internationally approved reagents (antigens and antisera) as per OIE procedures. Using these standard procedures of ELISA & HI 2307 serum samples were evaluated for seroconversion against AIV H7N9. The titer range observed was 0.00-4.00 which indicated mild exposure for AIV H7N9 in bird population. However, no seroconversion has been recorded during January-June, 2015 against AIV H7N9. • The bird species in Sindh province showed 2.05% seroconversion, while in Punjab & ICT the seroconversion was 1.25% & 1.23% respectively which is negligible, while no seroconversion has been recorded in AJK, Balochistan, KPK Province and Gilgit-Baltistan (Fig. 3, Table 1). The RT-PCR has been standardized for H7 & N9 gene detections using local as well as internationally recommended reagents (antigens/ Positive controls). The limit of detection has been determined for H7 and N9 primers by making serial 10 fold serial dilutions of positive standards and using different temperature profiles. The limit of detection of H7 primer was found to be 10⁻⁴ while for H7 and for N9 primer the limit of detection was 10⁻³ (Fig 4). More sensitive Taqman Real Time PCR technique has also been standardized using standard probes and primers for M, HA & NA genes. Limit of detection has also been determined for accurate diagnosis of AIV H7N9 (Fig 5). The selected samples were subjected to RT-PCR and Taqman Real Time RT-PCR
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					<p>techniques but no sample was found positive for AIV H7N9 presence.</p> <ul style="list-style-type: none"> • The data revealed the mild exposure of bird species for AIV H7 viruses in Sindh, Punjab and ICT in January - March 2015 but no isolation and detection was recorded. However, no seroconversion has been recorded during April-June 2015 and no isolation & detection has indicated that particularly AIV H7N9 has not yet been introduced into Pakistan and might be other serotypes of AIV H7 caused negligible exposure to some bird species in winter. Early warning system has been established by standardization of various serological and more sensitive and specific molecular diagnostic techniques.
47	<p>Establishment of Ostrich Breeding Facility at NARC Islamabad</p> <p>Dr. Farrukh Saleem, SO, Poultry and Wildlife program, ASI, NARC (AS-18)</p>	10.230	01-01-2015 To 31-12-2015	<ul style="list-style-type: none"> • To standardize production technique of ostrich farming • To study factors to reduce the early chick mortality • To produce cheap and healthy red meat • To develop human resource and training of farmers 	<ul style="list-style-type: none"> • For the establishment of ostrich breeding facility at NARC, Islamabad, six female and three male ostrich birds were purchased from Lahore and shifted to NARC. Twenty four eggs were collected and placed in the ostrich egg incubation system for hatching. Fertility and hatchability data were collected and found that out of twenty four eggs only twelve eggs were fertile. Further experiments are under progress.
48	<p>Development of Open Nucleus Breeding Scheme for Nili Buffalo and Sahiwal Cattle at NARC</p> <p>Dr. Abdul Ghaffar, PSO, Animal Reproduction and Genetics Programme (ARGP) ASI, NARC</p>	19.390	01-01-2015 To 31-12-2015	<ul style="list-style-type: none"> • To establish nucleus herds of selected breeds (Nili/ Nili-Ravi buffalo and Sahiwal cattle) for genetic improvement • To study the frequency of candidate genes (K-CN, β-LG and LP) in these breeds. • To sustain and maintain high yielding animals involving PATCO 	<ul style="list-style-type: none"> • A group of 20 Nili/ Nili Ravi buffaloes and 10 Sahiwal cows were purchased from the breeders. The animals were transported to NARC and housed at LRS. These animals are being maintained and monitoring of production performance is under progress.
49	Improvement of	17.985	01-01-2015	<ul style="list-style-type: none"> • Enhancement of small and 	<ul style="list-style-type: none"> • Eight sets of Sahiwal Cows 1 male 2 females, 20 male

	Reproductive and Productive Efficiencies of Sheep, Goats and Cattle's in Jaffarabad, Balochistan Mr. Mehdi Hassan Jamali SO, ARI, Jaffarabad (BARDC)		To 31-12-2015	<p>large ruminant's production through introduction of improved breeding with quality sire/AI, feeding with locally prepared feed /fodder formulations and major diseases prevention and control practices.</p> <ul style="list-style-type: none"> • Capacity building of the farmers/officials regarding major sheep, goats and cattle production issues of health, breeding and feeding management. Cost benefits ratio in livestock production under field and farm condition 	<p>rams Kooka breed sheep, 20 male Bucks of Beetal breed Goats purchased through spot animal purchase committee and handed over to the farmers (cattle 8 farmers, kooka 20 farmers, beetal 19 farmers) for breed improvement and reproductive efficiency of livestock in the area. Bhagnari breeding bulls (10) also purchased from Livestock and Dairy Dev. Dept, Govt. of Balochistan and kept at ARI-Jaffarabad. The animals will also be distributed to another 10 farmers. The applications were invited from the local farmers having livestock rearing experience through advertisement; the DG BARDC constituted a committee for on the spot verification and selection of farmers for provision of animals. In this connection list of farmers completed while the animals are handed-over to the farmers on 07th July 2015 in the presence of Member Animal Science and Member NRD. Three thousands animals were vaccinated and drenched/treated for PPR, HS, FMD, DQ, liver flock, de-worming.</p>
50	Pilot Project on Introduction of Tilapia Nilotica and Productivity Enhancement of Fresh Water Fish Farming in Balochistan Mr. Zulfiqar Ali Rahujo, SSO, ARI, Jaffarabad (BARDC)	10.350	01-01-2015 To 30-06-2016	<ul style="list-style-type: none"> • Study of fish quality, shelf-life and price structure in local fish markets. • Development of a Cold-Chain and fish processing facility for product development and quality improvement. • Training and Technology transfer for promotion of quality and hygiene in fish products. 	<ul style="list-style-type: none"> • Survey of six fish markets of Rawalpindi (Banni, Saidpur, Shamsabad, Pindora and Sunday Bazar and Sadiqabad) and six fish markets/vendors of Islamabad (Abpara Market, Rawal Dam Chowk, Melody market, I-10 Mandi, Kohsar Market and Karachi Company) were conducted on weekly basis for the months from September, 2014 to December, 2014 and collected diseased/infected samples of different fish species (Tilapia, Sliver, Rohu, Mori, Grass & Chinese carp etc) to observation the fish conditions under unhygienic environment. Microbiological and water quality experiment was another aspect of the field activity to identify the microflora (bacteria) associated with various fish species that might be one of factor effect adversely on fish quality. • During survey, physical fish condition that were being sold in mentioned market are not so much good but

					<p>satisfactory. The deterioration of fish quality in the market may be the one of reason to not adopting the hygienic measures. The infected fish samples have been processed under “Disease Diagnosis Lab, Aquaculture and Fisheries Program (AFP), National Agricultural Research Centre, Islamabad. Apparently, no prominent disease symptoms or infection were found after Fish body was opened up by dissection.</p> <ul style="list-style-type: none"> • Existing building of Fisheries Development Board was modified into a small fish handling and processing facility and installed refrigerating units, fish processing machinery, like Descalling Machine, De-heading Machine, Bone Remover, Skinning Machine and Vacuum Packing Machine. Processing Plant was inaugurated by Federal Minister for MNFS &R on 27-11-2014. Developed supply chain linkages with tilapia, trout and carp farmers of Punjab and KPK. Fish fillet product of Tilapia, Trout and Rohu was developed in Fish Processing Plant and sold at PATCO, NARC and outlet at Gate NO.2 NARC. A total of Rs.800.000
51	<p>Development of Aquaculture in Lakes surrounding Sindh Abadgar’s Sugar Mill, Tando Muhammad Khan through pen Culture</p> <p>Muhammad Ramzan Ali, Aquaculture and Fisheries Program NARC</p>	3.880	01-01-2015 To 31-12-2015	<ul style="list-style-type: none"> • To study the prospects of aquaculture in lakes surrounding Sindh Abadgar’s Sugar Mill i.e. Kapoor and Sehrani Lake through pen culture by using artificial diets. • To study growth performance of <i>Oreochromis nilotica</i> and seabass in pens in Kapoor and Sehrani Lake, Sindh 	<ul style="list-style-type: none"> • Survey of Kapoor and Sehrani Lake was conducted to study the suitability of water for fish culture and site selection for pen culture. From water quality analysis, it was found that water of Kapoor Lake is suitable for tilapia culture while water of Sehrani Lake is not suitable for fish culture. The site was selected for installation of pens in Kapoor Lake. Thirty thousand fish seed (Tilapia and Sea bass) was transported from Thailand. Transportation was made in polythene water and oxygen, packed in Styrofoam boxes. No mortality was observed during transportation. Imported fish seed is under the process of acclimatization in raceways and circular fiber glass tanks on locally made artificial feed.

52	Establishment of PARC Veterinary Hospital at Animal Health Program, NARC. Dr. Munib Hussain, SSO, AHP, ASI, NARC	9.030	01-04-2015 To 30-04-2016	<ul style="list-style-type: none"> • Provision of veterinary services to livestock (including pets). • Collect baseline epidemiological data on animal diseases in livestock populations of Islamabad Capital Territory ICT. • Strengthen interaction between farmers and livestock scientists at PARC. 	<ul style="list-style-type: none"> • Veterinary Clinic established, several farmers with disease outbreaks have also been dealt accordingly. Veterinary clinic is now functional and services are being provided to the farmers. Approximately, 150 animals including large and small ruminants and pets were provided veterinary services in ICT. Collected naseline epidemiological data on animal diseases in livestock population of ICT. More than 2000 brochures were disttibuted for disease control and management among farmers. Regular visits of different sites in and around the ICT is being made to attract the farmers and brief them about the advantages of PARC veterinary clinic.
53	Development of indigenous diagnostic assays for detection of PPR virus infection, Aamir Bin Zahoor, PSO, AHP, APIP, ASI, NARC	7.115	01-04-2016 30-06-2017	<ul style="list-style-type: none"> • To develop a panel of indigenous cost effective diagnostic assays using recombinant protein for PPR. • To prepare, demonstrate and promote the use of indigenous field diagnostic kit. 	<ul style="list-style-type: none"> • Project activity just at initial stage
54	Up-gradation and automation of yogurt production facility at dairy technology ASI, NARC, Dr. Haider Khan, SSO, Dairy Technology, APIP, ASI, NARC	5.20	21-03-2016 20-03-2017	<ul style="list-style-type: none"> • To increase the quality yogurt production capacity of Dairy Technology Laboratory. • To bring automation in the yogurt production process including packaging ast small scale • To upscale yogurt production entrepreneurship through skill development. 	<ul style="list-style-type: none"> • Project activity just at initial stage
AGRICULTURAL ENGINEERING					
55	Development and Adaptation of Farm-	6.960	01-01-2015 To	<ul style="list-style-type: none"> • To develop an improved 	<ul style="list-style-type: none"> • One week field survey was conducted on “Present Status

	<p>Scale Agricultural Technologies for Sugarcane Crushing, Maize Stover Harvesting, Maize Drying and Palm Oil Extraction Hafiz Sultan, SSO, ABEL, NARC</p>		30-06-2016	<p>sugar cane crushing technology at farm level to reduce juice losses in bagasse.</p> <ul style="list-style-type: none"> • To identify adopt and indigenise tractor mounted maize stover/stalks cutting/chopping technologies for timely vacating fields for sowing of subsequent crops. • To evaluate and compare the performance of locally available dryers for maize cobs and grain drying. • To identify and adopt small scale palm fruit and palm kernel oil extraction technology. • To test and evaluate these technologies in the field. 	<p>of Palm Oil Plantation in coastal areas on Sindh and Balochistan” from 24-30 March, 2015 with the help of PARC regional office Karachi & Thatta and Forest Department. Data was collected as per questionnaire formulated and was analyzed. Results revealed that the total survival of oil palm plantation so far on government land as well as private land is not more than 382 and 50 acres, respectively. The overall survival rate of palm plantation is not bad: it varied from 50 percent to 15 percent generally depending upon soil condition and supply of essential inputs.</p> <ul style="list-style-type: none"> • The apparent condition of majority of government palm plantation is discouraging and same is the case with private plantation. Only four out of a total fourteen oil palm growers succeeded in retaining their plantation. Furthermore, the plantation carried out by costal Development Authority in Thatta area is comparatively in better condition. It was also learned during survey to different palm fields that no significant oil palm fruit production was reported till date.
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