REPORT ON VISIT OF UNIVERSITY OF AGRICULTURE, FAISALABAD DELEGATION TO FRANCE

(MAY 31, 2010 TO JUNE 13, 2010)

University of Agriculture, Faisalabad, Pakistan

June, 2010
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REPORT ON VISIT TO FRANCE

Executive Summary

The visit was a study tour undertaken with financial support of the Government of Punjab. The delegation was treated as state guest at an official ceremony in the Ministry of Agriculture at its Paris headquarter. The agricultural education, research and extension systems in the France have evolved to perfection leading to innovation and development. All systems work in coordination and harmony. Different institutions belonging to districts, provinces and federal authorities and private sector do collaborative R&D and outreach under one association and this is the key to the progress in the agricultural sector.

The visit has been an enriching experiencing, which allowed interaction and learning from higher secondary school system to the higher education system, basic to applied research, students to the faculty and heads, museums to the extension services, cottage to the multinational industries, family businesses to the farmer cooperatives and large enterprises, and government institutions including Ministries of Agriculture to the private companies. All entities appeared to be converging to lead towards innovation and development.

The people of France at large and scientific community in particular have a high degree of openness, commitment and cooperation. They equally enjoy their work and food.

The UAF signed an Agreement of Collaboration with Agrocampus Ouest with clear targets and action plan, and set a foundation for 4-5 more agreements with other institutions. The key areas for collaboration include joint, split and double degree programs, students and faculty exchanges, internships and study tours of students enrolled in French institutions at UAF and vice versa, training and courses through virtual facilities, collaborative research projects between academia and joint ventures with private sector.

In conclusion, the visit has been extremely useful and the key take home lesson could be stated as: we need to converge people to work together, and we must invest into the development and harnessing of the human resource.
BACKGROUND

The University of Agriculture, Faisalabad (UAF), Pakistan and Agrocampus, Rennes - France signed a Memorandum of Understanding (MoU) in 2006, for mutual cooperation in areas of teaching and research, for a period of two years. In view of its successful completion the MoU was further extended for another period of two years on July 01, 2008. His Excellency the Ambassador of France in Pakistan visited the UAF at various occasions during 2009 and 2010 and was extremely impressed with the activities, programs, capacity and desire for development in agriculture. He showed keen interest to link up various programs having synergy between UAF and different institutions in France for research and development in agriculture to cater for the global change. His Excellency took the worthy Chief Minister, Punjab in confidence and the worthy Chief Minster was pleased to sanction a special grant of 70.0 million rupees to pursue the activities as enshrined in the Memorandum of Understanding. Among others, a sum of Rs. 3.6 million was provided for a visit of the faculty of University of Agriculture, Faisalabad to various Institutes/organisations of France to explore avenues for future collaboration in agriculture sector. The following delegation headed by Prof Dr. Iqrar Ahmad Khan Vice Chancellor visited different institutions of France from May 31 to June 13, 2010.

1. Prof. Dr. Iqrar Ahmad Khan, Vice Chancellor, UAF
2. Prof. Dr. Faqir Muhammad Anjum, Director General, National Institute of Food Science & Technology (NISFAT), UAF
3. Prof. Dr. Asif Ali, Director External Linkages, UAF
4. Mr. Ch. Muhammad Hussain, Registrar, UAF
5. Pro. Dr. Asghar Ali, Dept. Agronomy, UAF
6. Prof. Dr. Muhammad Iqbal, Dept. Farm Machinery & Power, UAF
7. Mr. Malik Afaq Ahmad Tiwana- Chief Executive- Farmers Associates Pakistan (FAP) Lahore
8. Dr. Sarfraz Ahmad, Assistant Professor, NIFSAT-UAF
9. Dr. Olivier Bergossi, Attache for Science and Higher Education, Ambassade de France a Islamabad
10. Prof. Dr. Jean-Francois Grongnet, Agrocampus Ouest
Special thanks are due to His Excellency the Ambassador of France in Pakistan who graciously nominated Dr. Oliver Bergossi, Science and higher Education Attaché of the French Embassy and Dr. Sarfraz Ahmad, Assistant Professor a former PhD student of Agrocampus Ouest, France to accompany the delegation at the expenses of the French Embassy in Pakistan. Mr. Malik Affaq Ahmad Tiwana, Chief Executive, Farmers Associates Pakistan was nominated by the Board of Governors of Endowment Fund Secretariat created by USAID at UAF to be a part of the delegation to represent the farmer’s community. It is also worth mentioning that Prof Jean Francois Grongnet from AgroCampus Ouest was nominated as Coordinator to conduct this visit by the French Ministry. He accompanied the delegation from 31st May to 13th June, 2010.

In the contemporary international link-ups, universities are looked upon not only as institutions of higher learning but are also well advised to provide a pervasive, vibrant leadership and an esprit de corps to help energize and indulge the many apparent and hidden resources of rural areas and related enterprises for purposes of pushing national programs of development, socioeconomic progress, sustained peace and prosperity and assurance of a better life to live for now and the future. By virtue of their organizational framework put together, keeping in view the client’s, farmers, problems and ecosystem, over and above their academic objectives, and a layout of elegant infrastructure on-campus finished with the essential nuts and bolts, these universities prompted by a forward looking leadership are ideally placed to enhance their working capital of creative dynamics and perform as efficient and proactive Centre of Excellence. Equipped with such shining amour of intellect, they serve to achieve and impact as planned and expected by the community starry-eyed. Networking between our universities if pursued with active public support, provide an effective mechanism of a cooperative effort, which is skilfully mounted, shall remarkably add to the socio-economic advantages.

With the above perspective in view the delegation planned its visit to France from May 31 to June 13, 2010. The French Ministry of Agriculture through Agrocampus Ouest, Rennes chalked a purpose oriented elaborate program of visit for the delegation (Appendix I)
June 1, 2010

UNESCO Headquarter

On June 1, 2010, prior to start dialogue with French Institutions, a meeting was set by the Vice Chancellor at UNESCO Headquarter, Paris with Dr. Shahbaz Ahamd Khan, the Chief, Division of Water Sciences UNESCO, with sound and clear motives. Prof. Dr. Iqrar Ahmad Khan, Vice Chancellor, UAF briefed the purpose of visit and presented the case for the institution of UNESCO Chair on Water Education and putting more than century old buildings of UAF on UNESCO heritage directory. Dr. Shahbaz and his team were very receptive to the presented ideas and considered them to have merit for support from UNESCO.

Vice Chancellor presenting shield to Dr. Shahbaz Ahmad Khan at UNESCO Headquarter in Paris

The Chief explained that the UNESCO under International Hydrological Program has set following themes and focal areas:

Theme 1: Adapting to the impacts of global changes on river basins and aquifer systems
Theme 2: Strengthening water governance for sustainability
Theme 3: Ecohydrology for sustainability
Theme 4: Water and life support systems
Theme 5: Water education for sustainable development

The Chief, Division of Water Sciences further explained that though universities are not main clients of UNESCO, but with the given strong arguments, existing capacity at UAF, and the trans boundary Indus and Kabul rivers can be the vehicles for Pakistan to be included in the above mentioned Theme 5. He clued-up the delegates that Pakistan is one of the 36 elected members in the International Hydrology Program, which are scheduled to meet from 5-9th July this year. He further suggested that the existing establishments on Water Management Research Centre and Irrigation & Drainage Department at UAF could be considered for enhancement to UNESCO International Centre of Excellence on water. He further emphasized that Pakistan’s case had never been presented properly. For the desired development the member state has to contribute funds and therefore there is a need to take all related parties like WAPDA, irrigation department and other institutions on board and develop a consortium for the common cause. The related Ministries, Secretariats, Member Power etc be fully taken into confidence for making a case for such a development in Pakistan. The Chief agreed to write a letter to the concerned authorities in Pakistan including Vice Chancellor UAF for the development of a consortium. He further informed that Pakistan, Afghanistan and Iraq are in focus on water issues and coming up with international consortium will be needed to find the ways and means. He also informed that the USA Government has recently resumed support to UNESCO due to water issues. Therefore, further support could be gained through Pak-US Scientist and Technology Collaborative Program. The meeting was extremely useful for lobbying to obtain support for UNESCO Chair on Water Education and explore further avenues to join world community on Water and other Environmental and Development issues. After UNESCO the delegation proceeded to visit Ministry of Agriculture, France, in Paris.

Ministry of Agriculture

Catching up with the schedule, the delegates reached Ministry of Agriculture, France. All the high level hierarchy including Counsellor, Director General, Education and Research, Deputy Director Social Sciences, Deputy Director Innovation, Director International Relations,
representative of French Foreign Office and representatives from Agrocampus participated from the French side.

Following brief introduction by the participants, the Counsellor extended a warm welcome to the Pakistani delegates and explained the agriculture framework evolved into a coherent system of education, research and outreach in France linking up with the industry. He also briefly explained the working of CIRAD, IRD, INRA and Agro Polis in coordination.

The worthy Vice Chancellor reciprocated his sentiments with appreciative words and special thanks to the Ambassador of France in Pakistan. He gave an overview of the UAF and purpose and expectations from the visit. He explained the needs of technology transfer and its benefits for both the countries and for the global food security and mitigation of environmental change impact.
Moreover, the Vice Chancellor showed keen interest to develop sandwich and joint degree programs, specialized linkage in agribusiness, Food Science, horticulture, crop production and its related linkages in dairy, poultry, cereals, corn, value addition and product development.

Finally, the Counsellor and other heads agreed to put dedicated slots for agriculture students under the sandwich program through both the governments, initially from Agro-campus Ouest. He further agreed to make use of the video conferencing facilities to boost up the process. A special Reception lunch prepared by the French Chef of the Minister was arranged in the Ministry. After lunch, the delegation left for the hotel at 2:00 pm.

The delegation took TGV train at 4:00 pm from Paris to Montpellier and the Pakistani students received the delegation at Montpellier Railway Station at 7:00 pm. Visited few historical places, took dinner, and discussed with the students their post graduate research activities.
Meeting with the students

Exclusive meetings were convened with HEC Scholars doing PhD at Montpellier, Rennes and Paris. List of the students is attached as Appendix II.

At Montpellier and in its surroundings out of 19 PhD Scholars, 18 were graduates of UAF. Each of the students presented and discussed his/her project. The delegation also met with the supervisors of most of the students and provided substantial input and feedback to improve research studies. The delegation was very happy with the progress of their work and scientific publications. The students also showed their concern to the current financial position of the HEC and their induction in the system after completion of their degrees. The Vice Chancellor made it very clear that the HEC is committed to engage PhD scholars in the universities in any case, as huge investment has been made from the public money for developing this human resource. Therefore, this is an obligation on the students to pay back to the nation through their contribution in the R&D and education. In response to motivational briefs by the Vice Chancellor at various occasions, all students showed their desire and commitment to do all possible efforts to go with the aims of HEC.
June 2, 2010

International Centre for Research and Development of Agriculture (CIRAD)-Baillarguet Center
(www.cirad.fr/en)

The International Centre of Research and Development of Agriculture (CIRAD) was visited on June, 2, 2010. This is French public organization placed under the joint authority of the Ministry of Higher Education and Research and the Ministry of Foreign and European Affairs. This research centre is specializing in Tropical and Mediterranean agriculture. Drs Bernard Faye and Philippe Lecomte welcomed the delegates very warmly. After exchange of welcoming remarks and introduction, Dr. Bernard Faye gave a general presentation of CIRAD (Centre Internationale de Recherche Agronomique pour le Development). He described the organization and direction of CIRAD, having multi-disciplinary teams to address agricultural problems in France and its partners in different African and other countries. It is operational in 90 countries, manned with 1820 researchers, 1200 working in France and rest outside the France in around 50 countries. The service unit brings a pedagogic support upon request for development projects, schools, training centres, faculties, or to vocational training centres of Southern countries. This support can deal with the analysis of training needs, with the identification of pedagogic objectives, with elaborating teaching programs and contents, and with designing of didactic materials or pedagogic techniques. CIRAD works to breed, adapt and disseminate improved varieties, control pests and diseases, develop crop management sequences and agro food processing technologies, study interaction between people, agriculture, and environments. CIRAD is involved in R&D projects worldwide, public policy decision support system, quarantine services and manages technology transfers. It works in partnership with different firms, scientific and technological organizations, NGOs and producer associations to develop new products and processes for use in developing countries. The priority areas of CIRAD include Ecological intensification, biomass for energy, food quality, product development, animal health and emerging diseases, public policy and rural areas.

Dr. Philippe Lecomte, gave brief on Livestock system dynamics in Mediterranean and Tropical areas. This unit uses its expertise in fodder crops and animal feeds, zootechtnics and product sanitary quality, economics and modelling to conduct integrated research on the factors that govern animal production performance, on feed resource management and on changes in
farmers’ intensification practices on the one hand, and on the impact of change on production system sustainability, product quality and commodity chain competitiveness on the other. Depending on the transformation of cultivated and derived natural biomass, animal responds a great number of functions and farming practices presenting a strong interactions with other rural activities like production and as well an equilibrium in local ecosystems. The unit develops integrative research on the function, resources and animals in the agro-ecosystem. This uses a holistic approach focusing on human health, farming system, environment and livelihood.

Some of the laboratories at CIRAD were visited and discussed different scientific problems. The Vice Chancellor extended an invitation to Dr. Genviève Libeau to visit Pakistan and develop scientific collaborations. A special emphasis was made for joint ventures on development of vaccines against local isolates for different animal diseases and for 1-3 months training on biosafety protocols.

*Delegation visiting International Centre of Research and Development of Agriculture (CIRAD)*

In another Mixed Research Unit UMR "Biology and Genetics of plant/parasites interactions" (BGPI), about 7 research teams are working on fungal, bacterial and viral diseases
and quarantine measures. Dr. Philippe Rott gave a briefing, showed us facilities and had a very good discussion. This Joint Research Unit BGPI aims at improving the knowledge of the biology and population dynamics of several pathogens and weeds with a view to proposing rational control using three lines of approach: systematic, phylogeny, phylo-geography; population genetics and ecology; integrative ecology of population-environment systems. The objectives of this team are to analyze the genetic diversity of plant pathogenic bacteria and to study the molecular mechanisms that confer pathogenicity toward plants, with the aim of developing new control methods.

The scientific objectives of work taken in the Laboratory of Tropical and Mediterranean Symbioses are to characterize, analyze and exploit the range of symbiotic and rhizospheric associations within plant-microorganism relations. On a fundamental level and in terms of training, this means characterizing the molecular mechanisms involved in how these associations function and evolve, on a few microbial and plant models. In terms of applications and commercial development, the aim is to offer methods likely to be of direct interest to firms in the biotechnologies field.

The presentations and laboratory visits generated a good discussion on the system and approach being followed in CIRAD. The Vice Chancellor appreciated the integrated approach and considered it a lesson to be followed to improve the agricultural education, research and extension system of Pakistan. Collaboration was sought after from CIRAD in building capacity in various areas particularly farming system in Pakistan.

**International Centre for Research and Development of Agriculture (CIRAD)-Qualisud Center**

In food science and engineering joint research unit of CIRAD, Dr. Max Reynes, the Director welcomed and Dr. Claudie Dhuite Meyer, researcher and specialist in analyses and composition of micronutrients (carotenoids, polyphenols, flavonoids etc.) of fresh fruits and vegetables presented her research interests on biodiversity, bio-availability and impact of structural modifications of carotenoids which occur during transformation of fruits on the bioavailability of micronutrients.

Then the delegation met Dr. Emile Cross, co-head of team 1 “Determinants of organoleptic and nutritional quality of fresh and transformed products”. This team is specialist on the transformation of cacao. He presented the activities of biochemical analyses of aromatic matters
(coffee, cacao, rice, fruits) and then activities and facilities with the software on sensorial analyses (coffee, tea, cacao, rice, mango etc). The laboratories of sensorial analyses for coffee and cacao are certified. Some sophisticated equipments were also presented during visit of different laboratories on aroma analyses. He visits a lot of foreign countries per year. The Vice Chancellor invited him to visit Pakistan to discuss some projects of common interest to which he agreed.

Delegation visiting research laboratories of CIRAD-Qualisud, Montpellier

Dr. Didier Montet, Head of team 2, «Control of contaminants of food chain» composed of three distinct actions:

**Action 1:** Research of markers of traceability and authentication of the products of plant and aquatic origin.

**Action 2:** Control of micro-pollutants: microbial toxins, mycotoxins, chemical residues, xenobiotic such as heavy metals of milk and toxic residues of packaging.

**Action 3:** Post harvest treatments and sanitary quality of fresh products (controlled and modified atmosphere, coating using active biomolecules).

Then Michel Bouniol, responsible of Technological hall gave a briefing on pilot scale equipments.
Dr. Michel Rivier, Researcher of team 3 “Process of stabilization and transformation” presented his expertise on drying equipments, conception of small scale equipments adapted to small scale units of production in the local context. He has good expertise on mango drying and designed a simple dryer for the purpose. This generated interest and discussion to replicate these models for Pakistan. Dr. Iqbal having expertise in machinery design took measurements and detailed notes to design similar equipment at UAF.

Next to this, Dr. Jean Pierre Pain, Professor, Department of Food Sciences and Technology of University of Montpellier and co-director of joint research unit Qualisud presented the interests of using ohmic heating for mango drying, for the pasteurization of mango puree, and chunks. He agreed to visit Pakistan for one week during the second half of September, 2010 to discuss and prepare the common project on mango preservation with National Institute of Food Science and Technology.

Prof. Thierry Tran is a researcher and specialist of molecular structure of starch. He studies functional properties of starch in relation with its structure. He also does work on analyses of life cycle of products. He showed the facilities available in his laboratories for physical, rheological and textural measurements.

Dr. Marc Valente and his Pakistani PhD student Mr. Muhammad Naseeb (1st year of PhD) presented their thesis project. He discussed some problems of funding to do research on proposed the project of Mr. Naseeb. To resolve the issue the Vice Chancellor proposed to set the protocols on the mango characterization and then to come to Pakistan for working on 10 different mango varieties of Pakistan. Prof. Marc Valente agreed to visit Pakistan in the second half of September, 2010 to develop some common projects on mangoes in addition to set up work plan for Mr. Naseeb’s project on the characterization of Pakistani mango varieties. Another postgraduate student of Dr. Valente was offered to spend a semester at UAF as an exchange student, which she accepted with a smiling face. Director External Linkages was asked to take it further.
June 3, 2010

Institute de Recherche pour le Developpement (IRD) (http://en.ird.fr)

On 3-6-10 (Wednesday), the delegation visited the Institute de recherché pour le development (the Research Institute for Development). Professor, Yves Duval, Director of the Institute received the delegation. After introduction and exchange of welcoming and thanking sentences, The Vice Chancellor UAF delivered a very comprehensive presentation about the UAF in the staff lounge of the IRD centre. He gave an overview of the academic, research and community outreach programs and future thrust of the UAF. He highlighted the UAF priority areas as: Water, Biotechnology, Precision Agriculture, Climate Change, Entrepreneurship, Value addition, Community Service, Technology Transfer and Internationalization. The IRD participating staff appeared impressed about the activities going on at the UAF. The director then explained about the role of IRD centre, which many focuses on R&D for Tropical areas with partner institutions. The Institute is working under the joint authority of Research and Universities Ministry and Foreign Affairs Ministry. The IRD is a support based host place for working teams abroad. This allows the Institute mobilize a wealth of scientific and human potential to study problems of importance for Southern countries. The researchers are working on issues of major global importance. The key figures of the IRD are:

- 65 Research Laboratories
- 205 Grants to Postgraduate students from Southern countries students
- 6 Research Centres, 2 in France, Paris and Montpellier, 4 in overseas regions.
- 35 Research Centres and Offices in Africa, Asia, Latin America and Mediterranean countries

The institute has 2256 staff with a total budget of Euro1952 million per annum and offers the academic programs in the following six departments.

- Agronomy and Environment(1700 students)
- Medical Sciences(1200 students)
- Chemistry(300 students)
- Math and Physics(600 students)
- Humanities and Social Sciences(1050 students)
- Water Use and Management(350 students)
The centre focuses on research, consultancy and capacity building activities which assists the economic, social and cultural developments of Southern countries. The six priorities of IRD are:

- Poverty reduction
- Migration
- Emerging diseases
- Climate Change and Natural Hazards
- Access to Water
- Ecosystems.

After the presentation of Director, two other faculty members gave presentations. The Vice Chancellor UAF also delivered a focused presentation to open up a debate for future collaboration. Prof. Iqrar A. Khan emphasised that global change on environmental, social, migration, food safety and biodiversity will have common impacts. Therefore, we must pool our resources to combat the current and upcoming problems at local level and we must join global forces to handle it globally.

In the afternoon, the director and his staff took the delegation to show the activities going on in the green houses and laboratories at the centre. The facilities for doing function genomics, tissue culture and epigenetics research were excellent. The greenhouse facilities segregated for culturing Non GMOs (level 1), GMOs (level 2) and pathogens, virus related studies (level 3) were of excellent standards. The micopropagation of palms and identification of sex of palm seedlings was of more interest. Mr. Rashid Wasim Khan, an HEC, PhD scholar presented his research achievements related to Palm oil at the IRD centre. Mr. Rashid presented a comprehensive report about his research findings on oil palm. We really feel honoured and elevated after looking the good achievements of UAF postgraduates at the centre.

After detailed discussion it was mutually agreed to take up the actions, which will be implemented after signing the formal agreement by the concerned Ministry.

- Setting up of Palm Diversity Program in Pakistan which will later evolve into an office/Date Palm Diversity Centre.
- Institution of Joint Diploma Course and Sandwich academic programs by IRD and the University of Agriculture, Faisalabad, Pakistan. Particular running a joint program on Human Nutrition and dietetics. The Vice Chancellor acknowledged the support received from the French Ambassador in Pakistan and Chief Minister of Punjab for setting up four
Video Conferencing facilities at UAF to start split and joint degree programs with French Institutions.

- Collaborative projects on bacterial and viral diseases.
- Delegation from France to Pakistan to assess the existing strength for collaborative academic and research programs
- Internship and exchange students, particularly from IRD to UAF
- Staff exchange and sabbaticals

Meeting with the Palm Group, IRD

A special meeting was organized with the Palm Group at IRD. Prof. Iqrar A. Khan, Vice Chancellor and Dr. Asif Ali participated in the meeting along with a PhD student Mr. Rashid. The Vice Chancellor explained that the largest food import of Pakistan is Palm Oil and the largest fruit export is dates. Therefore, oil palm and date palm both have visible impacts in the economy of Pakistan. Dates have religious and cultural attachment and excellent dietary value.

Although dates are found growing in all the four provinces of Pakistan but its cultivation is more concentrated in Southern Punjab, Sindh and Baluchistan in areas with low human development index. Date palm improvement will have a direct impact on the poor people of Baluchistan Province. Almost every province has its own special varieties and has a huge diversity to the land race level, particularly in Baluchistan.
Mr Rashid, a Pakistani PhD scholar explaining his project on palm

Therefore, the genetic diversity of date palm available in Pakistan deserves attention of national and international scientific community for its preservation and documentation. The Palm Group at IRD could help build the needed capacity on date palm. The researchers of the Palm Group added that proposed collaboration will provide a good opportunity to find answers to many scientific questions, build network of collaborators including Oman and Pakistan having genetic diversity in date palm, conduct surveys, develop new sets of molecular markers for phylogenetic studies for documentation and preservation of the germplasm, which would lead to cryopreservation. The questions, answers and discussion created interest and scope of collaboration. It was proposed to organise surveys, and expeditions along the Indus River from D. I. Khan to Hyderabad. To start the collaboration it was agreed that a PhD student already working on genetic diversity in the Institute of Horticultural Sciences at UAF will do a part of his PhD project with the Palm Group at IRD. His studies and interaction will provide basis for setting up a collaborative project between UAF and IRD. The representative from the French Embassy in Pakistan Dr. Olivier Bergossi suggested the possibility of funding the studies through the Sandwich Grant program between HEC and French Government.
Agropolis International
(http://agropolis.org)

After visiting the IRD centre, the delegation left to visit the activities going on at the Agropolis International. The director welcomed the delegation and presented the role and need of establishment of Agropolis. The Agropolis Foundation supports and promotes high level research and higher education in agricultural sciences that address the main challenges related to sustainable agricultural development in temperate, tropical and Mediterranean regions. The Agropolis is a centre open to the stakeholders involved in the economic and social development in agriculture, food and environment and rural societies. It is a hub for visitors and international exchanges; it promotes actions based on multilateral expertise and contributes to the scientific and technological knowledge needed for preparing development policies. It represents a significant potential for scientific and technological capability over 2200 scientists in more than 110 research units in Montpellier and Languedoc-Roussillon region including 300 scientists in 60 countries. The scientific community in Agropolis focuses on the areas:

- Agronomy in Mediterranean and tropical agricultural production sectors.
- Biotechnology and food technology.
- Biodiversity, natural resources and ecosystems,
- Water, environment and sustainable development,
- Rural development and societies
- Genomics in plant and animal integrative biology
- Food quality and safety.
Dr. Sylvie Albert, sensitized the delegation in detail about the above activities of Agropolis International. She informed that the Agropolis International supports scientific projects by
providing senior and junior fellowships, doctoral and postdoctoral research grants and supports awards to enable leading international scientists to come and work in the Foundation’s Research Units in Montpellier, France. Through the financial support, the Centre also enables its Research Units to establish and reinforce International partnerships with other scientific and educational organizations. The key figures of the Centre are:

- 12 national and international training and research institutions
- 7 higher education institutes.
- 5 universities
- 92 research units
- 2300 research scientists and lecturers
- 1400 technical and administrative staff.

The concept of Agro Polis generated enormous interest and the presentation devolved into discussions about the establishment, functioning, activities, role, responsibilities, management and governance of Agro Polis. The city of Faisalabad is similar to Montpellier by having maximum agricultural institutions like UAF, AARI, PPI, NIBGE, NIAB sitting in one town, but unlike Montpellier not working in coordination. This is leading to duplications, inefficient use and wastage of resources, low quality research, inadequate skill development, lack of focus and capacity for innovations in the system. The training and research in agriculture would never lead to innovation and development if we did not change the system of working in silos. Looking at the Agro Polis it seems possible that different institutions under the administrative control of various provincial and federal authorities in Pakistan could do collaborative R&D under one association. This is the only way forward if we are sincere with our nation and the country. On a proposal from UAF, the Agro Polis agreed to collaborate with UAF for holding short trainings through video conferencing facility as they are already doing with many other countries.

Embrapa, the Brazilian Agricultural Corporation has followed a unique strategy for capacity building through international partnership. The strategy is called Labex – external laboratories without walls. They have developed Labexes in USA, Europe and more recently in Asia. Through this strategy senior scientists are posted to ‘cutting-edge’ teams to work for half of the time on an ambitious project of joint interest. They use the rest of the time for scouting and for
seeking new opportunities. The information flows from these Labexes to Brazilian institutes and consequently there is a substantial increase in international collaborative projects. The Agropolis and Embrapa are collaborating through this Labex model, which is believed to be a model to be followed for research aiming for Innovation and Development.

**Agropolis Museum**

In the afternoon moved to the Agropolis museum. The director welcomed the delegation and explained the importance of establishment of the museum. The museum gives voice to the Agropolis scientific community, numbering almost 3000 scientists. With its 5100 items on display, its original stagecraft, its permanent and temporary exhibitions, the museum aims to give a dynamic perspective of agriculture and food in world. The museum reflects what is being done by Agropolis and asks the public what has not been done.

![Delegation visiting Agropolis Museum, Montpellier](image)

The museum consists of the following seven sections:

1. **Historical overview section:** Searching for food has been a constant concern for man and a major component of the cultural evolution through three overlapping periods; the pre-
agriculture age, agriculture age, and the agro-industrial age. The museum shows all these stages.

2. **Farmers and farming systems of the world** - The diversity of farming systems has been illustrated through eight typical situations represented by farmers expressing themselves through audio- or visual documents (Netherlands, USA, Mexico, Sahel, Java, Morocco, France, Burkina Fas)

3. **Foods, Meals and Beverages of the world** - Four sequences present the food categories and how food is consumed in the world.

4. **Banquet of mankind** - The diversity of nutritional models and the unachieved fight against hunger are here symbolically represented by eight patterns: Japan, Rawanda, France, Somalia, Portugal, Argentina, Columbia, Bangladesh.

5. **Cyber-Museum** - Computers are made available free of charge to make the visitors visit interesting.

6. **Temporary Exhibitions** - 300m² area has been made available for temporary exhibitions

7. **Conference area**.

After completing the visit of museum, the Vice Chancellor proposed to set up an exhibition centre and museum at the UAF to show the historical developments in agriculture and become a member of the Agriculture Museum Network. The Vice Chancellor further proposed to install a desk of Pakistani Agriculture at the Agropolis museum.

**June 4, 2010**

**Montpellier Sup-Agro**

(https://www.supagro.fr)

June 4, 2010 the delegation commenced with a visit of the Montpellier Sup-Agro. Dr. Jean-Luc Bosio, Director International Relationship welcomed the delegation. Dr. Iqrar Ahmad Khan delivered a very comprehensive presentation in the staff lounge of the Sup-Agro. The Vice Chancellor appreciated for the wonderful hospitality and cooperation received from Sup-Agro, Agrocampus and French Embassy in Islamabad. He apprised the participants that in the most recent ranking carried out by the Higher Education Commission, the UAF has been ranked a top of the line university among all the 130 universities of Pakistan. The UAF offers 8 first degree
programs in agricultural sciences. The Sup-Agro participants took interest and there had been questions and answers about the capacity, performance and absorbance capacity of the UAF.

Then Dr. Jean-LUC Bosio, Director International relationship delivered a presentation about the faculty, academic programs and facilities at the Sup-Agro. The senior professors were also present in the briefing and individually gave overview of the activities in the departments of the Faculty. The Super-Agro Faculty of Agricultural Sciences is 164 years old and dedicated to Education & Training. It is located in the South of France. Salient features of Sup-Agro are:

1. Annual budget - 30 M€
2. Campus accommodation - 630 rooms
3. Education & research buildings - 55000 m²
4. Campuses - 3
5. Experimental agriculture estates - 4
6. Academics & Staff – 410 (110 full-time Professors & Assistant Professors and 300 other permanent staff in total)
7. Total students enrolled - 1300 students (including 300 international students)
8. Teaching and Research Departments- 5
   - Plant Sciences
   - Ecology and Plant Health
   - Milieu, Crops, Resources and Systems
   - Agro-Bioprocess Sciences
   - Economics, Social and Management Sciences
9. Institutes -2 (i. Institute of Higher Vine and Wine studies ii. - University Institute for Tropical Agrofood Industries and Rural Development)
10. Associated Joint Research Units – 22 (with major national research institutes such as INRA, CIRAD, IRD, CEMAGREF.

After explaining the complete set-up of Sup-Agro International, Dr. Jean-LUC Bosio, Director International Relations took the delegation for the visit of various departments. Dr. Pierre Berth, two PhD students from Pakistan and a professor of soil science delivered presentations. Dr. Berth briefed that there are 44 postgraduate students including 16 foreign students in Soil Science department. They have a good number of high quality publications to their credit published in the scientific journals having Impact Factor greater than 5.0. They were appreciated for doing a high
quality research at the Sup-Agro. Then the delegation visited Soil Microbiology and Soil Nutrition lab. Prof. Dr Clude Plassard told that there are 3 teams of researchers with a total of 70 research technicians for running the programs to the peak of excellence. There are two PhD scholars from Pakistan sponsored by HEC. Mr. Usman Irshad and Zeshan Majeed who are doing PhD in Microbiology and gave impressive presentations of their on-going research. All the members of the delegation appreciated the work of the scholars. The major supervisors of both the scholars were fully satisfied from their work and extended invitation to the Vice Chancellor, UAF for more good students in future as well.

It came under discussions that students from Sup-Agro take Elective Courses from all around the world. The Vice Chancellor offered that any of these students may take Elective Courses at UAF and they will get any needed facilitation. The other items in our wish list included collaboration for joint degree programs in agricultural engineering, particularly in Water Management, and internship of Sup-Agro students at UAF. There appeared to have an agreement to work on the possibilities and hold a Video Conference on Water Management.

University of Montpellier 2

In the afternoon, the delegation visited the University Montpellier 2; UMR Unite de Biologie. Dr. Philippe Fournier warmly welcomed the delegation and gave brief presentation. She arranged visit of different laboratories at the university. All the laboratories were well established and high quality work was going on. The main focus of the research unit is to study interaction between insects and environment and insect – virus interactions. Two PhD students from Pakistan started their MS leading to PhD degrees there but one of them could continue his PhD after MS and another had to move to some other institution. In response to a good discussion, she remembered that students from Pakistan are generally good and do very well in communication and skill development.
At 3:00 pm we visited the 2nd centre of Montpellier Supagro. Jean-Luc Bosio, Director External linkages of Sup Agro drove us from University of Montpellier 2 to SupAgro-IRC. Dr. Fabrice Dreyfus, Director Sup Agro-IRC (Institute for Hot Regions), received the delegation very warmly. He gave us a detailed briefing about the activities of his Institute. Their main missions are to contribute towards the improvement of food security, increase of the revenues of rural populations, management of natural durable resources and development of Agro-based industries in Southern countries. The director told that the Sup Agro tries to get hold on agricultural production and value chain of agricultural product (e.g. value chain through different unit operations in food sciences). The centre is dedicated to innovations in Agriculture and Food Sciences.

The experts of the centre work out of France with international organizations for their mutual benefits (like with dairy companies in China). This enhances the quality of Sup Agro institution. Continuing education is also a priority in three main domains, Agricultural production, extension, and food system and value chain management.

The centre works to develop local societies on community level/regional level to facilitate the development and implementation of public policies. The centre also works with enterprises for
development of quality standards, design supply chains and develop relationship between farmers and enterprises. The centre adds contracts of collaborative working abroad (like with Vietnam). It also works with Public Development agencies and civil society linked with development. The centre develops partnership with university for designing curricula for local requirements at undergraduate and postgraduate levels. The experiences gained from the outreach activates is integrated in the curricula, thus linking teaching with the reality.

The director also told that their internees are sent for internship abroad/out of France to have multinational training related to real area problems. The internees are involved in problem solving and report writing. The internees gather data, analyze it statistically and use for policy making for the respective areas.

The delegation was fully convinced with the outputs of integrated approach implemented by Sup Agro International for handling the projects and assignments at university, institute, and research centre levels. The Vice Chancellor asked the director for any option of training of three to four UAF staff members at Sup Agro. The director told that it is in the domain of Sup Agro for which there are following two options; i) One year training (6-month training in Sup Agro, France and 6-month in Pakistan), ii) An expert from Sup Agro France may visit Pakistan for training UAF staff for one year. However, to have any move, a memo has to be written to Sup Agro (Memorandum between UAF and Sup Agro). The Sup Agro will do cost analysis and write letter to UAF authorities which are responsible for its implementation if feasible.

Then Dr. Anjum, Director General, NIFSAT, UAF told him about his last meeting in April 2009 with one of his collaborators, Frederic Mens on Food Technology Transfer Centre (FTTC) in Paris. He asked them to help to purchase the equipments for some of the processing units like “fruits and vegetables processing unit”, which is one of the 5 units of FTTC. Dr. Fabrice, called his collaborator Guillaume Baud who is project manager at IRC. They asked Dr. Anjum and Dr. Sarfraz Ahmad to provide names of the equipments and time duration of the purchase and installations. On the basis of information which NIFSAT-UAF will provide to them, they will decide how much they will charge for the technical work and would it be possible to do with convince.
June 5-6, 2010

June 5th was Saturday and all centres around were closed. The delegation visited the historic places. Next morning the delegation left Montpellier at 9.15 and reached the Agrocampus Rennes in the evening of Sunday 6th June, 2010 by Train with one changeover.

June 7, 2010

Agrocampus Ouest, Rennes

The visit of Agrocampus Ouest, Rennes was started next day. Two flags of Pakistan were hoisting with a French flag in the middle in front of the main building of Agrocampus for week long duration of our stay there. The Director General, Prof. Gregoire Thomas warmly welcomed the delegation outside the building. After introduction and brief exchange of felicitations, Ms. Delphine Richard, Co-Director International Relations delivered a presentation about Agrocampus Ouest, system and programs. The Agrocampus Ouest was established on July 1, 2008 by merging two graduate institutions in Science and Engineering; i) Agrocampus Rennes, and ii) Institute National d’Horticulture (Angers). There are 150 teaching and research staff members and 350 scientist partners (joint research staff). Total students enrolled both at undergraduate and post graduate levels are 1890. There are a total of 10 departments of education and research at the university (5 at Angers and 5 at Rennes campus). All the activities in education and research have been certified at ISO standards 9001-2000.

The university awards four engineering degrees in the field of agriculture, sixteen MSc, degrees, one Master Erasmus Mundus (International Master of Rural Development), two double degrees with Germany and China, and six Ph.D. degrees in different areas in agriculture. The Vice Chancellor, UAF appreciated the excellent teaching and research activities going on through coordination of campuses at Rennes and Angers. Moreover, the Vice Chancellor reiterated his high hopes for strengthening the links between UAF and Agrocampus. The Vice Chancellor initiated a discussion on double degree program between UAF and Agrocampus. She responded that no doubt the double degree will be costly but the graduates will be more versatile and confident in handling the international projects/assignments.
Pakistani and French flags hoisting in front of main building of Agrocampus Ouest

Meeting with Director General, Agrocampus Ouest for MOU signing ceremony
Then the delegate was taken to the UMR 1253 INRA Agrocampus Science & Technology of Milk and Egg. Dr. Frederic Gaucheron, welcomed the delegation and gave a very good presentation about milk production in France. The UMR Science & Technology of Milk and Egg has 65 permanents (26 Scientists), about 20 PhD, and 7 industrial teams. There are three disciplinary teams viz; Microbiology, Food Technology, and Biochemistry. All the three teams have strong interaction for promotion and development of dairy products of high standard and quality. He highlighted that about 24 billion litter milk is produced at 100,000 farms of France with an average of 36 cows per farm. There are 700 factories related to milk products which employ 600,000 workers. So long as collaboration with Pakistan is concerned, Dr. Sarfraz Ahmad has been awarded PhD degree and Mr. Gulzar Ahmad is in the second year of his PhD degree program there. Prof. Dr. Frederic Gaucheron, was very happy with the performance of both the students and showed his keen interest for having more such students which possibly be sent to Agrocampus in future to strengthen the relationship of both the institutes. After the presentation of Frederic Gaucheron and discussion, Mr Gulzar Ahmad presented his PhD ongoing research work “Denaturation of whey proteins under controlled water activity: Structure, Interactions and Functionality”. The Vice Chancellor congratulated Mr. Gulzar Ahmad for his deep involvement and keen interest in handling such a needy task in future. He advised Gulzar to focus at the development of Cottage Industry for making cheese in Pakistan. After both the presentations, the delegation was taken for the visit of Cheese production Platform in the same building. It was very fascinating to look at the facilities and standards employed for cheese production. One thousand litres milk is processed in a day for making cheese and other dairy products. The machines required for various unit operations like milk skimming, pasteurization, filtration, sterilization, etc needed for cheese production were of high standard and quality.
Delegation visiting UMR 1253 INRA-Agrocampus Ouest Science & Technology of Milk and Egg with Dr. Frederic Gaucheron, Head of Dairy Platform

At 11:00 am the delegation visited the main library of Agrocampus. The library was founded in 1830 and presently headed by Madam Sougelot. She told that this is one out of the three best libraries in France (Montpellier University, Paris University Library, and Agrocampus Library). All the three libraries are interconnected with each other and with congress library for their database. Old books of 16th Century were also available in the library. One of these books on Traditional laws was printed in 1520. All kinds of books, online research papers, 5000 periodicals and internet facilities required to the students, research scientists are available in the library.
At 11:45, the delegation visited the Department of Applied Mathematics and Statistics. Dr. Jerome Pages, Head, Department of Mathematics gave a comprehensive presentation. He told the department awards undergraduate and postgraduate degrees both in mathematics and statistics. The department is commonly engaged in research and education in theoretical and applied statistics. The department has developed two software (two R packages; SensoMineR-is a package dedicated to sensory analysis, and FactoMineR-is a package dedicated to multivariate exploratory analysis. The two packages are also very user friendly and oriented towards the practitioners. Dr. Jerome is frequent visitor of Pakistan for butterflies’ collection, the Vice Chancellor invited him to visit and arrange one-week workshop in the department of mathematics and statistics on his next trip to Pakistan. He accepted the invitation and asked that it will be easily possible after mutual understandings of both the universities (UAF and Agrocampus).

After lunch, the delegation was taken to visit a joint research unit of INRA-Agrocampus Ouest in Saint-Gilles. Dr. Charles-Henri Malbert, Research Director, briefly explained the ongoing research activities and the laboratory facilities at the farm. He demonstrated how computerized high speed scanning machines are employed for developing mathematical relationships between dietary requirements of swine to the mental capabilities developments and study the causes of obesity. Moreover, he demonstrated the use of computerized surgical equipments for operations of
swine. The Vice Chancellor, UAF appreciated the concern of Dr. Charles-Henri Malbert for developing and use of new methods/techniques for the health care of animals needed directly as a food for human being.

Delegation visiting INRA-Agrocampus laboratories in Saint Gilles

At 4:00 pm the delegation was taken to visit CREAVIA, a top French company in the field of improvement of genetic of dairy cows, artificial insemination (AI), and embryo transfer. Mr. Thierry Simon, Director General briefed the historical development of artificial insemination and facilities at the centre. The centre is working on AI of cows since 1980. This new centre is only one year old and was built in 2009. There are 200 bulls at this centre. Bulls are used for fertilization up to the age of 16 years. Semen is collected twice a week in an extremely contained sterilised environment. Semen samples are stored at -180°C (in Liquid Nitrogen) to maintain their viability and are thawed before their use for fertility of cows. Siemens collected in one stroke of a bull are enough to fertile 1000 to 1500 cows. Only 40 Euros are taken from a farmer for the AI of a cow with guaranteed pregnancy and other services. The services of AI and embryo transplant are also available for horses. The enterprise is a farmer’s cooperative for the local needs for animal breeding and sales of semen in France and export. A high degree of sanitation and sterilisation conditions is maintained for the collection, storage and supply of semen, purity of the semen and segregation of semen from exotic and local breeds is strictly observed. Mr. Tiwana requested them to collaborate with the Framer’s Association of Pakistan. It was agreed that Mr. Tiwana will take
the Livestock breeders of Pakistan on board for proceeding to develop collaboration with CREAVia to establish such systems and protocols in Pakistan.

**June 8, 2010**

**Agrocampus Ouest Angers Centre**

Next morning on 8-6-10 started with the visit of Agrocampus Ouest, Angers Centre. Prof. Dr. Jean-Claude Mauget, Scientific Director for Research and Dr. Cecile Dubas, Director International Relations warmly welcomed the delegation. Dr. Cecile Dubas gave comprehensive and impressive presentation about the teaching and research activities at Agrocampus Ouest. This campus is dedicated to higher education in agriculture, plant sciences, and environment related to the production of horticulture crops (vegetables, fruits, flowers etc.) and awards B.Sc., M.Sc. and Ph.D. degrees in horticulture, agriculture business, and landscaping. Currently about 2500 students are enrolled in different programs both at undergraduate and post-graduate levels. The university offers five year curricula after high school and three year curricula after B.Sc. degree for getting MSc degree. The internship program in the final year is six months at the campus and six months abroad, out of France. For international students it is obligatory to have command on two languages (English and another foreign language). Job diversity of the graduates in horticulture and landscaping is 66% and 61% in private companies and 34% and 39% in public sector respectively. Clusters of research centres, universities, and industries work in collaboration with each other to evolve/innovate good horticultural crops. The delegation appreciated the excellent programs of teaching and research going on at the Agrocampus Ouest, Angers Centre and the integrated approach of universities, research centres, and companies for handling and finding the crop production education and solutions to the problems.

Prof. Dr. Iqrar Ahmad Khan, Vice Chancellor, UAF thanked the director with appreciative words and congratulated him putting together the most practical Agranium-consortium at their campus. He delivered a presentation and introduced the admission criteria both for undergraduate (4-year program after HSS) and postgraduate programs (2-year program after B.Sc.), and PhD programs in the five faculties, various institutes and centres at the UAF. The recent initiatives of enhancing access and flexibility in educational programs and institution of new programs, particularly interdisciplinary arrangements were brought to the front. He also highlighted the 1st
ranking position of UAF among all the agricultural universities of Pakistan and the 2\textsuperscript{nd} in the public and private sector universities of Pakistan (HEC report). With a clear focus and vision he discussed the future thrusts of the university including internationalisation. At the end Prof. Iqrar Khan put forward an idea of sandwich program of education, which was welcomed by the director of Agrocampus, Ouest. Prof. Khan briefly reviewed the production of some important crops in Pakistan and asked for joint strategy product development and processing the produce:

- About 40-types of vegetables in Pakistan
- Twenty times more fruit/vegetable production today than in 1960
- Five times more cotton bales than that in 1960
- Huge poultry industry than that in 1960 primarily managed by UAF graduates

Delegates visiting Greenhouses of Agrocampus Ouest Angers Centre

Dr. Olivier Leprince briefed about seed production centre at the Agrocampus Ouest. He brought to view that their centre is the largest seed producer in the whole Europe and 3\textsuperscript{rd} large exporter in the world. The Angers centre contributes 25\% to the national seed production (especially in vegetable and flower seeds). The main focuses of the research as highlighted bellow
are to increase the knowledge of intrinsic factors of seed quality, and how these factors interact with the abiotic stress factors to obtain uniform germination and emergence in variable environmental conditions.

1. Prioritise and characterise the genetic and environmental aspects of the biological functions that determine germination and emergence
2. Protection and regulation mechanisms involved in abiotic stress tolerance (water, cold),
3. Survival in the dry state (desiccation tolerance, longevity),
4. Amino acid metabolism, respiration and mitochondrial function.
5. Proteomics, transcriptomics and QTL analyses are coupled with physiology, ecophysiology and computer-assisted simulation in order to identify key genes.
6. Traditional approaches involving seed physiology, reverse genetics and structural and functional biochemistry are used to investigate the function of proteins and of the metabolic pathways identified.

The centre offers MS and PhD degree programs in Plant Breeding and Seed Production in collaboration with the University of Angers. He explained that in the degree program, the centre
offers courses of plant breeding and seed production in the 9th semester, and in the 10th semester the internship is totally based on research and development. Dr Asif asked the possibility of teaching latest courses of plant breeding and seed production through video conferencing if possible, the Agrocampus staff appreciated this idea and promised to work and prepare a proposal acceptable for both the countries. Prof. Iqrar A. Khan requested for a short term training on flower breeding.

After lunch, Dr. Paul Capaus, International coordinator for Vegepoly gave an excellent presentation. She explained that the Vegepoly Cluster has the aim of becoming the world’s leading cluster by producing healthy and environment friendly plants. This French cluster involves association of companies, research centres and training organizations. The friend organizations are committed to a partnership approach aimed at creating synergies within jointly-run innovative projects. The government and regional authorities allocate a special budget to collaborate research projects approved by these clusters. The delegation appreciated the integrated approach of conducting high quality research in producing and promoting standardized seed of horticultural crops for end users/farmers. The Vegepolys has been recognized in France as the leading international plant cluster. This cluster is based on a unique concentration of organizations operating:

1. In the plant world: ornamental horticulture, fruit and vegetable growing, wine growing seeds, aromatic and medicinal plants, mushrooms, cider, and tobacco.
2. Around the plant world in upstream and downstream processes

The members of the delegation were overwhelmed to know the point specific actions concentrated on a specific area to evaluate all the pros and cons and achieve the highest degree of standard and quality of a product which the cluster has dreamed about. Late in the afternoon, the delegation members were taken for the visit of Agrocampus Ouest. The delegation keenly looked at the teaching and research facilities available at the centre. Drip irrigation installed to irrigate the fruit plants in the open field and computerized environmentally controlled greenhouses are the best examples of its peak of high interest, standard and quality that has really been made available at the centre. The UAF delegation really feels elevated by signing an MoU with such an excellent institute “Agrocampus” and working in collaboration with whom will really be an international pride.
June 9, 2010

Houdebine SA

It was very beautiful morning on 9-6-10 when the delegation visited Houdebine SA, first class company in the field of ready to eat meals. Dr. Michiel Houdebine, Director General of company warmly welcomed the delegation of UAF which was headed by the Vice Chancellor. This company has been founded by Michel Houdebine who is presently the President of Valorial, Breton Techno-pole dedicated to agro industry. The company has specialties in Elaborated meats & vegetables and cooked products. It is located at the heart of the first French agro area. He explained that for the total agricultural production, Brittany is ahead of Ireland and Austria and for animal production is ahead of Denmark, Belgium and Ireland. The share of company in specialized circuits is 20%, in Industries it is 10 % and in Foodservice it is 70 %. Presently the company produces 55 tons per day 350 types of products which totals about 16000 per annum on volume basis. The Houdebine strongly believes in producing flexible products, which should be of high quality (ISO 9001 – BRC A – CARE), and Environmentally-secured (ISO 14001, ISO 22000). Moreover they have more innovations in products being monitored by marketing researchers of the company who have keen eyes on the day to day needs of consumers throughout the world. The company has following salient elaboration units for their ready to eat products:

1. SELTEA - 3000 tons, 80 persons, Air Catering (Catering, Ethnic Products, and Specialties)
2. H1 HOUDEBINE - 11 000 tons, 250, 11 lines of elaboration (Stuffed meats and vegetables, Kebabs, Coated products, nuggets, Cooked products, and Gratins and finger foods)
3. H2 HOUDEBINE - 3000 tons, 40 persons, Ready cooked dishes chilled frozen and Sauces.

Steps implemented by the company for preparing ready to eat food are; cooling of starchy foods, calibrated measuring of ingredients, presentation, and pieces disposition, different and dedicated packaging, Portfolio of + 300 recipes, with specific meal ( gluten free, low fat, without salt). After the nice and impressive presentation, the physical production of products was shown to the delegation members. Before entering into the production units the safety and security rules were explained, proper gloves for feet & hand and caps for head and mouth were provided to each
member of the delegation. Each unit operation involved (cleaning, washing, cutting, mixing ingredients, pasteurization, short & long cooking, freezing, packaging, etc.) in the production of food products from raw materials was completely and precisely controlled and monitored by computer. All the safety, security, and ISO-standards were fully implemented. After completing the visit, the Vice Chancellor of UAF thanked for arranging an impressive, productive and knowledgeable visit.

INRA-Agrocampus Ouest-Le Rheu

After lunch, the delegation reached Le Rheu a joint research unit of INRA-Agrocampus Ouest to visit plant protection, plant improvement, and milk production labs. The delegation was warmly welcomed by Jean-Christophe Simon (Head). With a comprehensive multimedia presentation Dr. Jean explained that his UMR, Joint Research Unit, was created on January, 2000 by affiliating INRA (SPE), Agrocampus Ouest and University Rennes 1. The staff strength and organization structure is as following:

Staff
- 77 INRA - 8 Agrocampus Ouest – 7 University Rennes 1
- 40 researchers + INRA engineers
- 2 PR + 10 MC URI & Agrocampus Ouest
- 37 technicians
- 14 people employed by R&D sector
- 17 PhD & post-docs

Organisation
- 6 research teams grouped in 3 thematic departments (ecology and evolutionary biology, epidemiology and modelling, integrated pest management)

- 1 logistic and administration team

The UMR has been established with strategic orientations as:
- Display scientific excellence in:
  - General and applied ecology
– Plant epidemiology and population dynamics
– Evolutionary biology and et population genetics
– Functional and comparative genomics

• Build innovative strategies to contribute to pesticide-use reduction and reach 50% pesticide reduction in 2018
• Transfer activities and productions to the agri-environmental world
• Federate a research-training-teaching campus on plants for durable agro-ecosystems

The organization works in three thematic areas; i) population adaptation and sustained resistance (2-teams), ii) epidemiology and ecology of soil born diseases (2-teams), iii) genetics and ecology of phytophagous insects and insect transmitted viruses (2-teams). Major advances made by the unit includes

• Complete genome sequence of the first hemipteran insect (pea aphid)
• Identification of genes and proteins involved in asexuality/sexuality switch in the pea aphid
• Ecological speciation in the pea aphid complex
• Regulatory mechanisms of bacteria-fungi interactions in the rhizosphere
• Sustainable resistances against potato cyst nematods and late blight
• Origin of introduced populations of potato cyst nematods in Europe
• Decision making tools for pesticide use against insect vectors and viral diseases
• Integrated pest management method to control soil borne disease using intercrops
• Molecular and serological tools to detect emerging virus strains

The integration of different research departments and universities/institutes resulting in high quality teaching and research with optimum use of resources was greatly appreciated by the Pakistani delegates.

Dr. A.M. Chèvre, Head Research Unit on Plant Genetics and Biotechnologies gave presentation and briefed the staff strength as:

• 93 INRA – 4 Agrocampus Ouest – 8 UR1
• 26 researchers + engineers INRA
• 2 Professor + 7 MC Agrocampus & UR1
• 80 technicians
• 18 permanent and temporary positions R&D
• 10 Post-docs.

He explained that the aim of integrating research departments and university is to federate a research-training-teaching Campus on plants for sustainable agro-ecosystems by:

- merging research units working together on plants
- creating scientific synergies from gene to agro-ecosystem
- teaching in plant biology and plant-parasite interactions
- sharing technological platforms

Four research teams have been developed to meet the objectives; i) Biodiversity and polyploidy, ii) Resistance to bio-aggressors, iii) Rapeseed yield under abiotic stress, iv) Innovative plant material. They have good achievements to their credit including per year publications and communications as >30 peer reviewing publications (IF>1), >20 other publications (chapters, technical reports etc), >50 communications in International Congresses.

The delegation members were really impressed looking at the outputs by the integrated efforts of research departments and the university professors. Thereafter, the worthy Vice Chancellor congratulated the head of the organization and thanked for comprehensive and impressive presentation.

The delegation visited the milk production unit at 5:00 pm. The research engineer briefly explained the activities going on at the milk production unit. He physically showed the working operation of horizontally revolving automatic milk extracting unit from 28-cows standing in a sequence. He said there are 170 cows at the farm for which one man is enough for extracting milk with the use of above machine within a short period of time. He also explained the operation of automatic feeding unit for cows. Feeding of each cow is recorded, controlled, weighed, and monitored automatically by computer. A robot has replaced the man and all the activities automatically being controlled by computer programming. A Pakistani HEC funded post graduate student, Mr. M. Naveed gave presentation of his research tilted “Profile of Intestinally available amino acids to improve milk protein yield”. He showed the instrumentation made on the cows and well explained the objectives, treatments, and the results achieved. The delegation members appreciated Mr. Naveed in putting day and night sincere efforts for completing fruitful research and writing dissertation. After visit the Director General, Agrocampus arranged a joint press
conference and the news appeared in the one of the leading French News paper “Ouest France” as reproduced below:

In the evening the delegation was received by the Director General Agrocampus Ouest at his residence for reception dinner. During dinner useful discussion took place to further strengthen the collaboration between UAF and Agrocampus Ouest.
June 10, 2010

Higher Secondary School in Rennes

It was beautiful rainy morning on 10-6-10 when we started visiting a Higher Secondary School in Rennes. Mr. Detrez, Director and Mrs Toulouse, Co-Director of the School welcomed the delegation. After getting introduction of all the delegation members the Director briefly explained the aims and objectives of school. This was a general and technology education school, which provide schooling to 10th, 11th and 12th grades. They collaborate with Agrocampus Ouest for some degree programs. They prepare/ take pre lectures for seeking admission at Agrocampus . It appeared to have similarity to the new initiative of admitting students after matriculation at UAF. He informed that this is a general and diploma high school which was built in 1960. They also award a two year diploma in agriculture, landscaping, water management, animal production, and farm record management. The graduates of this school are considered as nursery for admission at the Agrocampus , Rennes for higher degrees (BSc, MSc and PhD). General information about school is as follows:

- Director 1
- Co-Director 1
- Teachers 70
- Student/teacher ratio 8 to 1
- Boys/girl ratio 65% boys and 35% girls
- Total Area of college 60 ha (40 ha for cow grazing + 20 ha growing maize for making silage for animals).

Signing Agreement of Collaboration between University of Agriculture, Faisalabad and Agro-campus Ouest, Rennes, France

The University of Agriculture, Faisalabad (UAF), Pakistan and Agro-Campus Ouest, Rennes, France signed an MoU in July 10, 2006 for mutual cooperation in areas of teaching and research for a period of two years. This proved useful to generate some collaborative activities. Considering the potential and success at hand, His Excellency the Ambassador of France in Pakistan and the Chief Minister, Punjab, supported and desired to get into an Agreement of Collaboration and take the collective good further.
As per schedule, the delegation reached in the main library of Agrocampus on 10-6-10 for signing the MoU. The Technical Councillor of the Embassy of Pakistan at Paris travelled all the way from Paris to Agrocampus Ouest, Rennes to participate in the MoU signing ceremony. The Director General (DG), Prof. Gregoire Thomas along his team members warmly welcomed the delegation in the oldest hall of the Library. Both the leaders, Prof Dr. Iqrar Ahmad Khan, VC UAF and DG Prof Gregoire Thomas, got introduced their team members. The DG Thomas asked Prof. Dr Iqrar A. Khan, the Vice Chancellor, UAF to give his views on his visit of different universities, institutes, and research departments in France during the last 10 days. Prof. Khan very thankfully appreciated for the hospitality given to the UAF delegation by all the officials in general and the Agrocampus specifically. He further appreciated the support of His Excellency the Ambassador of France in Pakistan and Chief Minster Punjab to make this activity possible for long lasting impacts. He recorded his extreme satisfaction with the visit, which has been very useful for setting up a good foundation for future collaborative endeavours. The Vice Chancellor expressed his great feelings for the commitments of positive cooperation from the heads of various institutes about sandwich programs, joint supervision at postgraduate level, and institution of joint and double
degree programs. He further explained with great sense of motivation that the UAF delegation members were very much impressed from the integrated approach implemented by French research departments, institutes and universities for bringing up good technicians, graduates, post-graduates, research scientists for achieving the targets with optimum use of country resources (land, labour, capital, and energy). Prof. Khan also appreciated the concern of higher secondary schools which are producing open-ended nursery for research colleges and universities in general and for agriculture universities in specific which is a weak sector in Pakistan. He explained that we used to have agriculture in high school curricula but we have lost it over time. He emphasised that we must start agriculture education in the higher Secondary Schools in the rural areas. The Vice Chancellor narrated with great enthusiasm that he is looking bright future for both the universities and will feel honour after signing the Agreement of Collaboration between UAF and Agrocampus today on 10-6-10.

The DG Agrocampus was much excited from the comments of Prof. Khan and asked the UAF delegation members if someone want to say anything he is welcomed.

Mr. Malik Afaq Ahmad Tiwana- Chief Executive- Farmers Associates Pakistan, a member of the delegation agreeably appreciated the remarks made by Prof. Iqrar Ahmad Khan about the visit. He added that the visit has been an eye opener for him, particularly coming from the Private Sector and he was able to see all facets (whole spectrum) of agriculture. He further added that to build the momentum and follow-up interaction from the Private Sector of Pakistan with the French industry and academia would be very useful. He promised to prepare a working paper from the farmer’s side to start solving problems of farmers by integrated approach as being practiced in France.

Prof. Dr. Faqir Muhammad Anjum, D.G. NIFSAT, UAF, also said that this was the day he has been waiting for and after all we succeeded because of the sincere efforts and desire from both sides. Dr Anjum further added that in spite of good production of fruits and vegetables, Pakistan is much behind in their processing and value addition, for which more focused efforts, will be made now.

Prof. Dr. Asif Ali, Dir External Linkages, UAF, also appreciated the capacity of building bridges between the two institutions and ultimately nations through collaborative activities. He proposed to link the two institutions through joint, sandwich and double degree programs and E-learning through video conferencing would provide effective tools for the purpose. The E-learning
is not distance bound and will be very effective mean for distant learning between Agrocampus and UAF. The D.G. Agrocampus replied that with Video Conferencing facilities now at hand will be put to work for the purpose very soon in future.

Prof. Dr. Muhammad Iqbal, appreciated the mechanical engineer expertise available at IRD, Montpellier for developing a dryer for drying mango slices working on heat developed after burning mango seeds and a heat pump designed by a professor for cauliflower environment control in the greenhouses of Agrocampus Ouest. Dr Iqbal told that since there is an energy crises issue in Pakistan, therefore, an effort would be made for developing joint projects to design and develop machines and get benefits of such technologies.

Dr. Sarfraz was very excited as today he was seeing the happening of what he conceived during his PhD at this campus. It was like his thoughts and efforts were bearing fruits. He showed his devotedness to produce tangible actions and results out this collaboration.

In the concluding remarks, D.G. Agrocampus appreciated the broader views and considered that the cooperation between the two institutions of higher learning and research is progressing. Now we have pathways to deepen the collaboration more strongly. He added that after signing the Agreement of collaboration a concrete list of priorities, as discussed above, will be prepared and action plan will be chalked out and attached to this agreement as addendum. He showed his willingness to visit UAF in September/October this year to sign the action plan and kick off some activities.

Both the heads of UAF and Agrocampus signed the agreement documents and exchanged the files with each other (Appendix III).

In a follow-up discussion the Vice Chancellor explained that in Pakistan we do have branching of education, but it is very rigid without any flexibility. We have tight jackets without flexibility like Pre-Medical, Pre-Engineering, non-Science and there is no flexibility. The system does not provide good opportunities for talent screening. The Vice Chancellor requested Mr. Tiwana, President Farmer’s Association of Pakistan (FAP) to take it up with the Government of Pakistan to set up a flexible model of Agricultural schooling with flexibility, in collaboration with UAF and Agrocampus. The D.G. Agrocampus agreed to help build a network of such schools in Pakistan.
The Technical Councillor of the Embassy of Pakistan at Paris asked the heads of both the Universities to send a copy of the agreement (signed copy) to Paris for follow up with the Government of Pakistan. The meeting and signing ceremony was adjourned with thanks by the DG Agrocampus.

Agriculture Waste Management Unit

In the afternoon visited a new system of Agriculture Waste Management: mechanization of manure at the farm of Alain Guillaume Plelo. Mr. Guillaume briefed the history of installing waste management plant. There was a big issue of water and environment pollution. Economic sources through tourism were affected badly. The farm and animal waste directly going into water ponds, ditches, canals caused water and environmental pollution by methane gas evolution after fermentation process in the open air. Since he owned only 200 animals on his farm and could not afford such a big technology, therefore, after discussing with the nearby farmers for animal waste needed as an input for the plant, he installed the plant by arranging funds ($ 1-million) from different sources as following:

20% funds from ADEME (An energy association)
20% funds from District Government
20% funds from provincial Government
40% funds from the farmer pocket

This plant produces electric energy from the farm waste. Each day 2-tons of animal fat and 8-m$^3$ of animal waste (faeces and urine) are mixed with required amount of lawn harvested grass and straw of plants. The mixed semi-fluid (without any hard stuff like metal pieces, bones, stones) is pumped into the fermentation unit (@ 400 kg/h. The pump functions automatically. The methane gas developed is used as a fuel for producing electricity by two electric generators with 150 kW capacities each. After fermentation, the harmless waste and is drained into the canals. Fermentation tank walls are made from 25 cm thick concrete and insulation material is used to avoid temperature loss during fermentation (40°C$^\circ$). Iron oxide in powder form is also mixed in the animal waste semi-fluid mixture in order to avoid deterioration of running parts of the electric generators. In order to promote this technology, the Government pays $ 0.65 to the farmer for each kW-hr of electricity produced by mechanization process and the farmer sells the same generated electricity to the end users at a price of $ 0.13 per kW-hr (incentive/benefit of $ 0.52 / kW-hr to the
farmer). There are more eight plants approved by the government and are plants are under construction and 23 projects are in line for approval. We were really impressed from the waste management and production of electricity by methane gas and therefore will try to develop a project for producing electricity to meet the needs of university from farm and animal waste at the UAF.

**Cheese Production Farm**

In the late afternoon visited a cheese production farm. Mr. Domine, an expert in the field of animal husbandry, is producing different varieties of cheese from 40 cows at his farm of 40 ha land. There are only six workers on the farm (including Domine and his wife). Cheese production facilities at the farm as following:

- Mechanized Milk extraction plant for six cows at one time 1-No
- Chilling unit along with accessories 1-unit
- Cheese ripening/fermentation rooms 2-No.
- Milk and Cheese processing room 1-No
- Cheese display room 1- No

They are producing cheese from 190,000 litre milk from their 40 cows per year. The cheese recovery rate is 10%. Mr. Dimine and his family are very happy by running a business of cheese production at their farm from their own resources.

Four family members of Mr Dominic Darley work on a family dairy and cheese farm having 100 acres of land and 40 dairy cows. They have 1 cow/hectare/year. They produce 320,000 litres of milk per year as a quota given by the Government. They have a sustainable agriculture farm. Wife of Mr. Darley deals with sale point, he (himself) deals with the fabrication, his son Frederic deals with the farm management and land holdings and his second son Benoit deals with the fabrication to replace his father who is going to retire within few months. They also sell the products of their friends on their sale point along with their own cheese and dairy products.

They made 4 types of cheeses like Hirl Tomme, Darley, Bleu Emeraud and Daley with cumin. Along with these four cheeses they also make and sale fresh cheese and pouch packing of 1 L of fresh whole raw milk.

They also manage a small dairy museum in their sale point to show their clients the history of their own farm. They do the analyses of their milk thrice per week and record the results of the
quality of milk. We visited the facilities on the farms like milking parlour with six places, feeding open hall, animal herd, pouch packing small room and equipment, cheese fabrication controlled entry room, ripening rooms, etc. In their ripening rooms more than one year ripened cheese was also present.

As both wife and husband are going to retire by the end of this year, the Vice-Chancellor invited them to come to Pakistan to help for the establishment of small cheese units for six months. As they had visited lot of countries, so they were very open and hope they will visit us very soon.

June 11, 2010

Triballat-SojaSun

The delegation visited Triballat-SojaSun, functional foods in Rennes on 11-6-10. The Director Research & Development warmly welcomed the delegation. After formal introduction of participants he presented the activities and products of the company. The company is purely private and has warehouses/offices in France and overseas. The company produces new high quality standardized food products of its own kind without any chemical preservatives. They are producing four categories of plant based products.

1. Soya – Full soya products and provide the needs of fresh soya desserts, soya drinks etc.
   - Soja deserts: They produce broad range of desserts with original flavour, which are cholesterol and lactose free, rich in essential fatty acids and protein source (3.2%).
   - Sojasun drinks: The company produces all types of drinks, which are 100% plant product, cholesterol and lactose free, rich in fatty acids and good source of protein (3.8%)

2. Organic: The company produces in two brands:
   - VARI produces- Organic yogurts, fresh cheese, desserts, butter and fresh cream.
   - SOJA products- Organic fresh soya desserts and organic UHT soya desserts, and delicious drinks for both children and children

3. Cheese and butter: Cheese produced from cow, goat, and sheep milk.

4. Nutrition: The Company has expertise in dairy and soya proteins. The sales department guarantee the consumers for flexibility, reactivity and dynamism in their products.
The company ensures sustainable policy for their products strong commitment of standard and quality of all the products. They also ensure secure and protective environment of production. The company has engaged full time two PhD holding experts and twenty technical graduates for research and development. The company also arranged physical look of products being produced in the industry. We were astonished to look at the production capability of computerized machines. Robots were fully computerized for timely operation of all unit operations involved during processing and packaging. Two computerized machines prepare 80000 packages of products in one hour.

**Hubbard, Chateaubourg**

Over the lunch at Agrocampus, a meeting was setup with Mr. Olivier Behaghel, Business Director Southern Europe, Middle East & Brazil and GP Operations Director of Hubbard. The Hubbard is the leading poultry breeding company in the world. With a culture based on innovation, excellence and rigour its primary research focus is genetic and veterinary research in poultry. The global network of Hubbard staff provide training and help to establish farmers in Africa, by developing joint ventures in Asia and South America, by organising seminars with its customers and partners, and by supporting university programs and the work of research institutes.

Hubbard is doing business in Pakistan with Bigbird and other poultry chick suppliers. Prof. Iqrar A. Khan reinforced that there is a complete revamp of poultry business in Pakistan with the adoption of controlled poultry sheds. The UAF offers degree programs and have instituted a new Poultry Science degree program at Toba Tek Singh Campus. A request was made to the Director for innovation sharing with the UAF, and to help identify the gaps in poultry research and outreach.

On a question, Mr. Olivier Behaghel responded that Turkey is no priority and has no potential as Broiler has faster growth and better conversion rate. He added that Duck has a great potential for enhancing production of eggs and should be promoted. He appeared to be on the same track with the Vice Chancellor for promoting rural poultry in Pakistan. Mr. Behaghel offered his help to provide various poultry breeds and expertise to exploit their potential for reviving rural poultry in Pakistan. He is a frequent visitor of Pakistan and will come to UAF on his next visit to the country.
CEMAGREF

In the afternoon visited Cemagref a public research institute, which is involved in agricultural and environmental research. It is located few km from Rennes city. Dr. Roger, Director General gave brief presentation about the organization. The institute is a major player in environmental science & technology and reports to both the Research and Agriculture Ministry of their progress. They are conducting integrated environmental research focused on regions for finding the optimal solutions. Environmental protection and agro-food quality are the main goals of this organization. Both of the issues are addressed by technological research to develop new solutions for better control and management. The institute has following two units:

1. **Food process engineering unit:** In this unit two technologies are involved;
   a. Localized cold and clean air-technologies for food product protection and conservation: These technologies will ensure the conservation of fresh, healthy, natural, and ready-to-use food products. Research is in progress.
      A PhD holding researcher has designed two models for studying air flow resistance through horizontally and vertically placed ducts. He explained the experiments which have been planned to be conducted in future. Both the models were computer controlled. The instrumentation of models is still in process.
   b. Characterization by NMR/MRI of Agri-food products and their transformations: To quantify the water and fats as well as the spatial distribution of the molecules in products, MRI has been found playing a positive role in no time. MRI will help to understand in time transformation mechanisms involved during production and manufacture of Agri-food products in-order to improve their quality and safety. Research is in progress. The engineer concerned explained the operation of instruments involved for experimentation.

2. **Environmental management and biological treatment of waste unit:** Two technologies being used in this unit are:
   a. Biological treatment and management of municipal wastes: This technology will help in improving composting techniques and management of municipal and organic wastes. Dr. Colin Burton explained the experiments going on with three composting machines with three different techniques. Research is in progress in this regard.
b. Management of livestock effluent: The research is going on in-order to improve management techniques and to develop biological-treatment process. Dr. Colin Burton explained the experiments being conducted on management of livestock effluent in the instrumentation labs. The effort is to control over the bad odour of swine faeces and urine and nitrogen-nitrate leaching down into the deep layers of soil.

After the achievement of fruitful results this centre of waste management will be able to bring a big change in the field of agriculture and waste management.

June 12, 2010

On Saturday Morning, June 12 left for Paris, and delegation was received by a group of UAF alumni doing their PhDs in various fields under HEC initiative. During the day had some sight seeing and meeting with the students studying in Paris to discuss their projects, so far progress and problems. The names of the students are given (Appendix II).

Gandhara exhibition

It all stared from an excellent article written by Mr. Zafar Masood "Ranjit's French Connection" which appeared in daily DAWN on Wednesday 26 May, 2010. The Vice Chancellor picked up this article in the perspective of our visit to France. It was about a show/exhibition "Pakistan, the Land of Encounters" being hosted by the Guimet Museum located in the heart of Paris near Eiffel tower during our visit to France. We stared communicating with Zafar and finally we were able to locate and visit the exhibition in the evening of June 12, 2010. The curators were kind enough to allow us visit during the last half an hour and even for some time after its closing hours. It was fascinating to see the Gandhara art pieces, books, CDs and lots of literature about Pakistan, Gandhara art and civilisation at such a prestigious place. It was very encouraging to know that visitation of the exhibition has been much more beyond expectations of the organisers. Pakistan appears to have a perception problem and such kind of shows and exhibitions certainly helps improve the soft image of Pakistan.
Take home lessons

- The city of Faisalabad is similar to Montpellier by having maximum agricultural institutions like UAF, AARI, PPI, NIBGE, NIAB sitting in one town, but unlike Montpellier not working in coordination. This is leading to duplications, inefficient use and wastage of resources, low quality research, inadequate skill development, lack of focus and capacity for innovations in the system. The training and research in agriculture would never lead to innovation and development if we did not change the system of working in silos. Therefore, the UAF, other public universities at least in Faisalabad, NIAB, NIBGE, AARI, PPI etc should come up with cross institutional research units (groups) to conduct focused research under an association.

- Looking at the Agropolis and Vegepolys it seems possible that different institutions under the administrative control of various provincial and federal authorities in Pakistan could do collaborative R&D under one association. This is the only way forward if we are sincere with our nation and the country.

- Setting up an exhibition centre and museum at the UAF to show the historical developments in agriculture and become a member of the Agriculture Museum Network. Installation of a desk of Pakistani Agriculture at the Agropolis museum.

- Global change in terms of environment, social, migration, food safety, biodiversity will have common impacts. Therefore, we must pool our resources to combat the current and upcoming problems at local level and we must join global forces to handle it globally.

- Setting up of Palm Diversity Program in Pakistan which will later evolve into an office/Date Palm Diversity Centre.

- Institution of Joint Diploma Courses and Sandwich academic programs by IRD and the University of Agriculture, Faisalabad, Pakistan. Particularly running a joint program on Human Nutrition and dietetics. Some other collaborative projects on bacterial and viral diseases.

- Delegation from France to Pakistan to assess the existing strength for collaborative academic and research programs

- Internship and exchange students, particularly from IRD to UAF
• Work on creating a consortium for water issues in Pakistan under auspices of UNESCO, leadership to create such a consortium has to come from Planning Commission. Membership to include WAPDA, Prov. Irrigation Secretaries, Farmer stakeholders, NUST etc, UAF (as secretariat) Essentially for Research, Training and Developing medium to long term strategic plan on water. (Planning commission + UAF)

• Outreach to Ministry of Food, Agriculture and Fisheries through Agrocampus Ouest to study their support systems for creating a common policy for various players (common Objectives, Programs, Projects) policy of Mergers of Institutions, creation of Innovation Clusters, Innovation Fund, programs for enhancing competitiveness, Linkages and complete synergies between Education, Research and Technology Transfer (extension). (Ministry of Foreign Affairs and MINFA)

• Creation of Agreenium (consortium of Agriculture Research, Education, Technology Transfer, Agribusiness, Farmers) for joint projects funded through a public and/ or Private sectors. (MINFA and Provincial Agriculture Ministries + HEC + Universities +Stakeholders)

• CIRAD is involved in R&D projects worldwide in, public policy, decision support system, quarantine services and manages technology transfers. Their dual skills of firstly, employing a multidisciplinary approach towards researching any issue. Secondly their ability to study the ‘complete farming system’ in order to tackle a challenge. We may initiate joint programs with CIRAD and IRD for both our benefit. (Planning Commission)

• The French Ministry of Foreign Affairs in collaboration with the Ministry Agriculture is fully involved in cross border research projects and jointly oversees the administration and facilitation aspects of various research facilities and projects around the world. Recommend to MOFA to assist in tech transfer in Agriculture Sector. (MINFA and MOFA)

• Consortiums, Partnerships, joint projects (biggest learning) govt. creates and funds one facility and all use it. Carrot i.e. funding available only to joint projects

• Creation of Pakistan’s AGROPOLIS an organization of all research organizations, NGOs stakeholders to collaborate on Agriculture research projects, and to help and assist various member institutions in securing research projects. (UAF + Provincial Govt. + Agribusiness Groups+ Farmer organizations)
The concept of a LabEX office situated within Agropolis is a unique concept undertaken by various nations. Countries such as Brazil have established a technical office within Agropolis manned by both French and Brazilian scientists/personnel (2-3 people) who keep the channels of latest research open between all members of Agropolis and Brazilian stakeholders. This allows the LabEx country to receive a constant stream of the latest research and prospects for possible areas of collaboration. This most useful arrangement must be undertaken with Agropolis and funded jointly by the public/private sector. Pakistan’s LabEx may be situated at Rennes since Agrocampus Ouest is the bridge for collaboration within the Ag Sector duly recognized by the French Government. It is recommended that Pakistani some students currently studying at Rennes may be employed along with Dr. Jean Francois Grongnet who is scheduled to retire within 3 months time. (Planning Commission + Agribusiness companies)

Business collaboration with Creavia, may be pursued due to their commitment to create a long term relationship in Pakistan with their JV partners. Semen Collection Unit, technology and expertise employed in Public sector institutions has only produced mixed results, a sustained commitment is required to develop this very lucrative and beneficial activity within the private sector in Pakistan. (MINFA + Business Groups + Farmer organizations)

Duplicate the concepts of Vegepolis, Valorial, etc which integrate innovation, research, Tech. Transfer, and Education are clusters of Excellence within the Agricultural value chain. (Planning commission)

Pursue Michel Houdebine for creating a JV in Food Processing. (Agribusiness Groups + BOI + UAF)

Seek collaboration with French Agriculture Ministry to assist in recreation of their Lycee system in Pakistan. (Agriculture Training Schools. (Provincial Agriculture Department and Private sector)

Arrange a visit by Agribusiness and Farmers’ group in September/October 2010 to further strengthen commercial links between the Agriculture sectors of France and Pakistan.
• Undertake a commercial prototype of on farm power production using Methane technology with active collaboration of French and German organizations for total local fabrication. (UAF + Planning Commission + Agrocampus Ouest)

• Invite Mr. and Mrs. Domine to visit Pakistan as guests of UAF, funded by Government of Punjab and set up 5 cheese processing units including one at UAF. (Government of Punjab + UAF)

• Arrange visit of Director General Agrocampus Ouest as State Guest in October. (Ministry of Foreign Affairs + UAF + Provincial Government)

• The rural poultry should be saved and promoted

The take home lesson in two lines could be stated as:
• We need to converge people to work together
• We must invest into the development and harnessing of the human resource
Tentative program of the visit of the authorities of the University of Agriculture Faisalabad (UAF), Pakistan, in France (May 31\textsuperscript{st} to June 13\textsuperscript{th}, 2010)

Composition of the delegation:

Prof. Iqrar Ahmad Khan - Vice Chancellor \textit{(President)} - UAF
Prof. Faqir Muhammad Anjum - Director General, NIFSAT - UAF
Prof. Asif Ali - Director External Linkages - UAF
Mr. Ch. Muhammad Hussain - Registrar - UAF
Dr. Asghar Ali - Professor of Agronomy - UAF
Dr. Muhammad Iqbal - Professor of Farm Machinery and Power - UAF
Mr. Malik Afaq Ahmad Tiwana - Chief Executive - Farmers Associates Pakistan (FAP – Lahore)

Dr Sarfraz Ahmad, Assistant Professor, NIFSAT-UAF
Dr Olivier Bergossi, Attaché scientifique, Ambassade de France à Islamabad

accompanied by Prof. Jean-François Grongnet, Agrocampus Ouest
Monday May 31st:

Afternoon: Arrival at Paris Charles de Gaulle Airport, welcome by Dr Olivier Bergossi
Transportation to Hôtel Europe Liège, 8 Rue de Moscou (métro: Place de Clichy) [+33 (0)1 42 94 01 51] for three rooms and Hôtel Le Baldaquin, 16 Rue Caroline (métro: Place de Clichy) [+33 (0)1 45 22 50 95] for another three rooms
Rest and brief visit in Paris
Dinner at “Etoile du Kashmir”, Pakistani restaurant with Pr Jean-François Grongnet, just returned from Montpellier

Night: Hôtel Europe Liège

Tuesday June 1st:

Morning: Visit of UNESCO
Welcome at the French Ministry of Agriculture, Paris

Afternoon: Transportation to Montpellier by TGV
Accommodation at Hôtel Edouard VII, 10 Rue Aristide Ollivier [ +33 (0)4 67 58 42 13]
Visit of the centre of Montpellier
Dinner Place de la Comédie

Night: Hôtel Edouard 7
Wednesday June 2nd:

Morning: Visit of CIRAD: Centre of Baillarguet; welcome by Drs Emmanuel Camus, Anne-Marie Manez and others; visits of labs dedicated to tropical animal production, vet research including recombinant vaccines......

Lunch at Baillarguet

Afternoon: Continuation of the visit of CIRAD: Centre of Lavallette. Welcome by Dr Marc Valente and others; visits of different labs mainly dedicated to fruit technology (including mangos).....

Dinner Place de la Comédie

Night: Hôtel Edouard 7

Thursday June 3rd:

Morning: Visit of IRD (Institut de Recherche pour le Développement); welcome by Dr Yves Duval, general administrator, Dr Jacques Berger, human nutrition, Dr Jean-Christophe Pintaud, palm trees, Dr Jean-François Guegan, epidemiology.....

Lunch at IRD

Afternoon: Continuation of the visit of IRD

Visit of Agropolis museum

Night: Hôtel Edouard 7
Friday June 4th:

Morning: Visit of MontpellierSupagro; welcome by Dr Jérôme Thonnat, Director of external linkages department, visits of various labs and services (as Alain Brauman lab including two Pakistani PhD students)

Lunch at MontpellierSupagro

Afternoon: Continuation of the visit of MontpellierSupagro

Visit at University Montpellier 2; UMR Entomology: welcome by Dr Philippe Fournier or collaborator.

Night: Hôtel Edouard 7

Saturday June 5th:

Morning and afternoon: Tourism

Night: Montpellier

Sunday June 6th:

Morning and afternoon: Transportation to Rennes by TGV train
Monday June 7th:

Morning: Welcome at Agrocampus by Pr Grégoire Thomas, DG.

Presentation and visit of Agrocampus (Rennes Centre) including dairy technology lab STLO. Introduction by Mrs Joëlle Chancerel, Director of external linkages department, presentation by Pr Jérôme Pagès (faithful friend of Pakistan) of various mathematical tools for nutrition and agriculture sciences, visit of the library…..

Afternoon: Visit of INRA-Agrocampus lab (Saint-Gilles): human nutrition…

Visit of CREAVIDIA, top French company in the field of improvement of genetic of dairy cows, artificial insemination, embryo transfer…

Night: AgrocampusOuest

Tuesday June 8th:

Morning and afternoon: Visit of Angers centre of Agrocampus: visits of labs dedicated to horticulture, fruit production……

Night: AgrocampusOuest
Wednesday June 9th:

Morning: Visit of Houdebine SA, first class company in the field of ready to eat meals, founded by Michel Houdebine, current president of Valorial, Breton techno-pole dedicated to agro industry.

Afternoon: Visit of INRA-Agrocampus labs (Le Rheu and Saint-Gilles): plant protection, plant improvement, milk production…

Dinner at “Les Glanes”, residence of Agrocampus DG

Night: AgrocampusOuest

Thursday June 10th:

Morning: Ceremony of signature of the new MOU

Afternoon: Visit of a new system of agriculture waste management: methanisation of manure at the farm of Alain Guillaume, Plelo

Night: AgrocampusOuest

Friday June 11th:

Morning: Visit of Triballat-SojaSun, functional foods, welcome by Dr Theo Efstathiou, director of research and development
Afternoon: Visit of CEMAGREF labs in Rennes, research centre dedicated to agricultural engineering

or

Visit of Hubbard, Chateaubourg, world company in the field of poultry selection, highly involved in Pakistan

Night: AgrocampusOuest

Saturday June 12th:

Morning: Departure for Paris

Afternoon: Tourism in Paris

Night: Hôtel Europe Liège or Baldaquin Hôtel (see above)

Sunday June 13th: Departure for Pakistan
List of Pakistani Ph.D Scholars in France

Appendix II

Montpellier
1) Amna Sahar  amnasahar@yahoo.com
2) Imran Khan  agronomist786@yahoo.com
3) Muhammad Naseeb  naseeb_ft@yahoo.com
4) Zaheer Ahmad Nizamani
5) Zaigham Shahzad  zaighamthebest@gmail.com
6) Adnan Ahmad Tahir  uaf_adnan@yahoo.com
7) Mubashir Saeed  spectacular_mubashir@yahoo.com
8) Muhammad Waseem  rmw_uaf@yahoo.com
9) Muhammad Zulqarnain Haider  dr_mzhaider@yahoo.com
10) Rashad Waseem Khan Qadri  waseemrana83pk@gmail.com
11) Moeez Ghani Rathore  moeez2007@hotmail.com
12) Tanveer
13) Faisal Mahmood  fslagronomy@hotmail.com
14) Usman Irshad  usman_agr@yahoo.com
15) Abid Hussain  abidfalcon@gmail.com
16) Muhammad Zeeshan Majeed  shani2000_uaf@yahoo.com
17) Farrukh Azeem  azuaf@hotmail.com
18) Asad ullah  Kehar  asadkehar@yahoo.com

Rennes
1) Ahmad Nawaz  nawazrajpoot@yahoo.com
2) Amer Rasheed  qaamir77@yahoo.com, qaamir77@hotmail.com
3) Jabbar Khan  j_khans2001@yahoo.com
4) Majid Jamal Khan  facon_16@yahoo.com
5) Muhammad Gulzar  agmks_gulzar@yahoo.com
6) Muhammad Ali  muhammadalis@gmail.com
7) Muhammad Imran Arshad  drimranarshad@yahoo.com
8) Rizwan Yaseen  rizwany2001@yahoo.com
9) Naveed-ul-Haq  
10) Dr. Saleem Jan  
11) Amir Shehzad  

Paris  
1) Nazir Ahmad  
2) Raza Hussain  
3) Rizwan Shaukat  
4) Muhammad Javed  
5) Zeeshan  
6) Jam Rafiq  
7) Naeem Iqbal  
8) Muhammad Imran

haq_uaf@yahoo.com  
jann_saleem@yahoo.com  
aamir1326@yahoo.com  
kabeerhasham@gmail.com  
razahussaini143@hotmail.com  
rizwan.shukat@agroparistech.fr  
rjy786@hotmail.com  
zee_ft@yahoo.com  
jamrafiqe@yahoo.com  
aeemft@gmail.com  
exploring_human@yahoo.com