



International Conference on Urban, Peri-Urban Agriculture, Employment & Value Chain Management



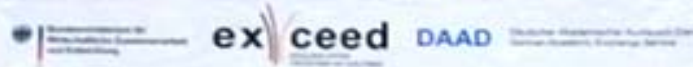
(October 18-22, 2011)

Organized by
International Centre for Development and Decent Work (ICDD)
University of Kassel, Germany
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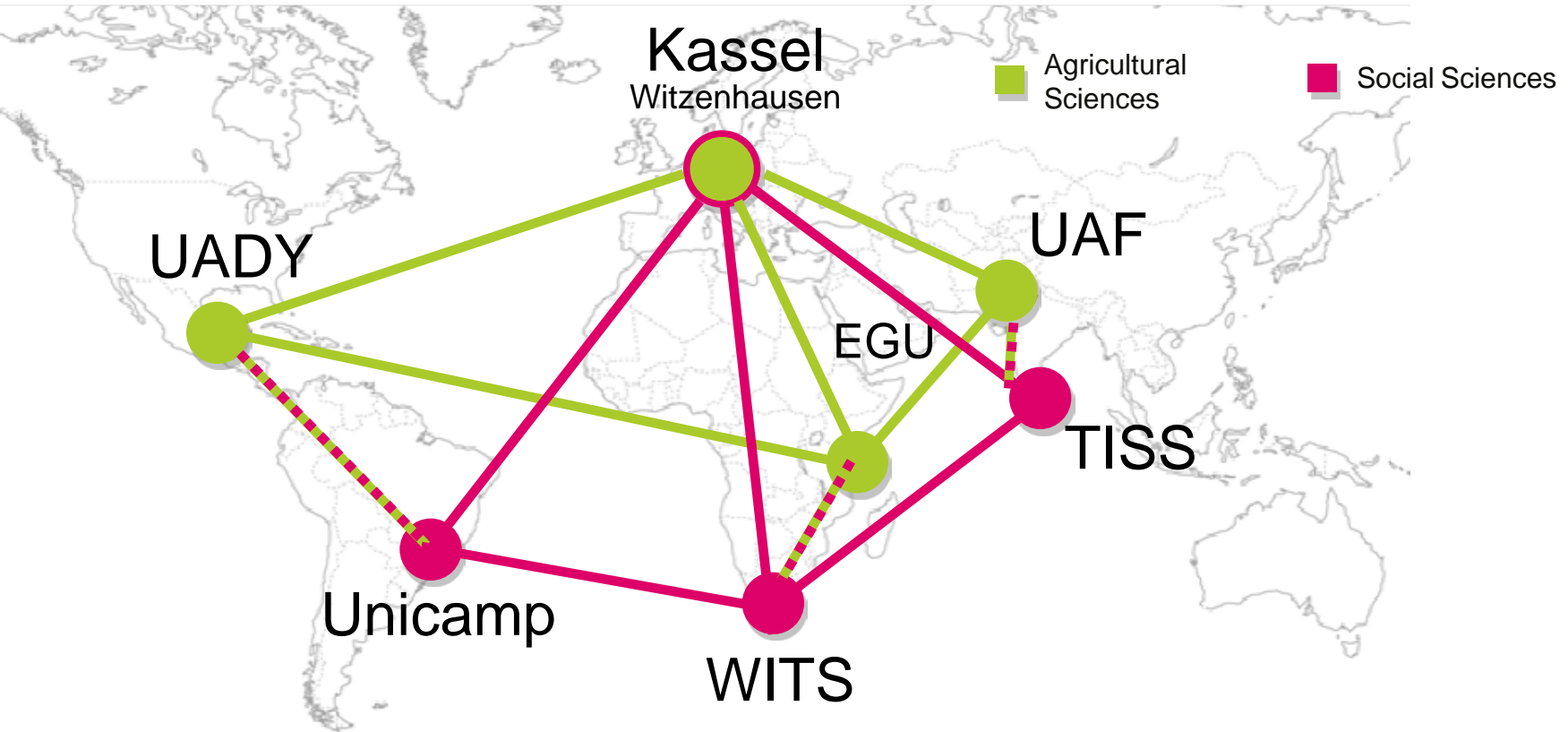


Closing Session

Andreas Buerkert, Eva Schlecht, Michael Wachendorf,
Muhammad Younas and Asif Ali

International Center for Development & Decent Work (ICDD)





Civil society partners:

FES, HBS, DGB, COSATU, CUT, SEWA, ITUC, WIEGO, RESPECT et al.

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WITS: University of Witwatersrand (RSA)
TISS: Tata Institute of Social Science (IN)

UADY: Universidad Autónoma de Yucatán (MEX)
EGU: Egerton University (KE)
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Three Research Clusters



Knowledge Transfer to Policy, Civil Society, Profession & Academia



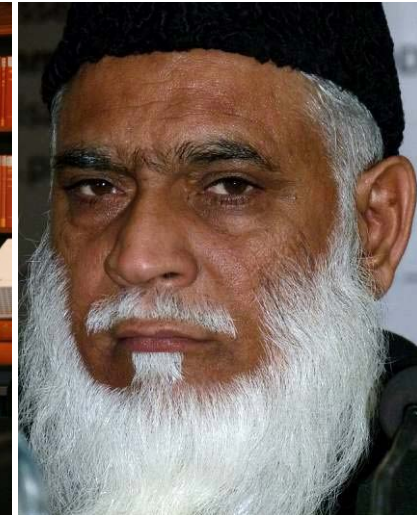
Ela-Bhatt Visiting Professorship for Development and Decent Work

Professor **Edward C. Webster**,
University of the Witwatersrand,
Johannesburg

Professor **Muhammad Younas**,
University of Agriculture, Faisalabad

Professor **Juan Jimenez-Orsonio**,
Universidad Autonoma de Yucatan

Professor **Sakhela Buhlungu**
University of Pretoria



ICDD activities planned for 2012 & 2013

- March 2012 **Graduate School Workshop** at Egerton University, Kenya
- 9 June – 16 September 2012 **DOCUMENTA 13** Kassel



- 4 -8 July 2012 **Annual Thematic Conference (ATC)** in Kassel together with the **Steering Committee Meeting**
- September 2012 **Alumni Applied Research School (AARS)** in UNICAMPI, Brazil together with the Annual GLU Conference
- 2013 **PhD workshop** at UADY, Mexico



Golden Jubilee Celebrations Year



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What we have done together....



International Conference on Urban, Peri-Urban Agriculture, Employment & Value Chain Management



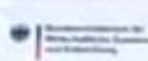
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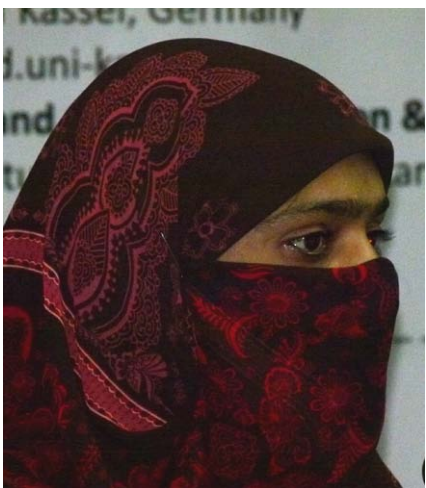
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exceed DAAD

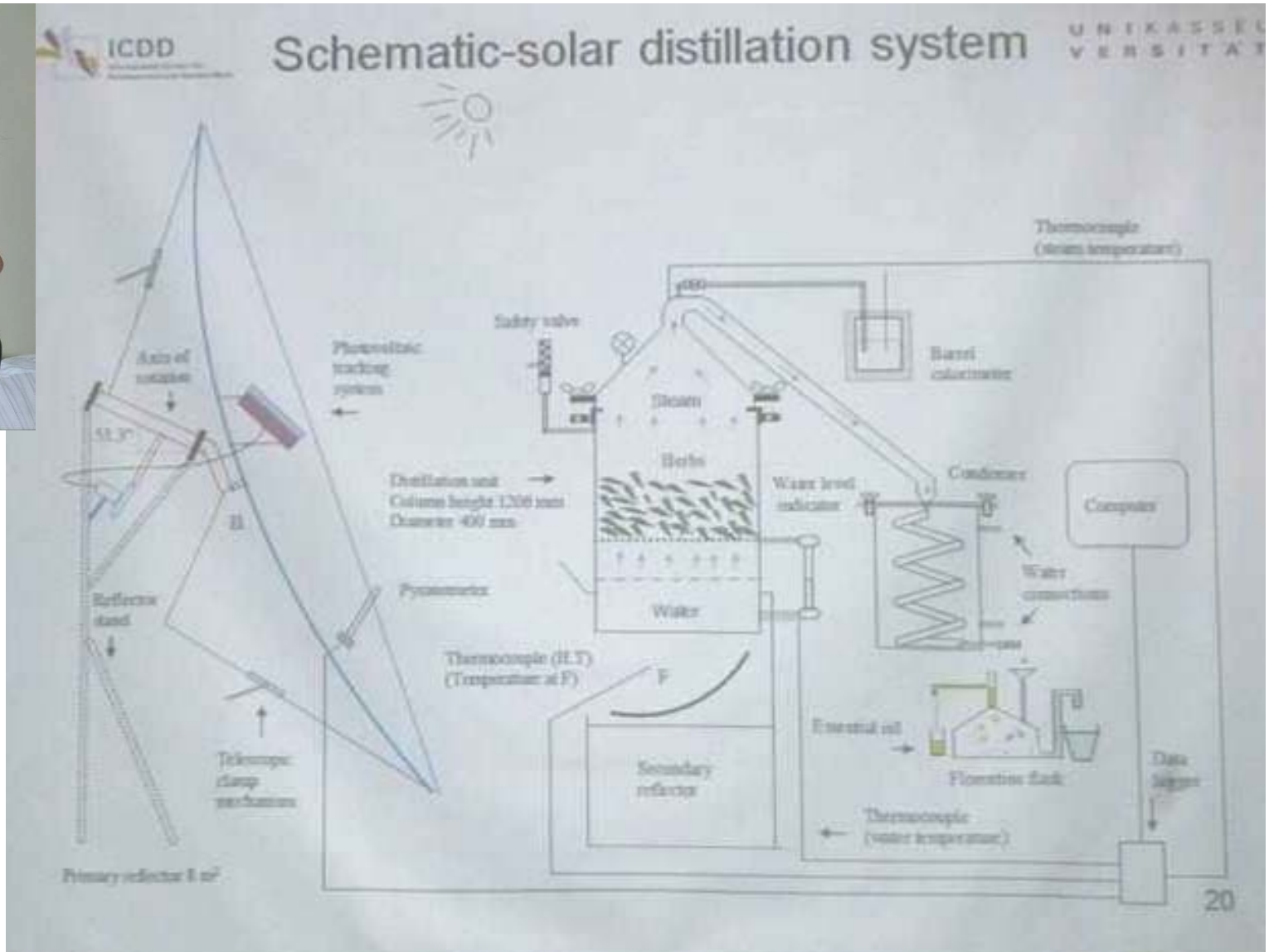
Deutscher Akademischer Austauschdienst
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Strong voices of dedicated women participants....



.... did we listen to their views?

Putting good science into practice



Diversity of very convincing poster topics

Predominance of helminthiasis in pastoral sheep and goat flocks at the vicinity of Qila Drawer, Cholistan desert of Pakistan

Muhammad Asif Raza, Eva Schleicht and Muhammad Younas!
Animal Husbandry in the Tropics and Subtropics, University of Kassel and Georg-August-Universität Göttingen, Germany
University of Agriculture, Faisalabad, Pakistan

- Background and Objectives**
- Helminthiasis is one of the most imperative animal diseases worldwide.
 - Chronic infestation leads to distinct losses in livestock productivity and growth.
 - We assessed the prevalence of intestinal helminths in sheep and goats in Qila Darawar, Cholistan desert, a very remote area of Pakistan.

- Conclusions**
- Particular attention should be paid to regular deworming of the animals.
 - Helminth species prevailing in the area should be screened for resistance against commonly used anthelmintics.

- Materials and Methods**
- Systematic collection of 5-10 grams of fresh feces from rectums of 200 sheep and goats; refrigerated storage in zipper polythene bags.
 - Feces examined by direct and indirect (floatation) techniques; helminth eggs and larvae identified by standard microscopic techniques (Fig. 1)



- Results**
- Overall helminth prevalence was 85%, namely 81% in goats, trematodes and mixed infestations were true for nematodes and cestodes (Fig. 2).
 - In goats, more males than females were infested, in Helminths were predominant in suckling animals; in goats while the opposite was true for sheep (Fig. 4).

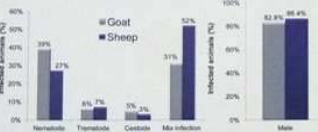
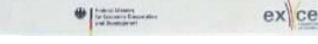


Fig. 2. Prevalence of different helminths in sheep and goat faeces



Introduction

- Livestock plays a key role in poverty reduction as majority of the poor in developing countries live in the rural areas and that food prices are a major determinant of the real income of both rural and urban poor.
- Livestock play a vital role in rural livelihood, employment and poverty relief.
- The growth in the agriculture is estimated at 1.2 percent on the back of 3.7 percent growth in the livestock sector. Output in the manufacturing sector has witnessed expansion of 3 percent in 2010-11 as compared to expansion of 5.5 percent last year.

- Main Objectives**
- To determine the role of livestock in Pakistan economy.
 - To investigate how to elevate poverty by livestock improvement.

- Impacts of Livestock Economy**
- Livestock products account for about one-fifth of the global trade of agricultural products.
 - Livestock has the share of 11.5% of Pakistan's total GDP.



Figure no. 2 dairy farm in Pakistan

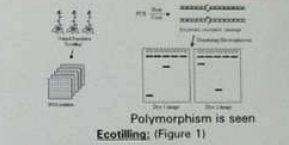
Ecotilling for SNP analysis in Date Palm

Aneesa Naeem, Asif Ali Khan and Andreas Buerkert
University of Agriculture, Faisalabad

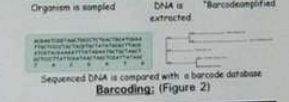
- Back ground and Objectives**
- Ecotilling is used for the detection of natural polymorphism.
 - DNA barcoding is the process of species identification based on nucleotide diversity of short DNA segments

- Conclusions**
- Both Techniques are very useful for the detection of Nucleotide variation in Date palm in order to evaluate its diversity.

- Materials and Methods**
- Ecotilling:** (Figure 1)
- Extraction of DNA
 - Pooling of samples.
 - Amplification of desired gene.
 - Formation of heteroduplexes
 - Treatment with Call 1 to detect mismatches.
 - Cleaved bands are Visualized by gel electrophoresis
 - Sequencing to detect nucleotide variation



- Barcoding:** (Figure 2)
- Sampling and Isolation of DNA.
 - Amplification of standardized gene
 - Sequencing
 - Submission and comparison of sequence to Database



- Results**
- We have extracted and amplified 36 samples of Date Palm for two genes matk and rbc1 and it revealed good results. (Figure 3)
 - Further on the basis of sequencing we will be able to identify nucleotide differences and predict whether they belong to same species or not.



Figure 3 1-5 values showing amplification of barcode genes rbc1 6-10 rbc2 2, 11-15 matk 1 and 16 in second row 16-20 matk 2

- Introduction**
- Date palm is one of the oldest fruit trees in the world and is mentioned in Quran and Bible.
 - Dioecious with male and female flowers being produced in clusters on separate palms.
 - Root system is divided into four zones.
 - In general root do not differ, but differ anatomically.
- Importance**
- Roots play role in water transport and in water storage
 - Thick walled sclerenchyma enhance the mechanical strength of the root.
 - Aerenchyma enhance diffusion of atmospheric and photosynthetic oxygen.
 - Large phloem area is responsible for increased translocation of photosynthate and metaxylem vessels may resist efficient transport of water and solute.

- Achievements**
- Procedure adopted to root anatomy**
- A 2 cm piece of root from root-shoot junction were selected for anatomical studies
 - The material were fixed first in FAA and then transferred to acetic alcohol solution
 - Free hand sectioning technique were followed in preparation of slides
 - Anatomical parameters were taken with the help of ocular micrometer under a camera-equipped microscope



Background and Objectives: Monoculture substitution is one of the acute factors for human health. In the context, iron deficiency anemia (IDA) and iodine deficiency disorder (IDD) are major public health problems causing worldwide. Most of the developing countries like Pakistan are facing nutritional deficiencies. Iron, Manganese, Zinc and iodine are above threshold level. Food fortification is one of the best options for prevention and control of micronutrient deficiencies. Dual fortification (DF) of salt with iron and iodine could be sustainable approach in fighting these diseases. Taking into consideration the significance of proper fortification more objectives were formulated:

- To assess the suitable level of fortificant and their interaction.
- To assess storage stability of fortified iodine and iron fortificants.
- To evaluate the bioavailability of fortificants through various analyses.

Materials and Methods: Common salt (NaCl) was subjected to various analyses like pH, ash value & mineral followed by double salt fortification. Common salt was fortified with two iron compounds, sodium bisulfate (sulfamic salt) and ferrous sulfate (FeSO₄), and iodine compound (KIO₃) at two different levels. Fortified salt was stored at ambient temperature for 3 months, & analyzed for moisture, pH, iron & iodine contents following standard methods by AOAC, 2007. Bioavailability of iron & iodine fortificants was analyzed by feeding albino rats with that containing fortified salt (20.5% Lysine, 10% Iodine, Hemoglobin, Serum transferrin, Whole blood zinc, prothrombin, Serum transferrin receptor and Serum thyroxine) were determined at the end of biological assay.

Table 2: Means for storage stability of DFS

Treatment	Color (a, b, L values)				Moisture	pH	Iron	Iodine	Iron
	a	b	L	Mean					
T ₁	1.89	1.11	88.41	0.47	1.31	1.080	0.080	1.31	1.080
T ₂	1.32	4.77	86.51	0.52	2.02	12.25	0.087	1.32	12.25
T ₃	1.31	5.09	87.40	0.50	1.88	10.10	1.19	1.31	10.10
T ₄	1.31	4.80	86.40	0.50	2.84	23.00	0.087	1.31	23.00
T ₅	1.42	5.00	86.40	0.52	2.11	24.89	1.19	1.42	24.89
T ₆	-0.07	-0.70	84.20	0.51	2.48	10.02	0.087	1.42	10.02
T ₇	0.37	-0.07	85.42	0.48	2.49	33.30	1.82	0.37	33.30
T ₈	-0.84	-2.21	85.21	0.48	2.48	2.10	1.82	-0.84	2.10
T ₉	-0.07	0.10	84.80	0.50	2.43	24.60	1.82	-0.07	24.60
Mean	0.14	2.28	86.24	0.49	2.04	25.72	1.21	0.14	25.72

Table 3: Means for efficacy study of DFS

Treatment	Color (a, b, L values)										Moisture	pH	Iron	Iodine	Iron		
	a	b	L	Mean	a	b	L	Mean	a	b						L	Mean
T ₁	1.89	1.11	88.41	0.47	1.31	1.080	0.080	1.31	1.080	1.31	1.080	0.080	1.31	1.080	0.080	1.31	1.080
T ₂	1.32	4.77	86.51	0.52	2.02	12.25	0.087	1.32	12.25	1.32	12.25	0.087	1.32	12.25	0.087	1.32	12.25
T ₃	1.31	5.09	87.40	0.50	1.88	10.10	1.19	1.31	10.10	1.31	10.10	1.19	1.31	10.10	1.19	1.31	10.10
T ₄	1.31	4.80	86.40	0.50	2.84	23.00	0.087	1.31	23.00	1.31	23.00	0.087	1.31	23.00	0.087	1.31	23.00
T ₅	1.42	5.00	86.40	0.52	2.11	24.89	1.19	1.42	24.89	1.42	24.89	1.19	1.42	24.89	1.19	1.42	24.89
T ₆	-0.07	-0.70	84.20	0.51	2.48	10.02	0.087	-0.07	10.02	-0.07	10.02	0.087	-0.07	10.02	0.087	-0.07	10.02
T ₇	0.37	-0.07	85.42	0.48	2.49	33.30	1.82	0.37	33.30	0.37	33.30	1.82	0.37	33.30	1.82	0.37	33.30
T ₈	-0.84	-2.21	85.21	0.48	2.48	2.10	1.82	-0.84	2.10	-0.84	2.10	1.82	-0.84	2.10	1.82	-0.84	2.10
T ₉	-0.07	0.10	84.80	0.50	2.43	24.60	1.82	-0.07	24.60	-0.07	24.60	1.82	-0.07	24.60	1.82	-0.07	24.60
Mean	0.14	2.28	86.24	0.49	2.04	25.72	1.21	0.14	25.72	0.14	25.72	1.21	0.14	25.72	1.21	0.14	25.72

Problem-oriented key recommendations



(1) Quality of irrigation water



Weckenbrock, Drescher, Amerasinghe and Simmons, 2008.

(1) Quality of irrigation water



(1) Quality of irrigation water



(1) Quality of irrigation water

Tissue concentrations (ppm) of heavy metals in crops irrigated with waste water in Uchkara

Species	Ni	Zn	Pb	Cr	Mn
Cabbage	3	53	0	21	19
Cauliflower	3	24	0	16	20
<i>B. juncia</i>	3	66	1	n.a.	68
Wheat	0	34	1	9	27
<i>B. napus</i>	3	66	0	13	28
Round gourd	3	37	0	12	8
Cabbage	4	64	2	18	17
<i>B. napus</i>	4	33	2	43	49

Shamim Raja et al. (unpublished data)

(1) Quality of irrigation water



Urban and peri-urban agriculture (UPA) can make an important contribution to supplying food as well as jobs and income opportunities to the rapidly growing urban populations, but its role and problems strongly vary between locations.



Recommendations

Negative externalities of UPA need:

- careful analysis
- consistent action and dialogue with all stakeholders to design solution-oriented policies
- a legislation fostering the sustainability of the systems, securing product safety and protecting consumer health

(1) Quality of irrigation water

Disadvantages of conv. membrane designs – Flat Sheet

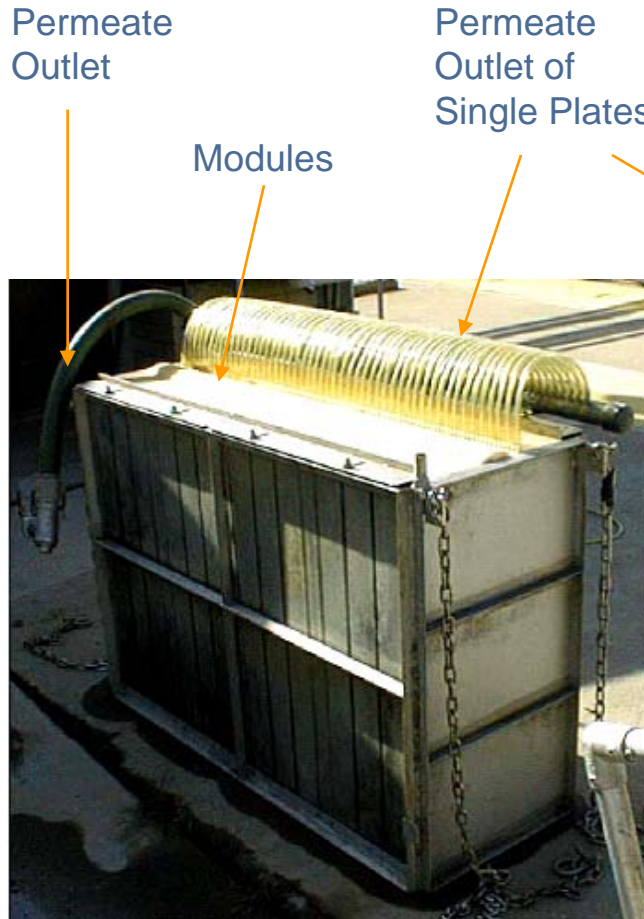
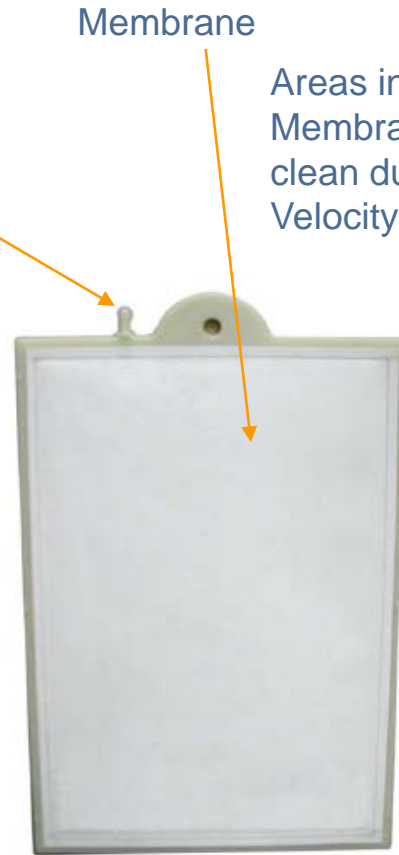
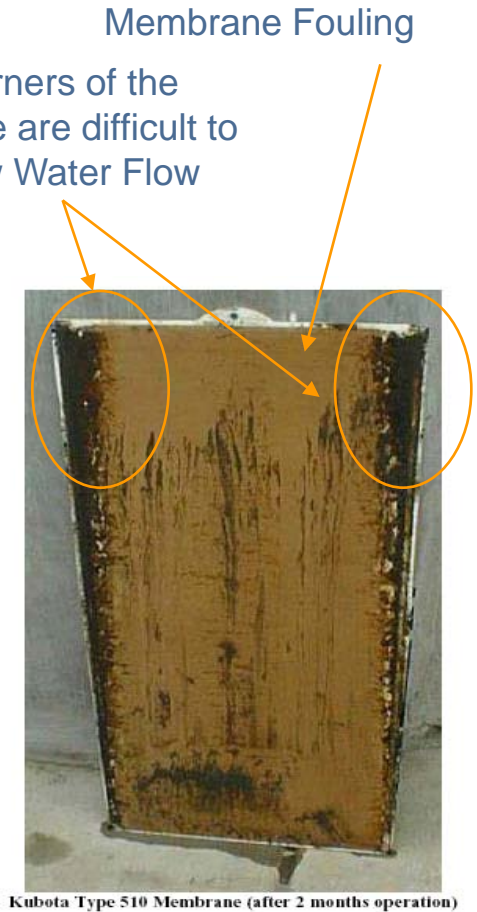


Plate / Frame UF Assembly



Kubota Type 510 Membrane (single sheet)

Single Plate



Kubota Type 510 Membrane (after 2 months operation)

Membrane Fouling

(1) Quality of irrigation water

The filter (membrane) stack before and after cleaning

Fouling



Easy cleaning



Recover complete



(1) Quality of irrigation water

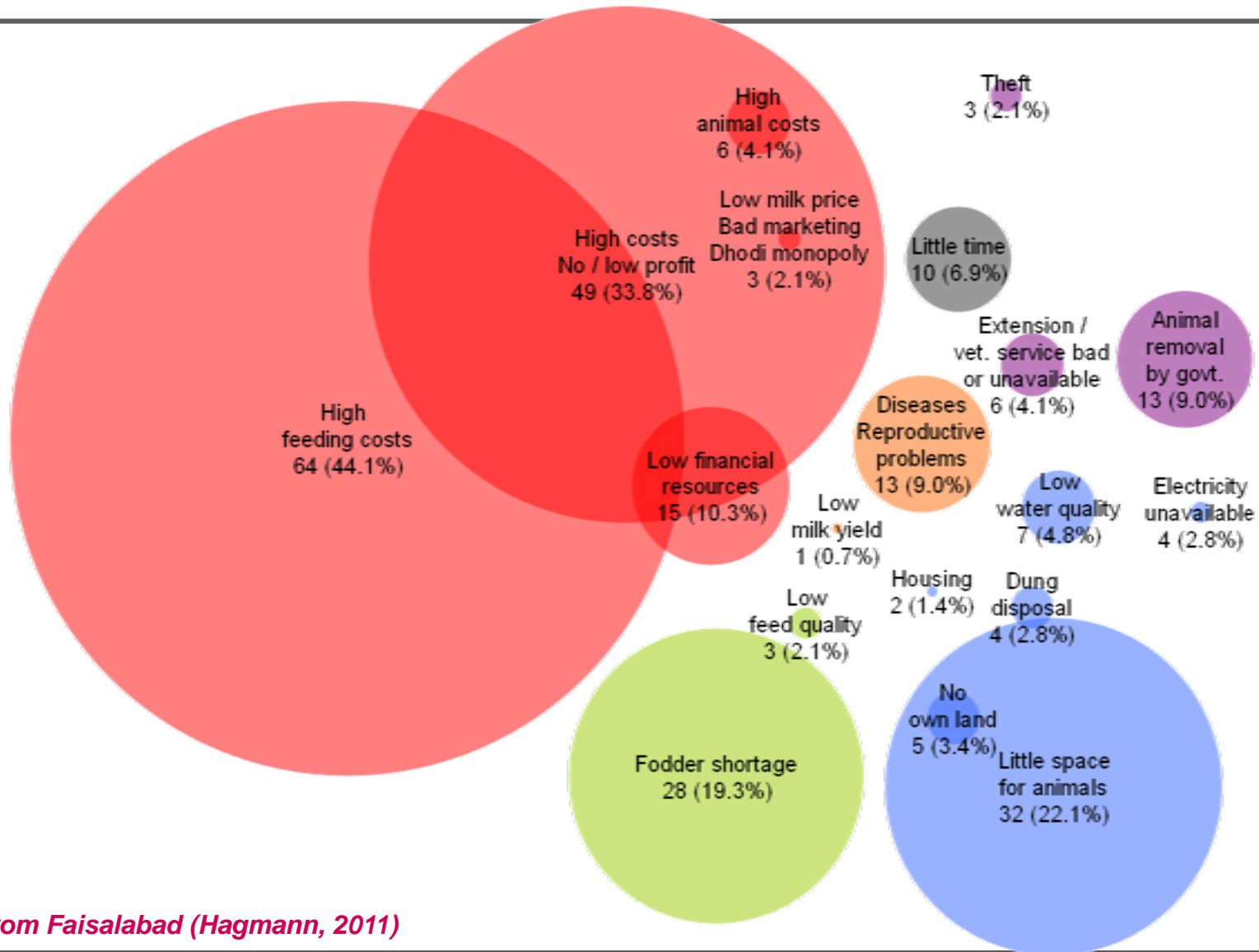
Sewage treatment with membrane stacks



(2) The urban dairy value chain



(2) The urban dairy value chain

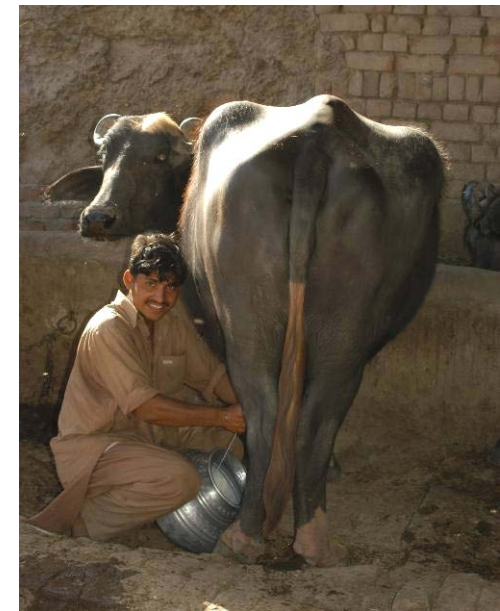


Data from Faisalabad (Hagmann, 2011)

(2) The urban dairy value chain



The urban dairy value chain is very important for supplying fresh milk as well as jobs around and within the cities.



Recommendations

Initiate dairy farmer cooperatives / producer associations to:

- harmonize milk production & quality
- rise competitiveness of small/medium farms
- secure adequate milk prices
- maintain jobs and improve income along the value chains

(2) The urban dairy value chain



Recommendations

- Investigate the usefulness of biogas digesters for (peri-)urban dairy households or cooperatives (of farmers or dung collectors)
- Better dung recycling to fields: regulations against dung waste and facilitation of fresh dung trade

(3) Rural-urban migrants – Returned migrants



Problems

- slum development
- no betterment of living conditions for migrants in town
- left-behind families

Recommendations

- dedicated investment in rural infrastructure
- credit schemes for small and medium size rural enterprises
- investigate the potential role of silvo-pastoral systems (Mexico) for Pakistan's rural areas
- establishment of women self-help groups for left-behind wives

(3) Domestic workers, unskilled female (migrant) labor

Problems

- very low wages
- irregular working hours
- unsafe working conditions
- abuse
- child labor



Recommendations

- establishment of an enforced legal framework for domestic worker with minimum wages, maximum working hours and prevention of abuse
- encouragement and support of women self-help groups for domestic workers

Thanks for an excellent guidance of our discussions !



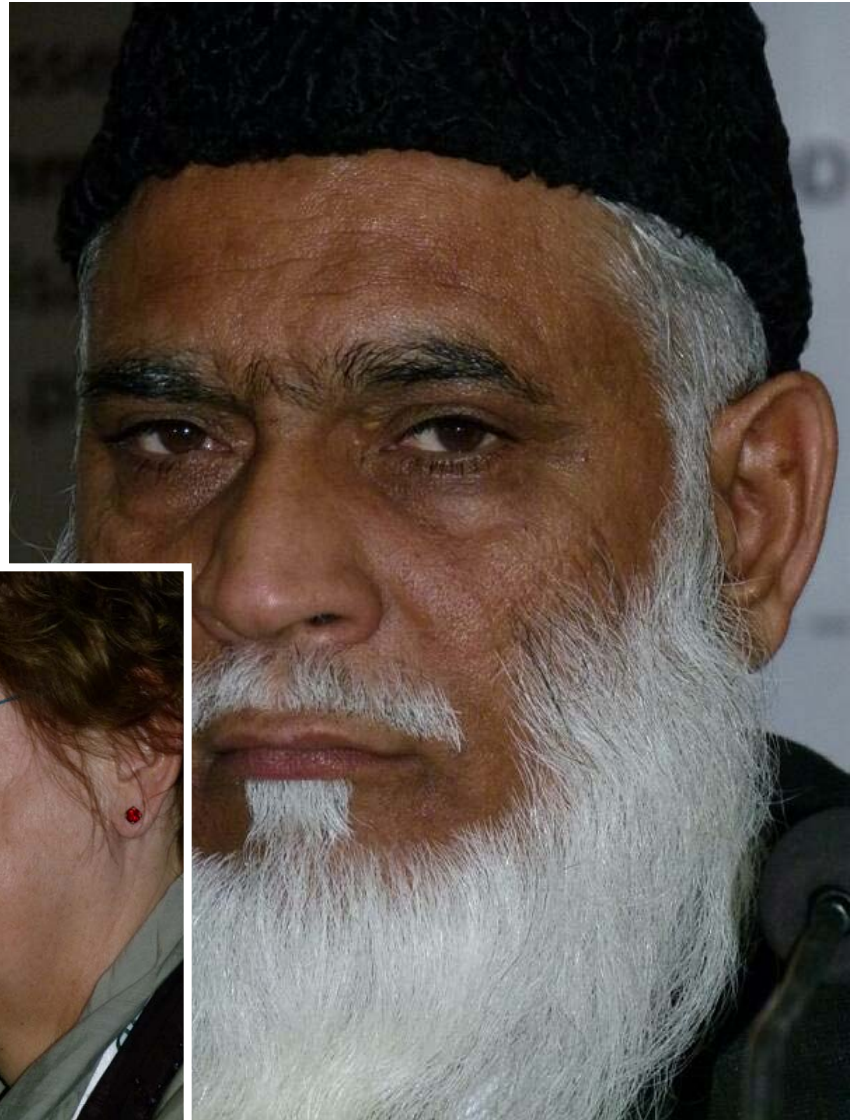
Thanks for great side events and social life



Thanks for a dedicated commitment to on-campus security!



Thanks for your engagement, patience and tolerance!



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