Furrows in the Desert
Agricultural development project north Turkana, Kenya

• Brit Olam – International Volunteering and Development, Israel
• Arava Center for Sustainable Development (ACSD), Israel
• Kibbutz Yotvata, Israel
• The Missionary Community Of Saint Paul the Apostle (MCSPA), Kenya, Spain
• KKL Jewish National Fund
Food insecurity is worst in the northern part of Turkana, which is **devoid of any agricultural infrastructure** for food production except for pastoralism.

**Former attempts** by aid organizations to establish an agricultural infrastructure in the area **have not been successful**.

Providing food and clean water at MCSPA nutritional centers and schools.
Unsatisfactory results owing to:

- the harsh environmental conditions
- The lack of know-how in developing agriculture in arid land
- the difficulty to bring expert agronomists and skilled manpower to the area on a long term basis
- The deep cultural gap between the herders way of life and farming way of life
- The lack of water, transportation, supply chain infrastructure and markets
Furrows In the Desert (FID)
CONSTRAINTS

• Know how in desert agriculture
• Water availability for drinking and farming
• Available suitable inputs
• Transforming nomads to farmers
• Lacking infrastructure-roads, electricity marketing facilities, communication
• Information regarding suitable crops and agrotechnology
• Alkaline soils and water, pH over 9, non percolating clay soils
• Lonely plots attracting insects, locusts, goats
• Devastating climate- draughts, high day and night temperatures, wind storms
Furrows in the Desert - Goals
• To introduce agriculture in Turkana as a means for:
  ▪ food production towards nutritious food security in the area
  ▪ income generating activities for the local population through the marketing of agricultural products, an engine for development
• To contribute to the local community resilience through achieving self subsistence as a foundation for new empowerment initiatives in the fields of health, education and further diversification
Furrows In the Desert – Objectives:
• To Develop, Demonstrate and train in 2 types of agriculture:
  ▪ subsistence agriculture supporting humans and animals
  ▪ market oriented agriculture
• To operate on both family scale and community (clusters) scale
• To support the development of agricultural based marketing activities
• To assure the sustainability of the project in the hands of local management
• To secure water resources and establish central water distribution systems for the development of farming clusters
• To encourage an intercultural dialogue between Israeli volunteers, local missionaries and the people of Turkana
Furrows in the Desert is a long term program combining the continuous activity of MCSPA in north Turkana with Israeli expertise in the field of arid-land agriculture.

The commitment is for a 2 years pilot stage followed by a 3 years implementation stage and a supervised follow-up for another 5 years.

Achievements to date and targets to end of 2016:

- Establishing a training, experimental and demonstration farm next to MCSPA missionary center in Lobur demonstrating 4 types of agricultural models. Completed July 2013.
Innovation & Sustainability

- Establishing a training experiment and demonstration farm next to MCSPA missionary center in Lobur demonstrating 4 types of agricultural models. Completed July 2013
- Training local Turkana men and women from different parts of North Turkana, for 5-6 months program, through 2-3 cycles of crop production. Graduation of 5th course on 22nd July 2015
Innovation & Sustainability

- We have established a professional team in Turkana, responsible for running the courses and providing ongoing guidance at the graduates’ individual farms:
  - Farm manager: long-term committed Israeli agronomist living on-site
  - Israeli trainers: alternating teams of Israeli volunteers with agricultural background on a continuous basis and for a long term stay of 6 to 12 months
  - Local Turkana: selected graduates that are suitable and are willing to stay at the training farm and become trainers and project leaders
  - Establishing local association to handle marketing issues

Completed 2015
Innovation & Sustainability

• Establishing new farms by the program graduates (completed 180 in 2015, targeting 350 by end of 2016):
  • The trainees commit to establish their own farms and train 2 other local workers each at the successful completion of their training
  • FID supports the graduates with an income for 1 year and a full Farmer’s Kit on loan that they can keep providing they fulfill their commitments to the project
  • The trainees are selected from locations where water for agriculture can be secured.
  • Regular visits to the new farms by FID professionals to provide guidance and further education as needed
  • Access to agricultural inputs by way of credit in kind. Currently available at the training farm to avoid supply delays. To be commercialized by locals based on demand
Innovation & Sustainability

• Supporting commercial development (by end of 2016):
  • Developing a credit system to allow farmers access to agricultural inputs
  • Facilitating access to local marketing avenues
  • Handing over the central training and demonstration farm to local management run by local trainers in agriculture
  • Facilitate local farming agreements to form farming clusters with a capacity to maintain a centralized water distribution system
Central Training, Research and Demonstration Farm

Endorsement of FID by the Kenyan president and the Israeli ambassador to Kenya, August 2012

Building the trainees living and learning facilities (back), installing the central water distribution system between the 2 boreholes, 20m³ water tanks tower, and the 70m³ cement tank, constructing the nursery and tree nursery net-houses and tables, converting the container to a storage room and installing a 15m long shade-
FID- Building Capacity Through Training

Training Curriculum
Compost preparation; Land preparation; Crop planning; Nursery; Irrigation – Drip irrigation; Plant protection; Weed control; Crop management; Post harvest, Cooking, Administration, Literacy
FID- Building Capacity Through Training
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Successful graduation of trainees 180 up to July 2015.
Fully operating training farm with a large insect proof nursery, a tree nursery, a commercial insect proof nethouse, 10 gravity-fed drip-irrigated open fields, a central water distribution system, 3 Limans, 1 earth pan, 2 large compost pits, a storage facility for agricultural inputs, and attached living and studying facilities for the trainees

Products are consumed locally. Surplus is sold to the missions and at the Lokitaung, Lodwar and Kaikor markets
Practicing 4 Agricultural Models

Four types of agricultural models are practiced and implemented for training, demonstration and research:

1. Subsistence to commercial agricultural plots
   - Family scale to a community cluster scale of several plots sharing a central water infrastructure
   - Growing in open field with or without a net-house over a growing area of 500-1000m² per farming unit
   - Gravity fed Family Drip irrigation Systems (FDS)
   - Crop selection according to:
     - nutritional value
     - suitability to the local climate, soil and water properties
     - water availability
     - marketing potential (transportability properties and economical parameters)
- **Plant growing plan:**
  - 4 crops a year out of 5 plant groups in 2 cycles
  - Legume: soy beans, peanuts, chickpeas, green gram, cowpeas
  - Solanaceae: tomatoes, eggplant, chilli
  - Cucurbitaceae: water melons, melons, cucumber, squash, pumpkin
  - Allium: onion, garlic
  - Others: sorghum, corn, okra, spinach, kale, beetroot, cassava
  - Selected verities of fruit trees: Moringa, Pomegranate, Dates

- **Seed and product protection**
  - Using the double container system for keeping seeds for next season planting or for sale when prices are high when a product is out of season
  - Produce low level processed products:
    - sealed clay pots for later consumption such as cooked okra or chickpeas in tomato juice covered by a thin layer of oil
    - Sun dried products such as tomatoes and chilli
2. Liman – diversion of floods runoff

- Cultivation of crops based on catchments of runoff water along the banks of dry riverbeds. Plots are irrigated by seasonal floods diverted by canals and retained by low earth dikes.
- To be used for: Food crops such as pearl millet, sorghum, water melons, chick peas, casava.
- North Turkana.
- Fodder: animal feed to bridge through drought years
  - Fruit trees: such as pomegranates, almonds, sapota moringa, adapted to arid conditions
- This agricultural method requires relatively small investment in infrastructure and maintenance and is suitable for implementation along many of the dry rivers cutting through the plains of North Turkana.
4. Central Farm for dates and fodder. With the participation of KKL-JNF we are upgrading the project toward commercial scale.

- Utilizing the alkali water of Lake Turkana.
- Dates will be intercropped by annual crops in order to provide income from the first year onward.
- The propagation of offshoots from the third year after planting will support future date plantations and demonstrate another potential source of income and food.
- Date crops are expected from the fifth year.
- Other saline/alkaline-water resisting crops will be intercropped such as pomegranates or sapota with fodder like sudan grass.
Thanks to all Israelis who overcome the harsh conditions and made this project a success.