

Living Lab of Luxor – Raised bed cultivation

i. Sugarcane farms

Under this scenario, the sugarcane farmers are the least affected. Raised bed cultivation is not used for perennial crops (sugarcane), that are the main activity of this farm type. However, there is a small change in the land allocation, where wheat gains some land over the maize cultivation. Additionally, small changes in the farm activities are evident compared to the baseline, with the largest being the nitrogen leaching. The income of the farmers is stable, with a small increase of 2.3%.

Land Use

Main crops	sugarcane (1,42 ha ~ 0% BAU), wheat (0,52 ha ~ +10,6% BAU), maize (0,1 ha ~ -33,3% BAU)
Total area	2,04 ha
Crop diversity	three crops

Farm activities

Pesticide use	0,68kg/ha (~ -2,9% BAU)
Water use	11100 m ³ /ha (~ -3,3% BAU)
Nitrogen leaching	43 Kg/ha (~ -4,9% BAU)

Economic

Annual income	995,3 EGP (~ +2,3% BAU)
variable costs	

ii. Livestock farms

Similarly to the sugarcane farm type, here there is no change in the land of sugarcane. However, the farm type increase its preference over cereal crops, reducing the land of fodder. Contrary to the previous farm type, water use has a noticeable decrease, close to 24%, with nitrogen leaching following it with 15%. Also, the use of phytosanitary products has a small decrease. Income has an increase, small close to 7,3% compared to the baseline.

Land Use

Main crops	sugarcane (0,04 ha ~ 0% BAU), wheat (0,43 ha ~ +10,3% BAU), maize (0,24 ha ~ +9,1% BAU) , clover (0,14 ha ~ -17,6% BAU), sorghum (0,13 ha ~ -18,8% BAU)
Total area	0,98 ha

Crop diversity	five crops
-----------------------	------------

Farm activities

Pesticide use	0,96 kg/ha (~ -4% BAU)
Water use	4321 m3/ha (~ -23,5% BAU)
Nitrogen leaching	27,3 Kg/ha (~ -15% BAU)

Economic

Annual income	810 EGP (~ +7,3% BAU)
variable costs	

iii. Diversified farms

In diversified farms, cereal crops are more favored than fodder. The largest increase is on maize, while wheat remains the dominant crop. On farm activities, this farm type has the highest decrease in water use, close to 36% due to this practice change. Nitrogen leaching has also a noticeable decrease, whereas the pesticide use is close to the same. Finally, the annual income of farmers has an increase of almost 21%. This is due to the decrease in cost and the reduction of yield variability of the crops.

Land Use

Main crops	wheat (0,46 ha ~ +4,5% BAU), maize (0,38 ha ~ +8,6% BAU) , clover (0,19 ha ~ -17,4% BAU), sorghum (0,08 ha ~ -20% BAU)
Total area	1,12 ha
Crop diversity	Four crops

Farm activities

Pesticide use	1,52 kg/ha (~ -3,2% BAU)
Water use	3956 m3/ha (~ -35,6% BAU)
Nitrogen leaching	28 Kg/ha (~ -9,9% BAU)

Economic

Annual income	621,3 EGP (~ +20,6% BAU)
variable costs	

iv. Cereal farms

Under this scenario, cereal farms, increase the production of wheat, over the other crops. Regarding farm activities, water use had the highest decrease of 19%, followed by a decrease in nitrogen leaching. Also, this farm type had the highest decrease of pesticide use which was 5,3%. As in diversified farmers, this type experienced also a substantial increase in its total farm income (13,6% compared to baseline). This can be attributed to their cereal-based cultivation pattern, that is heavily influenced by the construction of beds in their fields.

Main crops	wheat (0,48 ha ~ +4,3% BAU), maize (0,14 ha ~ 7,7% BAU), clover (0,01 ha ~ -75% BAU)
Total area	0,63 ha
Crop diversity	three crops

Farm activities

Pesticide use	4,28 kg/ha (~ -5,3% BAU)
Water use	4400 m ³ /ha (~ -19,1% BAU)
Nitrogen leaching	27,6 Kg/ha (~ -15% BAU)

Economic

Annual income	311,3 EGP (~ +13,6% BAU)
variable costs	