

**Supplementary Table S (1, 2, 3, 4)**  
**Fixed and variable cost for barely fodder production in greenhouse hydroponic  
and open field systems**

Table S1. 1-Fixed cost for hydroponic system for fodder production.

Total area of greenhouse (261 m <sup>2</sup> )							
Item No.	Item name	No. of units	Unit cost (USD)	Initial Cost (USD)	Expected life	Residual (USD)	Depreciation (USD)
1	Cement bags (50 kg/unit)	30	4.27	128	60	0	2.1
2	Gravel bags ( 27 m <sup>3</sup> /unit)	2	266.65	533.3	60	0	8.9
3	Two insulated partitions with poly-strene	10	134.4	1344	30	0	44.8
4	An insulated entrance	1	200	200	30	0	6.7
	Cooling system	1	933.3	933.3	10		93.3
	Greenhouse roof insulation	1	933.3	933.3	30	93.3	40
	Green fodder production system+ installation	2	24545.05	49090.1	60	2321.1	779.5
	Irrigation and washing system	1	725.3	725.3	10	0	72.5
<b>Owner's time (opportunity cost)</b>							533.3
<b>Land rent (opportunity cost)</b>							5.4
<b>Fixed cost/year</b>							1035.8

<b>Fixed cost/production period (77 days) including opportunity costs</b>	756.3
<b>Area of production (m<sup>2</sup>)</b>	190.96
<b>Fixed cost/m<sup>2</sup></b>	3.96

**Table S2.** 2-Variable cost for hydroponic system for fodder production.

<b>Item No.</b>	<b>Variable items</b>	<b>Quantity</b>	<b>Unit cost USD</b>	<b>Total Cost USD</b>
<b>1</b>	Barley seeds (kg)	86.19	0.3734	32.18
<b>2</b>	Filtered irrigation water (L)	700.00	0.2683	187.81
<b>3</b>	Electricity (kw hr <sup>-1</sup> )	3130.17	0.06	187.81
<b>4</b>	Antiseptic solution (Colorax) (L)	11.00	1.3327	14.66
<b>5</b>	Labors and tech (hour)	85.33	4	341.31
<b>7</b>	Marketing cost (Packing + Transport)			133.33
	Total (USD)			897.1
	Area of production (m <sup>2</sup> )			190.96
	Variable cost per m <sup>2</sup> (USD)			4.7
	Dry fodder yield per m <sup>2</sup> (kg)			41.8
	Price per kg (USD)			0.2

**Table S3.** 3-Fixed cost for traditional open field system.

<b>Item name</b>	<b>No. of units</b>	<b>Initial cost (USD)</b>	<b>Residual (USD)</b>	<b>Useful life</b>	<b>Fixed cost (USD)</b>
<b>Irrigation pump (2 H.P)</b>	1	86.7	3.5	7	11.88
<b>Timer</b>	1	80	0	6	13.33
<b>Solenoid valves</b>	10	20	0	6	3.33
<b>Filter (200 mesh)</b>	1	6.7	0	7	0.952
<b>Material for irrigation</b>	1	68.7	0	6	11.44

system net					
Owner's time (opportunity cost)					186.66
Land rent (opportunity cost)					10.56
Fixed cost/year					238.19
Fixed cost/production period (77 days) including opportunity costs					50.03
Area of production m <sup>2</sup>					108
Fixed cost/m <sup>2</sup>					0.45

**Table S4.** 4-Variable cost for traditional open field.

Item No.	Variable items	Quantity	Unit cost USD	Total Cost USD
1	Barley seeds (kg)	9.99	0.3734	3.73
2	Filtered irrigation water (L)	19.87	0.2683	5.33
3	Electricity (kw hr <sup>-1</sup> )	67.83	0.06	4.07
4	Labors and tech (hour)	15.01	1.3327	20.0
5	Fertilizers	3.333	4	13.33
6	Marketing cost (Packing + Transport)			8.00
	Total (USD)			54.46
	Area of production (m <sup>2</sup> )			108
	Variable cost per m <sup>2</sup> (USD)			0.48
	Dry fodder yield per m <sup>2</sup> (kg)			5.6
	Price per kg (USD)			0.2