

Supplementary Table S1. Average root depth for various summer and winter crops (in m)

Crops ID	Winter crop	Root depth, m	Crops ID	Summer crop	Root depth, m
1	Wheat	0.35	1	Maize	0.4
2	Long clover	0.2	2	Cotton	0.8
3	Barley	0.4	3	Onion	0.3
4	Sugar Beet	0.9	4	Tomato	0.5
5	Garlic	0.12	5	Other vegetable	0.3
6	Tomato	0.5	6	Sorghum	0.2
7	Other vegetable	0.3	7	Other crops	0.3
8	Onion	0.3	8	Rice	0.2
9	Other crops	0.3	9	Soybeans	0.5
10	Broad Bean	0.5	10	Peanuts	0.5
11	Lentil	0.6	11	Sunflower	0.8
12	Flax	1.2	12	Potatoes	0.5
13	Tahrish	0.5	13	Yellow Maize	0.4
14	Potatoes	0.5	14	Sesame	0.5

Sources:

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Supplementary Table S2. Annual Quantities of Fertilizers for Various Crops (Kg/hectare/year)

Crops ID	Winter crop	Nitrogen*, kg/ha	Phosphorus*, kg/ha
1	Wheat	234	52
2	Long clover	143	91
3	Barley	58.5	19.5
4	Sugar Beet	78	104
5	Garlic	143	52
6	Tomato	390	143
7	Other vegetable	325	279.5
8	Onion	188.5	52
9	Other crops	65	182
10	Broad Bean	98	250
11	Lentil	234	52
12	Flax	80	45
13	Tahrish	390	188.5
14	Potatoes	390	188.5
Crops ID	Summer crop	Nitrogen, kg/ha	Phosphorus, kg/ha
1	Maize	377	71.5
2	Cotton	221	71.5
3	Onion	188.5	52
4	Tomato	390	143
5	Other vegetable	325	279.5
6	Sorghum	416	91
7	Other crops	65	182
8	Rice	188.5	52
9	Soybeans	123.5	91
10	Peanuts	123.5	91
11	Potatoes	390	188.5
12	Yellow Maize	377	71.5
13	Sesame	46	10
14	Sunflower	416	91

*Annual quantities of fertilizers multiplied by 1.3

Sources:

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Supplementary Table S3. Annual Quantities of FYM for Various Crops (Kg/hectare/year)

Crops ID	Winter crop	FYM, kg/ha/year
1	Wheat	12,000
2	Long clover	25,000
3	Barley	12,000
4	Sugar Beet	21,000
5	Garlic	13,000
6	Tomato	22,000
7	Other vegetable	21,000
8	Onion	15,000
9	Other crops	12,000
10	Broad Bean	8,000
11	Lentil	10,000
12	Flax	20,000
13	Tahrish	21,000
14	Potatoes	21,000
Crops ID	Summer crop	FYM, kg/ha
1	Maize	8,000
2	Cotton	12,000
3	Onion	15,000
4	Tomato	22,000
5	Other vegetable	21,000
6	Sorghum	12,000
7	Other crops	12,000
8	Rice	12,000
9	Soybeans	16,000
10	Peanuts	16,000
11	Potatoes	21,000
12	Yellow Maize	8,000
13	Sesame	12,500
14	Sunflower	20,000

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