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**Table 13** Effect of conjunctive use of irrigation water and organic manure on soil total N balance(kg/ha)\* in the open field potato crop grown under drip fertigation (pooled over two years: 2004-05 and 2005-06).

Treatments	Initial N status	N added by OM & fertilizers	Total N status	N uptake by potato	Expected balance	Actual balance	Net gain(+) or loss(-)
<b>A. Irrigation regimes</b>							
I <sub>1</sub> – 60% ETo	1866	224	2090	225	1865	1735	-130
I <sub>2</sub> – 80% ETo	1866	224	2090	356	1734	1542	-192
<b>B. O M levels</b>							
M <sub>1</sub> – 12.5 t/ha	1866	243	2109	191	1918	1758	-160
M <sub>2</sub> – 25.0 t/ha	1866	305	2171	390	1781	1520	-261
<b>C. Mean</b>	1866	224	2090	291	1799	1639	-160

\* Data statistically not analyzed

ETo = Reference evapo-transpiration

O M = Organic manure

N = Nitrogen

**Table 14** Effect of conjunctive use of irrigation water and organic manure on soil available P balance(kg/ha) \* in the open field potato crop grown under drip fertigation (pooled over two years: 2004-05 and 2005-06).

Treatments	Initial P status	P added by OM & fertilizers	Total P status	P uptake by potato	Expected balance	Actual balance	Net gain(+) or loss(-)
<b>A. Irrigation regimes</b>							
I <sub>1</sub> – 60% ETo	60.7	217.5	278.2	37.4	240.8	97.7	-143.1
I <sub>2</sub> – 80% ETo	60.7	217.5	278.2	50.5	227.7	105.2	-122.5
<b>B. O M levels</b>							
M <sub>1</sub> – 12.5 t/ha	60.7	205.0	265.7	31.1	234.6	101.2	-133.4
M <sub>2</sub> – 25.0 t/ha	60.7	230.0	290.7	56.7	234.0	101.7	-132.3
<b>C. Mean</b>	60.7	217.5	278.2	43.9	234.3	101.4	-132.9

\* Data statistically not analyzed

ETo = Reference evapo-transpiration

O M = Organic manure

P = Phosphorus

**Table 15** Effect of conjunctive use of irrigation water and organic manure on soil available K balance(kg/ha)\* in the open field potato crop grown under drip fertigation (pooled over two years: 2004-05 and 2005-06).

Treatments	Initial K status	K added by OM & fertilizers	Total K status	K uptake by potato	Expected balance	Actual balance	Net gain(+) or loss(-)
<b>A. Irrigation regimes</b>							
I <sub>1</sub> – 60% ETo	140.1	224.0	364.1	316.4	47.7	133.3	+85.6
I <sub>2</sub> – 80% ETo	140.1	224.0	364.1	449.3	85.2	135.4	+50.2
<b>B. O M levels</b>							
M <sub>1</sub> – 12.5 t/ha	140.1	243.0	383.1	264.9	118.2	133.3	+15.1
M <sub>2</sub> – 25.0 t/ha	140.1	305.0	445.1	500.8	55.7	135.4	+79.7
<b>C. Mean</b>	140.1	224.0	364.1	382.9	18.8	134.3	+115.5

\* Data statistically not analyzed

ETo = Reference evapo-transpiration

O M = Organic manure

K = Potassium

**Table 3a : Chemical analysis of irrigation waters in Kuwait**

<b>Chemical analysis</b>	<b>Al Wafra</b>	<b>Al Abdali</b>	<b>Sulaibiya</b>	<b>Shegaya well</b>	<b>Sewage effluent</b>	<b>Sweet water</b>
• pH	7.3	7.8	7.6	7.5	7.4	7.7
• EC x 10 <sup>6</sup> – micromhos /cm	9300	6400	6600	4000	3400	1400
• TDS – ppm	5700	4470	4560	2800	2200	830
• Carbonates – CO <sub>3</sub> ppm	Nil	Nil	Nil	Nil	Nil	Nil
• Bicarbonates – HCO <sub>3</sub> ppm	122	146	171	171	488	12
• Chlorides– Cl ppm	74	727	461	461	470	163
• Sulphates– SO <sub>4</sub> ppm	1441	2078	1195	1195	528	387
• Calcium– Ca ppm	600	170	296	296	220	41
• Magnesium– Mg ppm	122	30	141	141	49	31
• Sodium– Na ppm	1196	1262	306	306	391	101
• Potassium– K ppm	31	12	6	6	12	-

**Table 3b : Chemical analysis of treated waste water (Tertiary/third stage)**

<b>Item</b>	<b>Value(range)</b>
1. pH	6.5-7.5
2. EC(Mmhos/cm)	1100-2200
3. TDS(mg/L)	800-1500

