Table (2): Plant height (cm), No. of green leaves/plant and flag leaf area (cm^2) as affected by some technological fertilizers and nitrogen fertilizer levels in 2021/2022 and 2022/2023 winter seasons and their combined

Characters / Treatments	Plant height (cm)			Number of green leaves/plant			Flag leaf area (cm^2)		
	First season 2021/2022	Second season 2022/2023	Combined	First season 2021/2022	Second season 2022/2023	Combined	First season 2021/2022	Second season 2022/2023	Combined
	A-Technological Fertilizers								
Control	93.84 d*	93.09 d	93.47 d	28.58 d	27.94 d	28.26 d	36.18 d	35.43 d	35.81 d
Bio.	100.9 c	99.26 c	100.1 c	31.77 c	31.02 c	31.40 c	39.20 c	38.30 c	38.75 c
liquid	107.2 a	104.9 a	106.1 a	34.91 a	34.31 a	34.61 a	42.73 a	41.89 a	42.31 a
Nano	106.0 b	103.4 b	104.7 b	34.73 b	33.92 b	34.33 b	42.21 b	41.42 b	41.82 b
LSD (0.05)	0.04	0.0193	0.0297	0.1482	0.1534	0.1508	0.0199	0.0164	0.0182
F .test	**	**	**	**	**	**	**	**	**
	B- Nitrogen Fertilizer Levels (kg /fed)								
0	93.90 e	93.06 e	93.48 e	27.84 e	26.84 e	27.34 e	37.50 e	36.49 e	36.99 e
40	97.42 d	96.11 d	96.77 d	30.42 d	29.95 d	30.19 d	38.45 d	37.51 d	37.98 d
60	102.9 c	99.85 c	101.4 c	32.41 c	31.69 c	32.05 c	40.06 c	39.29 c	39.68 c
80	106.9 b	104.5 b	105.7 b	35.55 b	34.86 b	35.21 b	41.26 b	40.53 b	40.90 b
100	108.8 a	107.3 a	108.1 a	36.27 a	35.64 a	35.96 a	43.14 a	42.48 a	42.81 a
LSD (0.05)	0.0447	0.0216	0.0332	0.1657	0.1715	0.1686	0.0223	0.0184	0.0204
F .test	**	**	**	**	**	**	**	**	**
			C- Interaction						
A*B (F .test)	**	**	**	**	**	**	**	**	**
LSD (0.05)	0.0895	0.0432	0.0664	0.3319	0.3435	0.3377	0.0446	0.0368	0.0407

* Means followed by Unlike Alphabet(s) within a treatment Column and /iod are Significantly Different DMRT (p=0.05).

Bio = (Cerialine, Phosphourine and Potassiummag)., **Liquid =** [Compound fertilizer in the liquid form (N 20%, P_2O_5 20%, K_2 o 20%, Fe 0.3%, Cu 0.5%, , Mg 5%, Zn 0.3%, Mn 0.3%, S 1%, B 0.01% and Mo 0.01%)]**., Nano =** (N, P and K by /cent age 10: 10: 10).

Table (2-a): The interaction effect between Nitrogen levels and technological fertilizers on plant height (cm) in the combined of both growing seasons

Technological fertilizers	Nitrogen levels (kg /fed)				
	0	**40**	**60**	**80**	**100**
Control	D 88.91 d*	C 90.52 d	B 94.09 c	B 94.95 c	A 98.87 c
Bio.	E 91.06 c	D 95.65 c	C 99.68 b	B 106.1 b	A 108.1 b
liquid	E 98.05 a	D 101.0 a	C 106.8 a	B 111.3 a	A 112.9 a
Nano	E 95.92 b	D 99.91 b	C 105.1 ab	B 110.4 ab	A 112.3 a

* Means followed by Unlike Alphabet(s) within a treatment Column and /iod are Significantly Different DMRT (P=0.05).

Table (2-b): The interaction effect between Nitrogen levels and technological fertilizers on Number of green leaves/plant in the combined of both growing seasons

Technological fertilizers	Nitrogen levels (kg /fed)				
	0	**40**	**60**	**80**	**100**
Control	D 24.13 c*	C 26.37 c	B 27.84 c	A 31.11 c	A 31.85 c
Bio.	E 26.10 b	D 29.10 b	C 32.39 b	B 34.29 b	A 35.11 b
liquid	D 29.68 a	C 32.69 a	B 34.10 a	A 38.05 a	A 38.53 a
Nano	E 29.46 a	D 32.59 a	C 33.87 ab	B 37.36 ab	A 38.34 a

* Means followed by Unlike Alphabet(s) within a treatment Column and /iod are Significantly Different DMRT (P=0.05).

Characters	Number of grains /spike	Number of spikelets/spike	1000-grain weight (g)

	First season 2021/2022	Second season 2022/2023	Combined	First season 2021/2022	Second season 2022/2023	Combined	First season 2021/2022	Second season 2022/2023	Combined
	A-Technological Fertilizers								
Control	65.74 d*	64.46 d	65.10 d	19.22 c	18.64 c	18.93 d	51.55 c	50.12 d	50.84 d
Bio.	72.31 c	71.07 c	71.69 c	19.75 b	19.50 b	19.63 c	54.49 b	52.57 c	53.53 c
liquid	78.48 a	77.11 a	77.80 a	20.88 a	20.61 a	20.75 a	56.06 a	54.04 a	55.05 a
Nano	77.17 b	76.01 b	76.59 b	20.59 a	20.29 a	20.44 b	54.91 b	53.45 b	54.18 b
LSD (0.05)	0.7383	0.4113	0.5748	0.3793	0.3442	0.3618	0.9669	0.4583	0.7126
F .test	**	**	**	**	**	**	**	**	**
	B- Nitrogen Fertilizer Levels (kg /fed)								
0	64.56 e	63.83 e	64.20 e	18.67 e	18.42 e	18.55 e	50.65 e	48.32 e	49.49 e
40	69.44 d	68.25 d	68.85 d	19.35 d	18.94 d	19.15 d	52.41 d	50.35 d	51.38 d
60	73.94 c	72.24 c	73.09 c	20.23 c	19.89 c	20.06 c	54.22 c	52.35 c	53.29 c
80	78.09 b	76.72 b	77.41 b	20.81 b	20.55 b	20.68 b	55.73 b	54.98 b	55.36 b
100	81.11 a	79.77 a	80.44 a	21.49 a	21.01 a	21.25 a	58.25 a	56.74 a	57.50 a
LSD (0.05)	0.8254	0.4598	0.6426	0.4241	0.3849	0.4045	1.0811	0.5124	0.7968
F .test	**	**	**	**	**	**	**	**	**
			C- Interaction						
A*B (F .test)	**	**	**	**	**	**	**	**	**
LSD (0.05)	1.6534	0.9211	1.2873	0.8495	0.7709	0.8102	2.1654	1.0264	1.5959

Table (3): No. of grains/spike, No. of spikelets/spike and 1000-grain weight (g) as affected by some technological fertilizers and nitrogen fertilizer levels in 2021/2022 and 2022/2023 winter seasons and their combined

* Means followed by Unlike Alphabet(s) within a treatment Column and /iod are Significantly Different DMRT (P=0.05).
Bio = (Cerialine, Phosphourine and Potassiummag).
Liquid = [Compound fertilizer in the liquid form (N 20%, P_2O_5 20%, K_2 o 20%, Fe 0.3%, Cu 0.5%, Mg 5%, Zn 0.3%, Mn 0.3%, S 1%, B 0.01% and Mo 0.01%)]., **Nano =** (N, P and K by /cent age 10: 10: 10).

Table (4): Biological yield (ton /fed) and Harvest index (%) as affected by some

technological fertilizers and nitrogen fertilizer levels in 2021/2022 and 2022/2023 winter seasons and their combined

Characters / Treatments	Biological yield (ton /fed)			Harvest index (%)		
	First season 2021/2022	Second season 2022/2023	Combined	First season 2021/2022	Second season 2022/2023	Combined
A-Technological Fertilizers						
Control	6.767 d*	6.449 d	6.608 d	33.02 d	33.38 d	33.20 d
Bio.	7.155 c	6.946 c	7.051 c	35.48 c	35.76 c	35.62 c
liquid	7.952 a	7.387 a	7.670 a	37.06 a	38.18 a	37.62 a
Nano	7.309 b	7.054 b	7.182 b	36.14 b	36.31 b	36.23 b
LSD (0.05)	0.0134	0.0064	0.0099	0.0663	0.0368	0.0516
F .test	**	**	**	**	**	**
B- Nitrogen Fertilizer Levels (kg /fed)						
0	5.872 e	5.634 e	5.753 e	33.01 e	33.41 e	33.21
40	6.857 d	6.319 d	6.588 d	34.18 d	35.42 d	34.76 d
60	7.468 c	7.099 c	7.284 c	35.93 c	36.40 c	36.17 c
80	8.036 b	7.726 b	7.881 b	37.11 a	37.13 b	37.12 a
100	8.248 a	8.019 a	8.134 a	36.98 b	37.18 a	37.08 b
LSD (0.05)	0.015	0.0071	0.0111	0.0742	0.0412	0.0577
F .test	**	**	**	**	**	**
C- Interaction						
A*B (F .test)	**	**	**	**	**	**
LSD (0.05)	0.0301	0.0143	0.0222	0.1486	0.0824	0.1155

* Means followed by Unlike Alphabet(s) within a treatment Column and /iod are Significantly Different DMRT (P=0.05).
Bio = (Cerialine, Phosphourine and Potassiummag)., **Liquid =** [Compound fertilizer in the liquid form (N 20%, P_2O_5 20%, K_2 o 20%, Fe 0.3%, Cu 0.5%, Mg 5%, Zn 0.3%, Mn 0.3%, S 1%, B 0.01% and Mo 0.01%)].
Nano = (N, P and K by /cent age 10: 10: 10).

Table (4-a): The interaction effect between Nitrogen levels and technological fertilizers on

biological yield (ton /fed) in the combined of both growing seasons

Technological fertilizers	Nitrogen levels (kg /fed)				
	0	**40**	**60**	**80**	**100**
Control	D 4.882 c*	C 5.872 c	B 6.832 b	A 7.563 c	A 7.893 c
Bio.	D 5.774 b	C 6.563 b	B 7.214 ab	A 7.733 b	A 7.971 b
liquid	D 6.303 a	C 7.272 a	B 7.855 a	A 8.335 a	A 8.583 a
Nano	E 6.053 ab	D 6.645 b	C 7.232 ab	B 7.892 b	A 8.088 ab

* Means followed by Unlike Alphabet(s) within a treatment Column and /iod are Significantly Different DMRT (P=0.05).

Table (4-b): The interaction effect between Nitrogen levels and technological fertilizers on harvest index (%) in the combined of both growing seasons

Technological fertilizers	Nitrogen levels (kg /fed)				
	0	**40**	**60**	**80**	**100**
Control	D 26.47 c*	C 32.43 c	B 34.10 c	A 36.49 b	A 36.52 ab
Bio.	B 34.39 b	B 34.58 b	A 36.18 b	A 36.41 b	A 36.54 ab
liquid	C 36.30 a	B 37.29 a	A 38.14 a	A 38.41 a	B 37.99 a
Nano	D 35.69 ab	C 34.73 b	B 36.25 b	A 37.19 ab	A 37.26 a

* Means followed by Unlike Alphabet(s) within a treatment Column and /iod are Significantly Different DMRT (P=0.05),

Bio = (Cerialine, Phosphourine and Potassiummag), **Liquid =** [Compound fertilizer in the liquid form (N 20%, P_2O_5 20%, K_2 o 20%, Fe 0.3%, Cu 0.5%, Mg 5%, Zn 0.3%, Mn 0.3%, S 1%, B 0.01% and Mo 0.01%)], **Nano =** (N, P and K by /cent age 10: 10: 10).

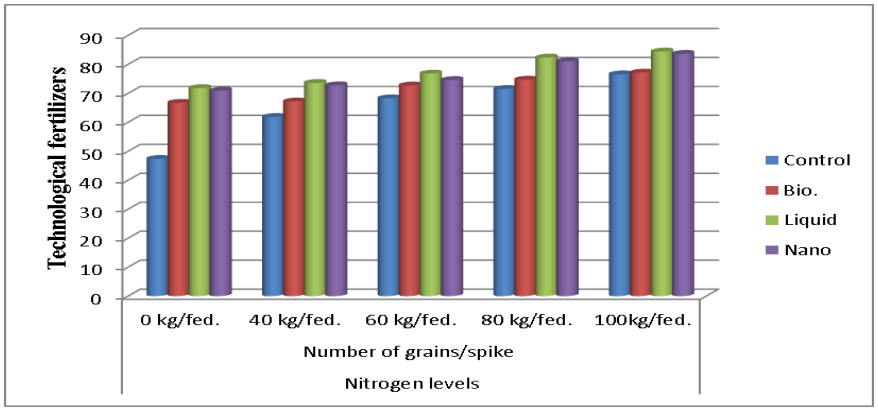

Fig. (3-a): Interaction between nitrogen fertilizer levels and technological fertilizers on Number of grains /spike

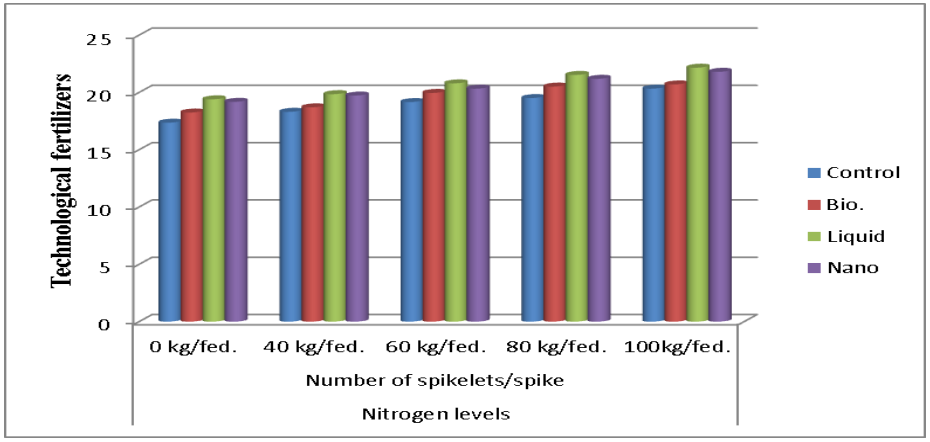

Fig. (3-b): Interaction between nitrogen fertilizer levels and technological fertilizers on Number of spikelets/spike

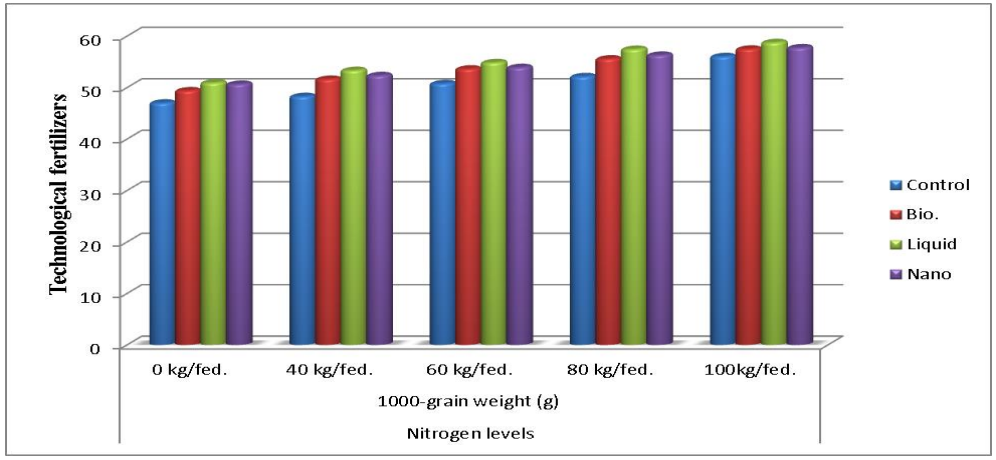

Fig. (3-c): Interaction between nitrogen fertilizer levels and technological fertilizers on 1000-grain weight (g)