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Importance of soil sampling and result interpretation for the farmers

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NEAR EAST AND NORTH AFRICAN SOIL LABORATORY NETWORK

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Importance of soil sampling for proper soil Management

- To insure and to maintain the soil fertility status for better production and sustainability for the next generation.

- Conduct land and soil classification according to used classification systems (soil classification, land capability, land suitability……etc .

Soil samplings fertility status

- Compost soil samples are the main sample used to ensure that the sample is represents the target field or the tested soil.
- Samples must taken randomly or in set pattern to ensure statistically representative sample is collected as we are collecting small amount of soil to represent a large area.

- Each representative sample consist of 5 – 6 soil samples, mixed together to get a representative sample

- The representative soil sample is labled and send directly to laboratory.

Depth of soil samples

- In general and to monitor soil fertility under vegetable farms, one depth 0 – 30 cm is the main depth used to take soil sample because more than 90% of the roots are located under this depth.
- But in some cases two depths are preferable, so another soil depth from 30 – 60 cm will give a clear picture of soil fertility under specific farm condition.
- In case of soil sampling under orchards, the depth of soil sampling could reach 90 cm and it divided for 3 soil depths

Tool of soil samplings

- Soil Auger
- Shavel
- Soil containers

Main requested parameters for soil managements

- All soil physical, chemical and biological Parameters are very important to be tested and monitored periodically.

- But for monitoring the soil fertility and the crop production, macro and micro elements are the most important parameters should tested in addition to pH, EC, OM.
- Physical properties such as texture, bulk density are also important to under stand the soil, water and plant relation ship.

Timing and frequently of soil samplings

- Time of soil samples are quit important to ensure that the soil conditions and fertility is ready for planting the new crop season,
- So soil sampling before the season in order to set the appropriate fertilization program and determine fertilizer recommendations is the most important issue
- The second soil sampling used to be during the crop season to monitor the elements to give secondary fertilizer recomendations

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نتائج فحص عينات تربة

.Sample No	PH	O.M %	EC dS/m	CO3 ppm	HCO3 ppm	CL- ppm	Na ppm	K ppm	Ca meq./L	NO3 ppm	P2O5 ppm	Mg+Ca Meq/l
1 نور ابو الرب عنب قباطية	6.56	1.52	2.9	Nil	274.5	**212.7**	190	58	35	43.5	7.9	55
نور ابو الرب 2 عنب قباطية	6.85	1.49	1.2	Nil	250.1	**567.2**	86	30	10.5	18.3	6.48	20
3 جميل براغثة خيار عرابة	6.78	1.4	5.0	Nil	335.5	**992.6**	235	17	70	41.3	5.98	95
4 زياد احمد عرابة زيتون	7.78	1.2	0.3	Nil	237.9	**602.7**	37	5	4	6.4	3.13	7.5

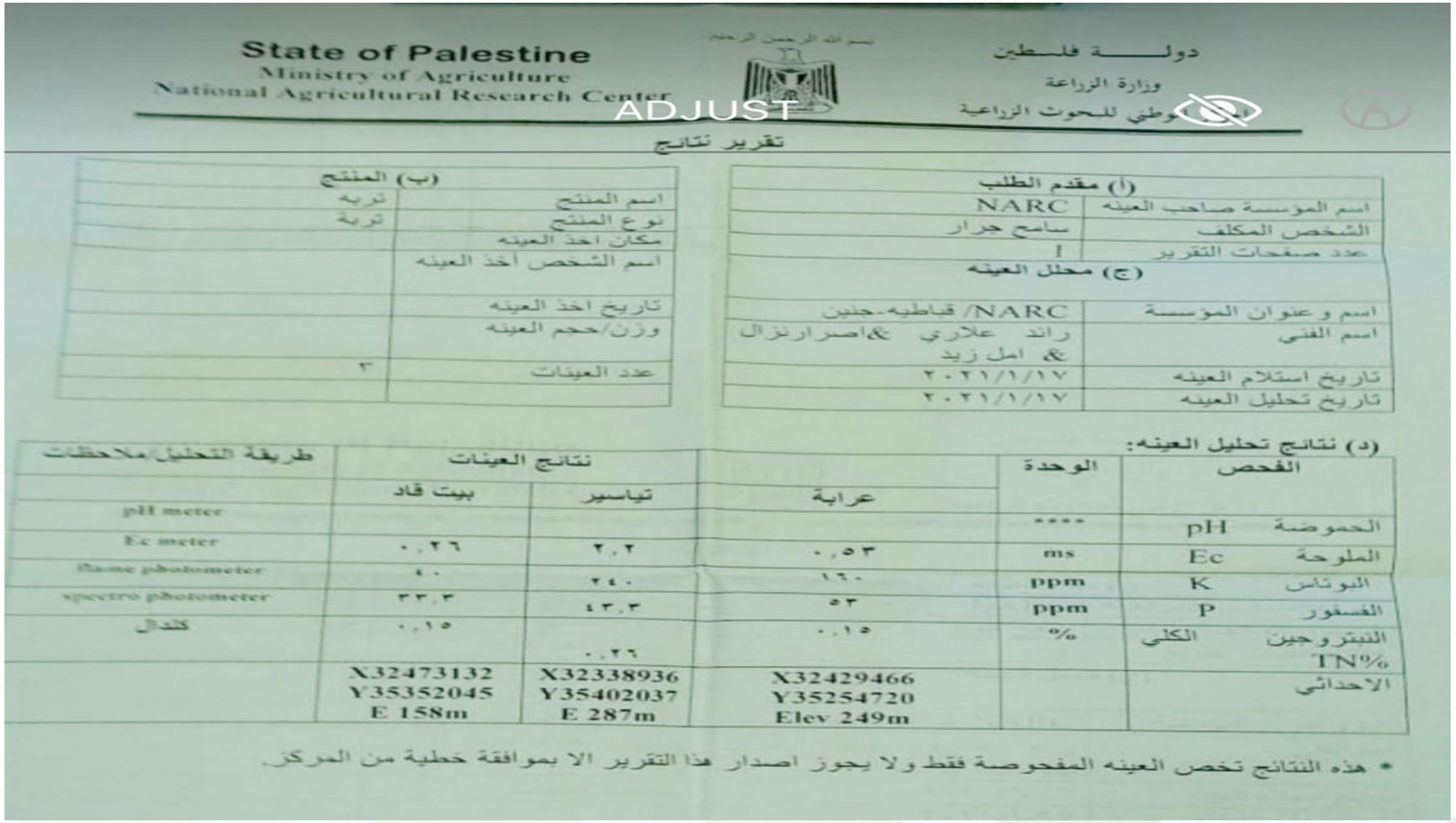
مع الاحترام،

رئيس قسم التربة

نهى القدومي

مدير دائرة
المختبرات
م. عبد الرحمن
الطيباوي

Samplings results and reporting



State of Palestine
Ministry of Agriculture
National Agricultural Research Center

دولـــــة فلسطين
وزارة الزراعة
المركز الوطني للبحوث الزراعية

ADJUST

تقرير نتائج

(أ) مقدم الطلب	
اسم المؤسسة صاحب العينه	NARC
الشخص المكلف	سامح جرار
عدد صفحات التقرير	١

(ب) المنتج	
اسم المنتج	تربه
نوع المنتج	تربة
مكان اخذ العينه	
اسم الشخص أخذ العينه	
تاريخ اخذ العينه	
وزن/حجم العينه	
عدد العينات	٣

(ج) محلل العينه	
اسم وعنوان المؤسسة	NARC/ قباطيه-جنين
اسم الفني	راند علاري &اصرارنزال & امل زيد
تاريخ استلام العينه	٢٠٢١/١/١٧
تاريخ تحليل العينه	٢٠٢١/١/١٧

(د) نتائج تحليل العينه:

الفحص		الوحدة	عرابة	نتائج العينات: تياسير	نتائج العينات: بيت قاد	طريقة التحليل/ملاحظات
الحموضة	pH	****				pH meter
الملوحة	Ec	ms	٠,٥٣	٢,٢	٠,٢٦	Ec meter
البوتاس	K	ppm	١٦٠	٢٤٠	٤٠	flame photometer
الفسفور	P	ppm	٥٣	٤٣,٣	٣٣,٣	spectro photometer
النيتروجين	الكلي TN%	%	٠,١٥	٠,٢٦	٠,١٥	كلدال
الاحداثي			X32429466 Y35254720 Elev 249m	X32338936 Y35402037 E 287m	X32473132 Y35352045 E 158m	

* هذه النتائج تخص العينه المفحوصة فقط ولا يجوز اصدار هذا التقرير الا بموافقة خطية من المركز.

Interpretation of the results

- Generally, In Palestine, we used Icarda soil analysis manual for interpretation the soil results especially for nutrient contents and soil organic mater, because the of same soil conditions and soil forming factors.

Appendix 9. Generalized Guidelines for Interpretation of Soil Analysis Data

Nutrient /Organic Matter	Soil Test	Low	Marginal	Adequate
		---------- % ----------		
Organic matter	Walkley- Black	<0.86%	0.86 – 1.29%	>1.29
		----------ppm----------		
Nitrate	AB-DTPA	<11	11 – 20	>20
Phosphate	$NaHCO_3$	<8	8 – 15	>15
	AB-DTPA	<4	4 – 7	>7
Potassium	NH_4OAc	<100	100-150	>150
	AB-DTPA	<60	60 – 120	>120
Zinc	DTPA	<0.5	0.5 – 1.0	>1.0
	AB-DTPA	<1.0	1.0 – 1.5	>1.5
Copper	DTPA	<0.2	0.2 – 0.5	>0.5
	AB-DTPA	<0.2		>0.5
Iron	DTPA	<4.5		>4.5
	AB-DTPA	<2.0	2.1 – 4.0	>4.0
Manganese	DTPA	<1.0	1.0 – 2.0	>2.0
	AB-DTPA	<1.8		>1.8
Boron	Hot water	<0.5	0.5 – 1.0	>1.0
	HCl	<0.45	0.45 – 1.0	>1.0

DTPA= diethylene triamine pentoacetric acid. AB = ammonium bicarbonate.

$NaHCO_3$ = Sodium bicarbonate.

Sources: FAO (1980); Soltanpour (1985); Ludwick (1995); Martens and Lindsay (1990); Johnson and Fixen (1990); Soil and Plant Analysis Council (1992); Matar *et al.* (1988).

- For salinity monitoring we usually we use USDA salinity classification

Salinity level	Degree of crops sensitivity	Electro-conductivity of soil saturated extract ECe at t = 25°C (dS/m)
non saline	very sensitive crops	0–2
low salinity	sensitive crops	2–4
mild salinity	mildly sensitive crops	4–8
high salinity	mildly resistant crops	8–16
severe salinity	resistant crops	>16

FAO (USDA) classification used for soil salinity assessment.

Recommendations for the farmers

- Set the amount of chemical fertilizers mainly (N,P K) and organic matter based on soil results especially during the preparation of the land for the new crop season.
- Improving soil physical properties to increase the leaching in irrigated area.
- Considering the leaching fraction in irrigation scheduling depending on salinity concentration.
- Reducing the chemical fertilizers and increasing the organic one.

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Thank you

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