Kurdistan Regional Government
Ministry of Planning
Kurdistan Region Statistics Office

Summer Crops agricultural report

Planting year 2013

Agriculture statistics department

October 2014

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Ministry of Planning/ Kurdistan Region Statistics Office
Suggested Citation:
Kurdistan Region Statistics Office, 2014, agriculture department*, Summer Crops agriculture report planting year 2013. Erbil, Kurdistan* Region.
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ID number 32

Preface

As a main source of providing food and its role in some industrial sectors, agriculture has always been concern of human being and countries look at it as of the most important infrastructural sectors of economy.

Agriculture confronted many problems due to war and economic restriction that our country faced during the last years. Erosion, inadequate irrigation project, lack of agricultural equipment and need for fertilizer and qualified seed supply as well as inappropriate policy that had been constantly imposed by previous regimes towards arable lands and construction are the factors that had directly or indirectly faded the agricultural sector. Therefore, rapid steps must be taken to implement a scientific plan to improve the agriculture and abilities in this field by rebuilding villages, and providing farmers with modern agricultural facilities to meet their problems.

Geographical location of Kurdistan made it an appropriate place for agriculture in regard to weather, fertile land (about 6.6 million donums), high level of precipitation compared to the center and south of Iraq, having five big water source like, Khabor river, big confluence, small confluence, Sirwan river, and Awa Spi river that annually supply 29.77 billion m^3 water on average, in addition to 3662 springs and 68 soil dams which have capacity of storing 14 million m^3 water. Then, through a good and scientific plan we can take optimal use of this location and expand agriculture sector in Kurdistan Region.

Serwan.M. Mohyaddin
President of KRSO

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Introduction

Kurdistan Region Statistics Office (KRSO) as the official institution that carries out surveys to collect information on different fields in Kurdistan Region and agriculture sector is one of them where the survey teams visit the cultivated lands in order to collect agricultural information in accordance with a pre-designed program.

The summer crops survey is an annual survey in which different information concerned summer crops directly collected through visiting all cultivated lands. Then, the collected data will pass data process (entry, verifying, analyzing…) and finally presented in a report in order to provide new data and indicators on this field to manifest the real situation of agriculture sector in Kurdistan Region.

Objectives

The aim of the summer crops survey 2013 is to provide agriculture ministry and water resource, research centers, and relevant people who concern with agricultural data with evidence based information on agriculture and real situation of farmers in order to make a substantial plan to improve the agriculture sector and farmers' economics condition.

We can make the objective of this survey clearer through the following two examples:

1. Facilitation through building a modern watering system. Data shows that many farmers (41%) use streams for watering purpose which mostly need to be concreted.
2. By revealing the cost difference in different geographical places, a scientific study can be done on the cost of all agriculture stages including plowing, land preparation, pesticide application, cleaning, irrigation, fertilizing, and reaping. Data shows that reaping per donum area is the most costly stage that recorded about 27% of the total cost for summer crops production in KRG.

Advantages

Above, we talked about how data and information can be used as a tool to make a scientific plan in solving the problems. And now we are going to talk about the advantage of this survey through manifesting some basic indicators:

1. Planted area for summer crops 2013 at the level of District and Sub-district,
2. Entire yield from one donum of summer planted area
3. Summer crops production size
4. The expense of planting one donum area for summer crops which includes:
    - The expense for one donum of planted area at the level of District,
    - The expense by the type of crops in one donum planted area.
5. The rate of percentage difference between planting time 2012 and 2013 in term of production, yield, planted area and the number of farmers,
6. Number of farmers who participated in planting summer crops at the level of villages,
7. The price of selling harvests by producers and the cost of production transferring.
8. The most widely water source used by farmer for irrigation.

Methodology

Process of conducting the survey

Summer crops survey is a comprehensive seasonal survey. It is done during September and October every year. Doing the survey, the field teams visit all villages over Kurdistan Region without exception in which the enumerators directly ask farmers to get information. In the case of farmers' absence, the questions would be directed to farmer's brother or somebody close to him.

Duration of the survey

The survey was done during 45 working days started on October 28, 2013 and the field work ended on December 15, 2013.

Teams

The number of teams participated in this survey was 33 teams where, 9 teams in Erbil, 14 in Suleimania, 7 in Duhok and 3 in Garmian administration were involved in addition to the field and center supervisors from statistics directorates and KRSO.

Data analysis

After the end of the field work and data collection, the forms get back to the Governorates' directorate to pass data entry process in a database that has been already made by KRSO staff for this purpose. After data entry, the agriculture department would manage, list and verify data and prepare data to pass the analyzing stage. Finally, the results would be introduced in the form of tables and figures as a report.

Questionnaire

The survey questionnaire consists of two main sections:

Section 1: it compromises of the name and second name of the farmer, the type of the corps and the land area at the level of Kurdistan Region's villages.

Section 2: it presents the information on all harvests concern with cost, yield, and watering system that used in villages.

Formula used

The formulas used in analysis

1. $Production = \frac{(\text{planted area} * \text{total yield})}{1000}$
2. $planted\ area = \text{total planted area}$
3. $Yield\ 1 = Total\ Yield$
4. $Yield\ 2 = \frac{\text{Production}}{\text{Planted Area}} * 1000$
5. $Rate\ Difference\ = \frac{\text{Production in 2013} - \text{Production in 2012}}{\text{Production in 2012}} * 100$

Note: after calculating the total yield (yield 1), the equation of yield 2 has been used to calculate the yield at the level of districts.

Measurement

The following measurement units have been used to calculate the production, land area, and yield of summer crops:

1. Ton (1000 kg): used to measuring the production of crops
2. Donum (2500m^2): used to measure the land area
3. Kilogram: used to measure the crop yield

And Iraqi Dinar (ID) has been used to measure the cost per unit area (one donum) of land cultivation.

Results

1. The number of villages and farmers

The number of villages in which summer crops planted and the number of farmers who involved in planting summer crops in addition to the involved labor force and planted area has been represented in tables at the level of sub- district.

1.1 The number of villages

According to the results, the total number of villages is 5605 villages in Kurdistan Region of which only 2510 villages participated in planting summer crops in planting year 2013 that comprises 45% of the Kurdistan Region's villages.

Distribution of villages over governorates: among sum 1633 villages across Erbil governorates, 630 involved in planting summer crops during growing season 2013 that includes 39% of the total villages in this governorate; In Sulaimani governorate, 1025 (49%) out of 2079 villages were cultivated; Duhok governorate had a total number of 1441 villages where, 775 (54%) of them were cultivated in growing season 2013; in Garmian administration, the rate of cultivated villages is 18%, that is 80 villages out of 452 villages.

1.2 The number of farmers

According to the results of summer crops survey 2012, a total number of 24416 farmers planted their land in Kurdistan Region (KR). This number decreased to 23160 farmers in 2013 with a decrease of 5% at the level of KR. In Erbil governorate, the number of farmers was 6046 in 2013 and reached 5085 in 2013 with a decreasing rate at 16%. Sulaimani governorate recorded 11602 farmers for 2012 and 11385 farmers for 2013 with a decreasing rate at 1%. Duhok governorate had a record of 6521 farmers for 2012 with a decreasing rate of 8% it reached 5981 farmers in 2013. Despite decreasing in the number of farmers in these three governorates, Garmian administration had registered a significant increasing rate of 189%. A record of 247 farmers registered in Garmian in 2012 while this number highly increased and reached 709 in 2013.

Table 1: No. villages and summer crops farmers in Erbil governorate 2013

district	Sub-district	No. villages	No. farmers	Planted area
Khabat	Dara Shakran	14	48	819
	Rzgari	7	35	754
	Kawergosk	10	199	4283
	Khabat center	3	79	492
Dashti Hawler	Darato	7	22	1079
	Qgoshtapa	49	340	7029
	Kasnazan	9	100	1240
	Dashti Hawler center	1	6	150
Rawandoz	Rawandoz center	15	76	75
	Warte	18	221	386
Soran	Khalifan	31	185	595
	Diana	9	68	210
	Sidakan	62	471	1938
Shaqlawa	Baserma	12	33	90
	Balisan	13	172	238
	Salahaddin	1	1	6
	Shaqlawa center	2	2	3
	Harir	24	129	1437
	Hiran	2	13	14
Choman	Hajiomaran	20	268	1891
	Smilan	38	605	1724
	Galala	70	87	227
	Qgasre	15	155	284
	Choman center	21	207	712
Koya	Taqgtaqg	13	141	689
	Sktan	3	23	161
	Segerdkan	7	172	1677
	Shoresh	21	128	1149
	Koya center	20	125	568
	Ashti	11	72	313

Continue of table 1

district	Sub-district	No. villages	No. farmers	Planted area
Mergasor	Barzan	5	35	137
	Piran	7	17	17
	Sherwan Mazen	5	18	62
	Gorato	13	61	142
	Mazne	17	104	467
Erbil center	Baherka	13	76	1206
	Shamamek	44	591	10291

Table 2: No. villages and summer crops farmers in Sulaimani governorate 2013

district	Sub-district	No. villages	No. farmers	Planted area
Pshdar	Zharawa	16	227	955
	Nawdasht	36	544	897
	Pshdar center	28	211	1594
	Hero	11	117	298
	Halsho	28	265	527
	Isewa	9	162	173
Penjwen	Garmek	42	716	4797
	Nalparez	21	138	383
	Penjwe center	31	583	6246
Chamchamal	Takya	6	17	246
	Takyai Jabari	3	18	28
	Sangaw	25	108	245
	Shoresh	3	14	41
	Qgader Karam	10	51	68
	Chamchamal center	2	18	70
	Agjalar	25	381	1601
Darbandikhan	Bawakhosh	4	10	62
	Darbandikhan center	14	223	1254

Continue of table 2

district	Sub-district	No. villages	No. farmers	**Planted area**
Dokan	Bengerd	23	309	4260
	Piramagron	41	485	4454
	Khdran	17	111	532
	Khlakan	16	175	449
	Sordash	21	127	383
	Dokan center	4	25	51
Ranya	Betwata	23	293	733
	Chwarghorna	14	160	1398
	Hajiawa	15	172	1743
	Sarkapkan	29	328	426
	Ranya center	2	29	193
Said Sadiqg	Srochk	7	117	1523
	Said Sadeqg center	45	819	7883
Sharbazher	Chwarta	6	129	234
	Zalan	3	35	61
	Sitak	13	72	83
	Siwail	20	244	362
	Gapilon	21	227	583
	Warmawa	47	664	11459
Qgaradagh	Sewsenan	8	45	71
	Qgaradaqg center	30	189	501
Mawat	Mawat center	88	616	819
Sulaimani center	Bazyan	35	378	3882
	Bakrajo	39	313	5572
	Tanjaro	53	426	5278
Halabja	Biara	14	81	189
	Khormal	39	565	2279
	Sirwan	38	448	2293

Table 3: No. villages and summer crops farmers in Duhok governorate 2013

district	Sub-district	No. villages	No. farmers	**Planted area**
Bardarash	Darto	28	418	7761
	Rovya	45	316	7578
	Kalak	15	157	1605
	Bardarash center	8	44	676
Duhok center	Zawita	50	266	1650
	Mangeshk	48	355	4968
	Duhok center	6	11	50
Zakho	Batifa	39	132	4522
	Darkar	38	155	8158
	Rzgari	22	53	2470
	Zakho center	3	4	17
Semel	Batil	45	276	17750
	Faida	26	152	5037
	Semel center	33	174	9374
Shekhan	Ba adre	6	30	673
	Zilkan	18	172	4730
	Qgasroke	45	434	12797
	Atrish	38	242	3092
	Shekhan center	14	132	3005
Akre	Bjil	41	390	4207
	Dinarta	46	396	1317
	Grdasen	76	896	17287
	Akre center	12	88	2677
Amedi	Bamarne	14	101	428
	Chamanke	7	76	130
	Deralok	11	167	120
	Sarseng	13	128	87
	Kanimasi	21	155	155
	Amedi center	7	61	48

Table 4: No. villages and summer crops farmers in Garmian administration 2013

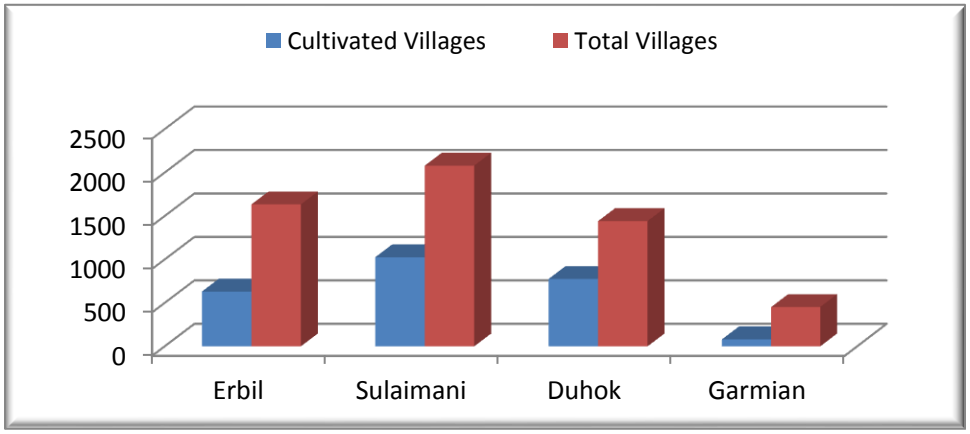
district	Sub-district	No. villages	No. farmers	Planted area
Khanaqgin	Bamo	2	5	10
	Qgorato	21	209	1507
	Maidan	12	91	297
Kalar	Pebaz	1	2	24
	Shekh Tawil	3	24	95
	Kalar center	9	61	194
Kfri	Sarqgala	15	107	392
	Kawkas	11	161	821
	Kfri center	2	35	159
	Nawjal	4	14	29

Table 5: No. villages and summer crops farmers by KR's governorates 2013

Governorate	No. villages	No. farmers	Planted area
Erbil	630	5085	42549
Slaimani	1025	11385	77166
Duhok	775	5981	122365
Garmian	80	709	3524
KRG	2510	23160	245604

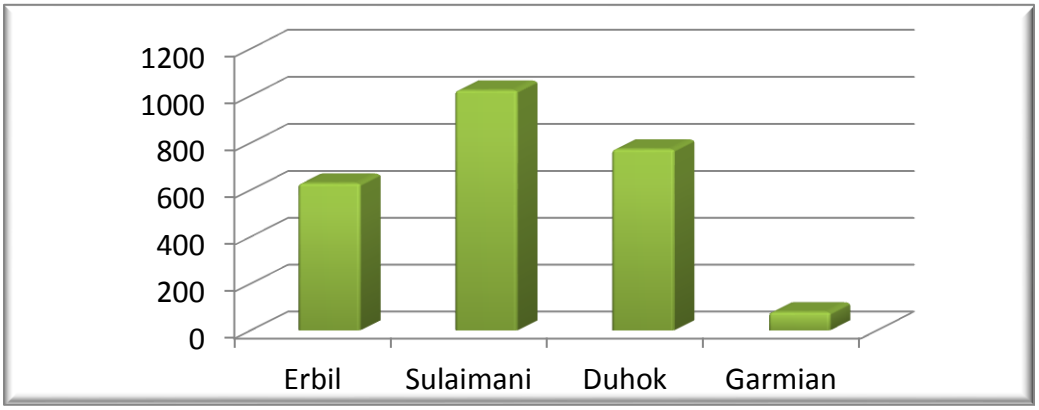
Collecting data from all villages across KR revealed that among total sum of 5605 villages, 2510 of them were cultivated for summer crops 2013 that comprised 45% of all villages in KR. Of 1633 villages in Erbil governorate only 630 villages were cultivated for summer crops that consisted 26% of all KR's villages; Sulaimani governorate with total number of 1633 villages 1025 of them were cultivated for summer crops that comprised 40% of all villages; 1441 villages registered in Duhok governorate of which 775 of them cultivated that consisted of 31% of all villages; and finally Garmian administration recorded a total number of 452 villages where only 80 of them cultivated that comprised 3% of all cultivated villages across KRG as it shows in figure1.

Figure 1: the level of villages in term of planting summer crops by governorates 2013



The results show that sum of 23160 farmers participated in planting summer crops 2013 in KRG, 5085 (22%) in Erbil governorate, 11385 (49%) in Sulaimani governorate, 5981 (26%) in Duhok governorate, and 709 (3%) farmers in Garmian administration. Despite having the highest number of farmers in Sulaimani governorate, it standed behind Duhok and Erbill governorates regarding summer crops production. Lower production in Sulaimani is attributed to low level of cultivated area and low level of the yield of a crop per unit area (donum) of land. This has been shown in figure 2.

Figure 2: the level of summer crops farmers by governorates 2013



2. Summer crop products

After analyzing data for 19 types of summer crops, the volume of the crops was estimated in ton and represented in tables and figures at the level of districts in each governorate.

The suitable season for planting summer crops is spring season as they need a high temperature degree for growing and summer season that comes later can provide suitable heat. Summer crop products continuously produced during summer up to the middle of fall time. Of these products we can mention okra, eggplant, potato, rice, peppers, onion, armenian cucumbers, tomato, cucumber, watermelon, bean, melon, squash, sesame, sunflower, corn, pea, and mung. Most of these products are suitable for both human and animals. Cotton is one of material that widely used in industry but, it has not been taken into account in Kurdistan Region. the crops like, corn, bean, mung, and rice need to be planted in larger scale than what is currently planted as they are looked at as the main food in this geographical area and also have the ability of being stored for long period.

Production of summer crops at the level of governorates and Kurdistan Region:
The total production of summer crops in each governorate shows that Erbil governorate had a record of 204769 tons for 2013; Sulaimani governorate recorded 118058 tons; Duhok governorate had a record of 229711 tons, and Garmian administration registered 5150 tons. At the level of Kurdistan Region, summer crops production reached 557688 tons.

The level of each summer products
Okra: the volume of okra product was 942 tons in Erbil governorate and its rate was 13%; Sulaimani governorate ranks first with 3505 tones and of 48%; Duhok governorate stands second in this rank with around 2013 tons and 28%; and Garmian recorded 769 tons of okra product that s of 11%. The total production in Kurdistan Region was 7229 tones and compared to 2012 it decreased to 79%.

Eggplant: Erbil governorate ranks first with 12790 tons of eggplant at the rate of 71%; Sulaimani governorate had a record of 1641tons and the rate of 9%; Duhok governorate recorded 3201 tones with 18%; and 444 tones has been recorded in Garmian administration with 2%. The total level of eggplant production had a record of 18076 tons for Kurdistan Region where an increase of 64% can be observed compared to year 2012.

Rice: rice product registered 61 tons (1%) in Erbil governorate, 736 tons (14%) in Sulaimani governorate, Duhok governorate stood at the first rank produced 3132 tons (59%), and Garmian produced 1347 tons (26%). The total rice product in Kurdistan Region recorded 5275 tones for 2013 with an increase of 43% compared to 2012.

Peppers: Erbil governorate stood at the first rank with7439 tones (77%) of peppers product; Sulaimani had a production of 593 tones (6%); Duhok governorate had 1454 tones (15%); and Garmian had a production of 141 tones (1%). The total production for Kurdistan Region was 9627 tones with an increase of 17% compared to 2012.

Armenian cucumber: this production estimated at 2819 tones in Erbil governorate that is of 10%; Sulaimani governorate had production level of 10248 tones estimated at 35%; Duhok governorate produced 16366 tones with 56% stood at the first rank; and Garmian had a production of 16 tones with 0.1%. The total production for Kurdistan Region estimated at 29449 tones with a decrease of 29% compared to 2012.

Tomato: this production estimated at 37011 tones (41%) in Erbil governorate, 31533 tones (35%) in Sulaimani governorate, 21317 (23%) tones in Duhok governorate, and 1069 tones (1%) in Gramian administration. In Kurdistan Region, The total production of tomato estimated at 90940 tones with a decrease of 25% compared to 2012.

Tobacco: Erbil governorate had a production level of 3 tones (14%); Sulaimani governorate recorded 14 tones (69%); and Duhoke governorate recorded 4 tones (18%) for tobacco crop. this production was not cultivated in Garmian administration. The total of tobacco production reached 29 tons in Kurdistan Region.

Potato: in 2013 the total production of potato reached 35233 tons in Kurdistan Region of which Erbil governorate produced 6169 tons with the rate of 18%; Sulaimani governorate produced 907 tons with the rate of 3%; Duhok governorate with the most production of potato produced 28105 tons with the rate of 80%; and Garmian produced 53 tons at the rate of 0.1%.

Onion: with a decrease of 49% compared to 2012 the total production of onion reached 27573 tons in Kurdistan Region of which Erbil governorate produced 21110 tons (77%), Sulaimani governorate produced 3589 tons (13%), Duhok governorate produced 2816 tons (10%), and Garmian produced 60 tons (0.1%).

Cucumber: the production of cucumber in Kurdistan Region with a decrease of 22% compared to 2012 reached 37016 tons of which Erbil governorate produced 20744 tons (56%); Sulaimani produced 5643 tons (15%); Duhok produced 10380 tons (28%), and Grmyan produced 249 tons that is of 1%.

Watermelon: a total number of 80558 tons watermelon produced in Kurdistan Region with a decrease of 8.5% compared to 2012. Of this, Erbil governorate produced 46340 tons (58%); Sulaimani produced 15980 tons (20%); Duhok governorate produced 17934 tons (22%), and Grmyan administration produced 303 tons (0.1%).

Corn: with an increase of 66% compared to 2012, the level of corn production reached 30707 tons in Kurdistan Region. Of this, Erbil governorate had a production of 25377 tons (83%); Sulaimani governorate had a production of 84 tons with 0.1%; Duhok governorate recorded 4987 tons (16%); and Garmian recorded 259 tons (1%).

Melon: Kurdistan Region had a level production of 168959 tons of melon in 2013 with an increase rate at 48% compared to 2012 of which Erbil governorate produced 16252 tons (10%); Sulaimani governorate produced 38801 tons (23%); Duhok governorate produced 113822 tons; and Garmian administration had a production level of 85 tons (0.1%).

Sunflower: the total production of sunflower recorded at 895 tons in Kurdistan Region with an increase rate of 270% compared to 2012 of which Erbil governorate produced 40 tons (4%); Sulaimani produced 871 tons (93%); Duhok governorate produced 24 tons (3%); and Garmian with no cultivated area did not have any record of sunflower corn.

Bean (phasolia): the total production reached 1545 tons in Kurdistan Region with an increase of 160% tons compared to 2012. Of this, Erbil governorate produced 358 tons (23%); Sulaimani governorate produced 1170 tons (76%); Duhok governorate produced 18 tons (1%), and Garmian with no cultivated area did not record any production for 2013.

Squash: the total production estimated at 8977 tons in Kurdistan Region with a decrease rate at 14% compared to 2012. Of this, Erbil governorate recorded a level production of 4700 tons (55%), Sulaimani governorate recorded 1751 tons (21%); Duhok governorate recorded 2215 tons (24%); and Garmian had a record of 24 tons that is of 0.1%.

Sesame: the total production of sesame estimated at 237 tons in Kurdistan for growing time 2013 with an increase rate of 30% compared to 2012 of which Erbil governorate produced 16 tons (7%); Sulaimani produced 141 tons (59%), Duhok governorate produced 56 tons (24%), and Garmian administration had a production of 25 tons with the rate of 10%.

Pea (lobia): the level of this production reached 5419 tons in Kurdistan Region with a decrease rate of 39% compared to 2012. Of this, Erbile governorate produced 2580 tons (48%); Sulaimani produced 644 tons (12%); Duhok governorate produced 1890 tons (35%); and Garmian had a production of 304 tons that is of 6%.

Mung: the total production reached 346 tons in Kurdistan Region with a decrease of 39% tons compared to 2012. Of this, Erbil governorate produced 20 tons (6%), Sulaimani governorate produced 207 tons (60%), Duhok governorate produced 117 tons (34%), and Garmian produced 2 tons (1%).

Table 6: summer crops production (ton) in Erbil governorate year 2013

District	Okra	Eggplant	Rice	Pepper	Armanian cucumber	Tomato	Tobacco	Potato	Onion	Cucumber
Khabat	27.0	8274.2	5.0	1077.3	168.1	1507.9	0.0	713.3	208.3	7800.8
Dashti Hawler	4.5	928.1	1.8	1385.8	208.9	3519.0	0.0	1451.3	2223.9	4310.0
Rawandoz	5.7	11.8	0.0	0.0	0.0	26.7	0.0	0.0	30.7	10.8
Soran	31.9	56.8	1.2	0.6	103.9	5134.8	0.0	11.6	32.2	948.3
Shaqlawa	1.0	6.0	52.8	1.3	6.0	1361.8	0.8	0.0	142.8	935.3
Koya	846.4	887.7	0.0	811.1	1423.6	1018.8	0.0	0.0	196.4	2148.3
Choman	1.0	6.0	0.0	1.9	10.0	7032.7	1.9	6.0	68.7	1615.0
Mergasor	3.0	0.0*	0.0	0.0	4.0	290.6	0.0	0.0	0.0	67.8
Center	21.8	2619.5	0.0	4161.2	894.5	17118.2	0.0	3986.4	18206.6	2907.6

Number 0 in all tables means no production

Continue of table 6

Diatrict	Watermelon	Corn	Melon	Sunflower	Bean (phasolia)	Squash	Sesame	Pea (lobia)	Mung
Khabat	21510.9	96.0	2775.5	0.0	0.0	1812.4	0.0	621.3	0.0
Dashti Hawler	6150.3	16901.3	5457.0	4.2	0.0	296.4	3.1	8.4	0.0
Rawandoz	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.1
Soran	79.05	0.0	1102.7	0.0	4.2	70.8	0.0	0.5	6.4
Shaqlawa	5593.38	0.0	5.0	0.0	0.0	5.5	0.0	0.0	6.0
Koya	6590.6	0.0	4008.9	0.0	206.0	214.3	0.0	1921.9	0.0
Choman	0.0	0.0	53.5	2.8	2.6	1784.1	8.1	4.4	2.3
Mergasor	138	0.0	1153.1	0.0	0.0	0.0	0.0	0.0	1.1
Center	6278.08	8379.4	1696.1	0.0	145.6	515.5	4.7	24.0	3.9

Figure 3 shows the level production of summer crops across the districts of Erbil governorate of which central district ranks first that produced 33% of summer crops due to large cultivated area (27%) in this district. And the less production level belonged to Rawandoz district that estimated at 0.04% and cultivated area in this district comprised 1% of Erbil's cultivated area.

Figure 3: the level of summer crops production in Erbil governorate year 2013

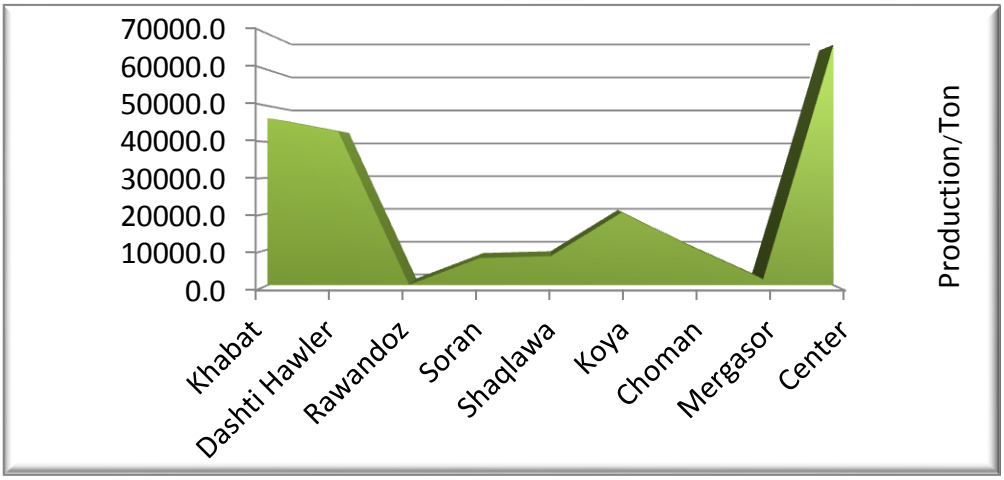


Figure 4 shows the level production of summer crops in the districts of Sulaimani governorate of which Penjwen district ranked first that produced 28% of summer crops due to high rate of yield in Penjwen. 76% of the cultivated area in Penjwen has been used for planting tomato that produced 3430 kg of tomato that had effect on the high level of production in this district. Sulaimani central districts come next regarding the high production level of summer crops. And the less production level observed in Gharadagh and Darbandikhan districts that equally estimated at 0.7% and 1% of planted area in Sulaimani governorate.

Figure 4: the level of summer crops production in Sulaimani governorate year 2013

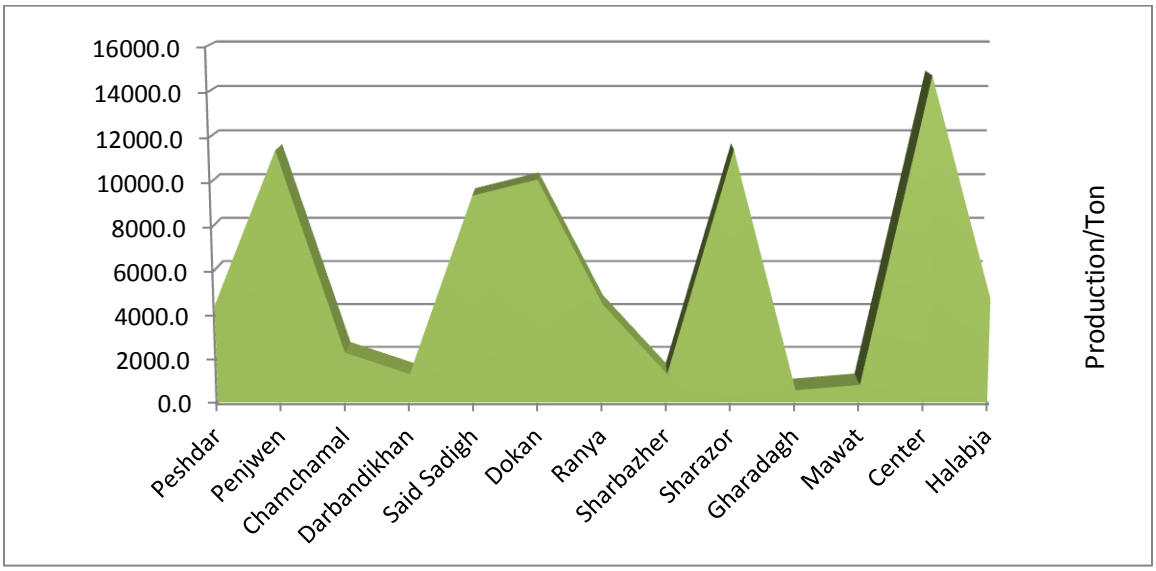


Table 7: summer production (ton) in Sulaimani governorate year 2013

District	Okra	Eggplant	Potato	Rice	Pepper	Onion	Armenian cucumber	Tobacco	Tomato	Cucumber
Peshdar	1115.1	45.2	0.0	72.5	1	1428.6	484.1	10.6	1825.5	1108.8
Penjwen	6.4	38.6	73.1	74.1	171.7	59.6	33.7	0.0	23910.3	750.3
Chamchamal	175.0	141.8	0.0	6.0	131.5	172.1	22.8	0.4	180.8	10
Darbandikhan	34.3	0.3	0.0	96.5	1.0	0.0	181.4	0.0	9.2	0.0
Said Sadegh	924.1	899.3	257.4	9.3	166.5	874.2	1742.4	0.0	416.0	99.8
Dokan	203.8	47.8	0.0	131.3	14.0	111.7	249.6	1.7	973.3	284.0
Ranya	69.7	50.3	4.0	26.8	11.4	223.1	1212.4	0.6	1100.1	510.3
Sharbazher	12.2	14.3	0.0	0.0	11.9	52.1	0.0	0.0	426.5	502.3
Sharazor	81.5	12.5	525.0	10.5	1.5	36.8	2109.7	0.0	134.4	1753.1
Gharadagh	17.8	1.9	0.0	54.5	0.0	6.0	0.0	0.0	256.7	23.4
Mawat	82.2	107.7			26.3	22.7	3.5	0.0	293.3	180.6
Center	343.0	154.3	0.0	177.0	22.5	15.9	2405.2	0.0	684.9	68.0
Halabja	439.4	127.1	48.0	77.3	24.8	585.9	1803.3	0.3	1321.4	262.9

Continuous of table 7

District	Watermelon	Bean (phasolia)	Melon	Squash	Sesame	Sunflower	Corn	Pea (lobia)	Mung
Peshdar	920.3	5.6	937.4	38.1	0.1	17.1	2.4	132.6	65.4
Penjwen	7949.2	4.3	221.1	364.7	0.0	0.0	0.0	0.0	0.0
Chamchamal	1044.1	3.0	545.3	21.6	0.0	0.0	0.0	190.9	0.0
Darbandikhan	0.0	0.0	466.5	1.0	0.0	0.0	0.0	0.0	0.0
Said Sadegh	4213.5	0.0	1563.0	12.0	2.0	64.8	1.7	7.0	0.0
Dokan	1056.6	17.1	10316.6	15.6	0.0	3.8	80.0	34.1	1.1
Ranya	258.5	979.2	1866.8	191.2	138.6	752.8	0.0	132.2	118.9
Sharbazher	112.5	11.4	1333.8	675.2	0.0	0.0	0.0	6.3	4.4
Sharazor	0.0	0.0	3990.1	40.0	0.0	0.0	0.0	3.8	0.0
Gharadagh	0.0	0.3	463.4	0.0	0.0	0.0	0.0	0.0	0.0
Mawat	51.8	85.3	4.6	24.6	0.0	0.0	0.4	39.5	5.3
Center	209.7	60.9	16522.3	29.1	0.0	14.5	0.0	24.2	1.1
Halabja	164.0	2.8	570.4	338.3	0.0	17.7	0.0	73.7	11.4

Rice production for Duhok governorate has been shown in the following table. Rice is a staple food that widely used in Kurdistan Region that could affect markets. The table shows that Bardarash district has the highest rice production level of 54% that followed by Akre district with production rate of 45% and this made Duhok governorate to take the first rank in production of rice in Kurdistan Region with 59% of the total rice production in the Region.

Table 8: summer production (ton) in Duhok governorate year 2013

District	Eggplant	Tomato	Okra	Rice	Pepper	Armenian cucumber	Tobacco	Potato	Onion	Cucumber
Bardarash	1377.5	11061.2	788.9	1701.8	503.1	4006.4	0.0	11747.3	717.2	6508.7
Center	544.1	3143.9	58.5	0.0	91.3	82.7	0.0	9.6	655.5	299.0
Zakho	483.0	244	11.5	0.0	177.4	35.8	0.0	816.3	48.6	78.1
Semel	375.1	2483.0	58.9	0.0	263.8	378.3	0.0	1813.5	387.2	460.8
Shekhan	90.1	2355.3	15.5	15.5	295.1	5859.5	0.0	13512.8	191.7	774.7
Akre	323.6	1203.3	1080.0	1395.6	120.2	6001.4	0.0	166.5	694.8	2168.4
Amedi	7.4	826.7	0.0	19.4	2.7	2.4	3.5	39.2	121.3	90.1

Contine of table 8

District	Watermelon	Corn	Sunflower	Melon	Bean (phasolia)	Squash	Sesame	Pea (lobia)	Mung
Bardarash	7665.4	485.1	0	6516.6	0	461.3	2	20.1	3
Center	750	0	17.2	6334.4	0	548.3	0	200.7	2.4
Zakho	728.8	82.5	0	23698.2	0	440.9	0	20.5	0
Semel	381.8	0	0	37681	15	278	0	18.2	0
Shekhan	74	4419.6	5.6	4537.8	0	220.3	3.2	78.8	0.6
Akre	8318	0	1.3	34068.2	2.6	212.9	23.6	1497.9	106.1
Amedi	16.3	0	0	985.5	0	53.4	27.3	54	4.6

Figure 5 shows the level production of summer crops in the districts of Duhok governorate of which the highest level (25%) of summer crops produced in Akre districts on 21% of land area followed by Bardarash district with 23% on 14% of land area. The high level production in these two districts is not because of having much cultivated area but, it is due to high level of yield crops in which, water and soil are considered as the main factors in this regard. For instance, if we compare the planted area in these three districts, we can observe that, Semel district with the most cultivated land area (26%) ranks third with production rate of 19% due to low yield in this district compared to the other two districts.

Figure 5: the level of summer production in Duhok governorate year 2013

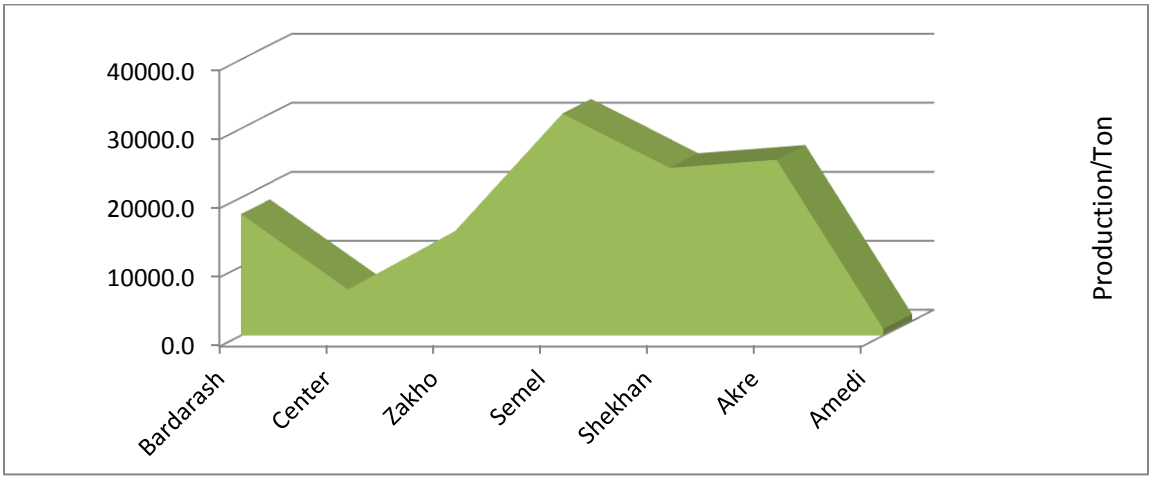


Figure 6 shows the production of summer crops in border of Garmian administration. Kefri district with the most production rate of 45% ranked first that followed by Khanaghin district with production rate of 39%; and Kalar district with 16% comprised lowest production of summer crops in this area.

Figure 6: the level of summer production in Garmian administration year 2013

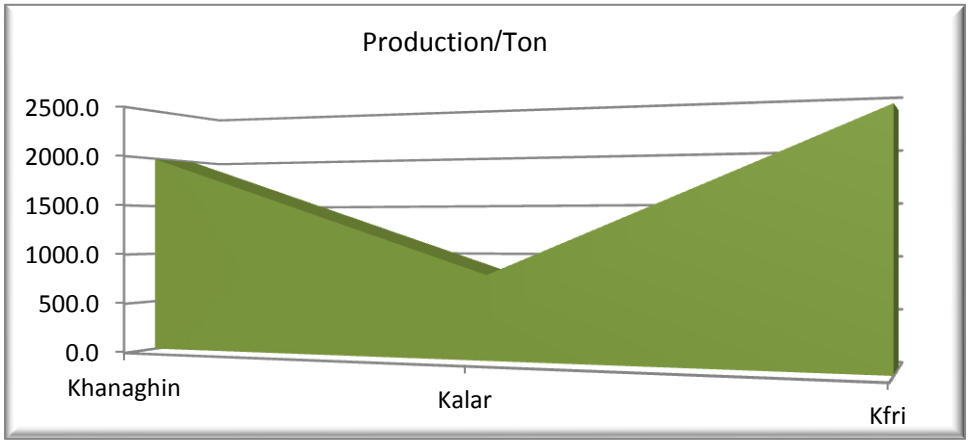


Table 9 represents summer crops in districts of Garmian boundaries. The results show that the highest level of rice product has been produced in Khanaghin district (59%) and Kefri district with production rate at 40% stands next. Garmian with rice production rate at 26% ranks second after Duhok governorate concerned rice production at the level of Kurdistan Region.

Table 9: the level of summer production (ton) in Garmian administration year 2013

District	Okra	Eggplant	Rice	Pepper	Armenian cucumber	Tomato	Potato	Onion	Cucumber
Khanaghin	149.2	152.7	796.4	2.5	0.0	340.3	45.9	0.0	122.6
Kalar	134.9	6.1	11.6	0.9	11.0	379.4	0.0	24.4	20.0
Kfri	484.6	285.3	538.8	137.5	4.8	349.5	6.8	35.2	106.5

Continue of table 9

District	Watermelon	Corn	Melon	Bean (phasolia)	Squash	Sesame	Pea (lobia)	Mung
Khanaghin	38.2	241.8	0.6	0.0	21.3	24.7	57.4	1.9
Kalar	55.8	0.0	84.6	0.0	0.9	0.0	89.1	0.0
Kfri	209.3	17.5	0.0	0.0	2.1	0.0	157.7	0.0

Table 10: the total of summer production (ton) in governorates year 2013

governorate	Okra	Eggplant	Rice	Pepper	Armenian cucumber	Tomato	Tobacco	Potato	Onion	Cucumber
Erbil	942	12790	61	7439	2819	37011	3	6169	21110	20744
%	13%	71%	1%	77%	10%	41%	14%	18%	77%	56%
Duhok	2013	3201	3132	1454	16366	21317	4	28105	2816	10380
%	28%	18%	59%	15%	56%	23%	18%	80%	10%	28%
Sulaimani	3505	1641	736	593	10248	31533	14	907	3589	5643
%	48%	9%	14%	6%	35%	35%	69%	3%	13%	15%
Garmian	769	444	1347	141	16	1069	0	53	60	249
%	11%	2%	26%	1%	0%	1%	0%	0%	0%	1%

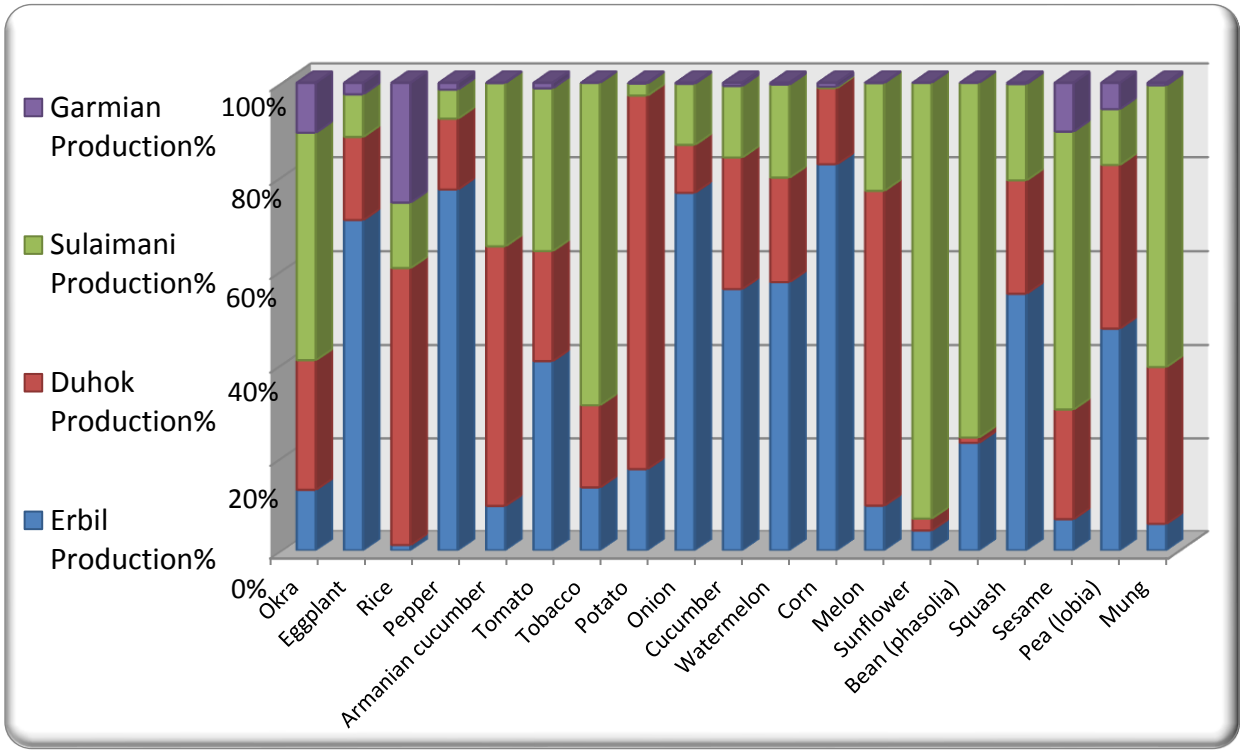
Continue of table 10

governorate	Watermelon	Corn	Melon	Sunflower	Bean (phasolia)	Squash	Sesame	Pea (lobia)	Mung
Erbil	46340	25377	16252	7	358	4700	16	2580	20
%	58%	83%	10%	%0.1	23%	55%	7%	48%	6%
Duhok	17934	4987	113822	24	18	2215	56	1890	117
%	22%	16%	67%	%0.3	1%	24%	24%	35%	34%
Sulaimani	15980	84	38801	871	1170	1751	141	644	207
%	20%	0%	23%	%79	76%	21%	59%	12%	60%
Garmian	303	259	85	0	0	24	25	304	2
%	0%	1%	0%	0%	0%	0%	10%	6%	1%

Figure 7 represents the rate difference for 19 types of summer crops at the level of Erbil, Sulaimani, and Duhok governorates along with Garmian administration. Erbil governorate produced 37% of summer crops amounted to 204769 tons; Sulaimani recorded 21% of summer crops that amounted to 118058 tons; Duhok recorded 41% that is of 229711 tons; and Garmian recorded 1% with total amount of 5150 tons. And the total of these comprised the total production in Kurdistan Region that estimated at 557688 tons.

Duhok governorate recorded the highest production level of 19 types of summer crops at the level of Kurdistan Region due to highest level of land cultivation that contained 50% of the total land cultivation in Kurdistan Region.

Figure 7: percentage rate of summer production in governorates year 2013



Summer crops productivity per farmer

An average amount of 24 tons of summer crops recorded per farmer at the level of Kurdistan Region in 2013 of which 40 tons recorded per farmer in Erbil governorate which is the highest among other governorates; Duhok governorate comes next with 38 tons per farmer followed by Sulaimani and Garmian with 10 and 7 tons respectively.

3. Summer crop yields

The yield of all summer crops has been presented in the form of figures and table with percentage in order to better clarify the results. The yield of one donum has been measured in kilogram. Yield is defined as the measure of grains or seeds or legume generated from a unit of land area collected during harvest time and expressed in kilograms per donum.

The high and low level of crops yield attribut to various reasons. The efforts have been exiled to identify the reasons by representing the related indicators in this report that could be used to help farmers to have better outputs. Thanks God, in Kurdistan Region there are plenty water sources and suitable agricultural soil that could be potentially used if farmers would be provided with advanced agricultural equipment, fertilizer, pesticides, new irrigation system, and qualified seeds that finally lead to higher level of production. The evidence shows the difference in yield generated from per donum of cultivated land from one district to another one due to effects of above mentioned factors.

The level of each summer yields

Okra: Erbil governorate recorded 3120 kilograms per donum and ranks first; Sulaimani recorded a measure of 1462 kilograms; Duhok had a record of 2499 kilograms, and 1596 kilograms has been recorded per donum in Garmian administration. Kurdistan Region had a record of 1812 kilograms per donum with an increase of 6% compared to 2012.

Eggplant: Eggplant had a record of 7986 kilograms in Erbil governorate in 2013; Sulaimani governorate recorded a measure of 2667 kilograms; a measure of 4092 kilograms has been recorded in Duhok governorate and 4092 kilograms in Garmian administration. And amount of 5491 kilograms of eggplant has been recorded in Kurdistan Region with an increase rate of 80% compared to 2012.

Rice: The measure of rice yield reached 614 kilogram in Erbil governorate in 2013. This measure had an estimation of 808 kilograms in Sulaimani governorate, and a record of 981 and 1114 kilograms has been registered in Duhok governorate and Garmian administration respectively. In Kurdistan Region, rice yield reached 975 kilograms per donum and compared to 2012 it registered a decrease rate of 41% for 2013.

Pepper: An amount of 6985 kilograms of pepper yield has been recorded in Erbil governorate, 1336 kilograms in Sulaimani governorate, 2406 kilograms in Duhok governorate, and Garmian administration registered a measure of 1355 kilograms. And Kurdistan Region had a record of 4342 kilograms in 2013 with an increase rate of 73% compared to 2012.

Armenian cucumber: an estimation of 3680 kilograms of Armenian cucumber has been recorded in Erbil governorate per donum in 2013. 1080 kilograms in Sulaimani governorate, 982 in Dohuk governorate and 645 donum in Garmian administration are the measures that have been registered for Armenian cucumber. At the level of Kurdistan Region it had a measure of 1093 kilograms per donum with a decrease rate of 44% compared to 2012.

Tomato: Tomato yield reached 4009 kilograms per donum in Erbil governorate, 2839 kilograms in Sulaimani governorate, 5950 in Dohuk governorate and Garmian administration registered 2275 kilograms per donum in 2013. At the level of Kurdistan Region it has registered 3728 kilograms per donum with an increase rate of 1% compared to 2012.

Tobacco: Erbil governorate registered a measure of 487 kilograms of tobacco per donum in 2013. This record has been registered at 862 kilograms in Sulaimani governorate, and1014 kilograms in Duhok governorate. And, 798 kilograms has been recorded at the level of Kurdistan Region.

Potato: Erbil governorate had a record of 8664 kilograms of potato per donum in 2013. A measure of 4537 kilograms has been recorded in Sulaimani governorate, 6770 kilograms in Duhok governorate, and 1700 kilograms in Garmian administration. This record has been 6916 kilograms per donum at the level of Kurdistan Region.

Onion: a measure of 5592 kilograms of onion yield has been recorded in Erbil governorate per donum in 2013. Sulaimani governorate registered 2021 kilograms, Duhok governorate registered 3077 kilograms and Garmian had a record of 1216 kilograms. At the level of Kurdistan Region it registered a measure of 4232 kilograms per donum with an increase rate of 49% compared to 2012.

Cucumber: Erbil governorate recorded 5682 kilograms of cucumber yield per donum in 2013. Sulaimani governorate registered 2117 kilogrsms, duhok governorate 4476 kilograms, and Garmian administration had a record of 1438 kilograms per donum. Kurdistan Region has recorded a measure of 4234 kilograms of cucumber yield per donum in 2013 with an increase rate of 15% compared with 2012.

Watermelon: an estimation of 6249 kilograms of watermelon yield has been registered per donum in Erbil governorate in 2013; Sulaimani governorate recorded 1409 kilpgrams, Duhok governorate had a record of 3660 kilograms; and Garmian administration recorded 2182 kilograms per donum for watermelon yield. 3385 kilograms per donum has been registered at the level of Kurdistan Region in 2013 with 15% decrease compared to 2012.

Corn: Erbil governorate registered 3388 kilograms corn yield per donum in 2013, Sulaimani had a record of 2702 kilograms; Duhok governorate recorded 2834 kilograms; and Garmian administration measured 1189 kilograms of corn yield per donum. At the level of Kurdistan Region 3233 kilograms has been registered with an increase of 87% compared to 2012.

Melon: Melon yield has been estimated at 3716 kilograms per donum in Erbil governorate for year 2013; Sulaimani had 1227 kilograms; duhok governorate recorded 1424 kilograms; and Garmian administration registered a record of 1209 kilograms of melon yield per donum. And 1457 kilograms has been recorded per donum at the Level of Kurdistan Region

Sunflower: a record of 533 kilograms of sunflower yield has been recorded per donum in Erbil governorate, in Sulaimani governorate 422 kilograms, and Duhok governorate recorded 109 kilograms per donum. At the level of Kurdistan Region it reached 390 kilograms perdonum in 2013 with a decrease rate at 32% compared to 2012.

Bean (phasolia): Bean (phasolia) yield recorded 2331 kilograms per donum in Erbil governorate in 2013, 1861 kilograms in Sulaimani governorate, and 1304 kilograms in Duhok governorate. This record has been 1942 kilograms per donum at the level of Kurdistan Region with an increase of 28% compared to 2012.

Squash: Erbil governorate recorded 4409 kilograms of squash yield per donum in 2013; Sulaimani governorate recorded 2995 kilograms; Duhok had a record of 3314 kilograms; and 1293 kilograms registered in Garmian administration. This record was 3725 kilograms per donum at the level of Kurdistan Region in 2013 with a decrease of 14% compared to 2012.

Sesame: Sesame yield recorded a measure of 479 kilograms per donum in Erbil governorate; 448 donum in Sulaimani governorate; 368 kilograms in Duhok governorate; and 633 kilograms for Garmian administration. 441 kilograms of sesame yield registered at the level of Kurdistan Region in 2013 with an increase of 17% compared to 2012.

Pea (lobia): Erbil governorate recorded 3370 kilograms of peas per donum in 2013; Sulaimani recorded 994 kilograms, Duhok had a record of 1629 kilograms; and Garmian registered a record of 1564 kilograms. Kurdistan Region registered 1957 kilograms per donum with a decrease rate of 2% compared to 2012.

Mung: the yield of mung reached 679 kilograms per donum in Erbil governorate in 2013; in Sulaimani it was 549 kilograms; 256 kilograms registered in Duhok governorate and 211 kilograms in Garmian administration. At the level of Kurdistan Region it was 397 kilograms per donum in 2013 and rose by 60% compared to 2012.

Table 11: yield crops (kg/donum) in Erbil governorate year 20123

District	Okra	Eggplant	Rice	Pepper	Armenian Cucumber	Tomato	Tobacco	Potato	Onion	Cucumber
Khabat	3375.0	9571.1	500.0	6300.0	4100.0	7013.6	0.0	14266.7	6125.0	7472.0
Dashti hawler	750.0	7607.1	588.0	15062.5	3214.3	9000.0	0.0	6750.0	3827.8	8101.6
Rawandoz	783.3	1275.4	0.0	0.0	0.0	123.3	0.0	0.0	974.6	87.0
Soran	1316.0	5166.7	588.0	1200.0	2885.7	2689.1	0.0	2900.0	1238.8	2276.9
Shaqlawa	1000.0	3000.0	652.0	2500.0	1000.0	3509.7	390.0	0.0	4722.2	5651.5
Koya	3541.4	4857.5	0.0	5250.0	2772.3	3681.4	0.0	0.0	3272.7	7155.0
Choman	2000.0	1087.5	0.0	250.0	1250.0	1967.1	550.0	2000.0	1716.7	2322.1
Mergasor	2000.0	0.0	0.0	0.0	1000.0	3175.7	0.0	0.0	0.0	3716.7
Center	1500.2	6475.8	0.0	6553.1	9670.0	7895.8	0.0	9060.0	6125.0	8190.3

Continue of table 11

District	Watermelon	Corn	Melon	Sunflower	Bean (phasolia)	Squash	Sesame	Pea (lobia)	Mung
Khabat	6997.7	4000.0	7625.0	0.0	0.0	6725.0	0.0	3500.0	0.0
Dashti hawler	7800.0	3167.4	4250.0	.0800	0.0	5200.0	391.7	1050.0	0.0
Rawandoz	0.0	0.0	0.0	0.0	0.0	160.0	0.0	0.0	130.0
Soran	1700.0	0.0	4752.9	0.0	2080.0	3333.3	0.0	2000.0	706.7
Shaqlawa	5089.5	0.0	10000.0	0.0	0.0	1000.0	0.0	0.0	1000.0
Koya	6531.8	0.0	3568.2	0.0	3476.9	2976.5	0.0	3400.0	0.0
Choman	0.0	0.0	1527.5	800.0	1700.0	3953.8	2700.0	2500.0	1150.0
Mergasor	5750.0	0.0	1690.7	0.0	0.0	0.0	0.0	0.0	300.0
Center	4567.5	3934.0	2848.2	0.0	1600.0	2816.7	225.0	2000.0	488.0

Table 12: yield crops (kg/donum) in Sulaimani governorate year 2013

District	Okra	Eggplant	Potato	Rice	Pepper	Onion	Armenian cucumber	Tobacco	Tomato	Cucumber
Peshdar	1677.5	2444.4	0	644.5	1000	2027.1	1541.7	940	2079.2	2253.6
Penjwen	920	2270	5622.5	748.8	2401.9	1867.5	1464	0	3430.2	2665.3
Chamchamal	733.6	794.3	0	750	755.8	1024.1	970	800	1012.9	1607.1
Darbandikhan	1443.9	650	0	1000	4000	0	420	0	2636	0
Said Sadegh	2378.7	6492.9	4950	1321.7	2895	2488.9	876.7	0	2692.3	2733.3
Dokan	1783.6	2895.5	0	824.6	825	1374.3	1870	1650	1256.7	1856.1
Ranya	968.4	2645	2000	465.8	735.7	3566.7	2515.4	230	3107.7	3097.2
Sharbazher	955.5	1244.4	0	0	850	1218.8	0	0	1396	2333.7
Sharazor	1207.7	5000	4200	700	1012.5	2300	863.2	0	3200	1950
Gharadagh	2033.3	1900	0	931.4	0	3000	0	0	1792.3	1950
Mawat	879.4	1267.3	0	0	955.6	1066.7	2000	0	1127	1447.4
Center	1756.7	3468	0	865.5	1450	1512.5	978.7	0	2394.9	2080
Halabja	856.9	1545.1	6000	831.3	623.7	2066.7	1511	1000	1745.1	2086.1

Continue of table 12

District	Watermelon	Bean (phasolia)	Melon	Squash	Sesame	Sunflowe	Corn	Pea (lobia)	Mung
Pshdar	3229.2	1125.0	1638.9	1730.0	80.0	326.0	1200.0	1170.8	353.3
Penjwen	2207.8	500.0	1016.4	4290.1	0.0	0.0	0.0	0.0	0.0
Chamchamal	1930.0	1000.0	1218.5	737.9	0.0	0.0	0.0	779.2	0.0
Darbandikhan	0.0	0.0	614.6	2000.0	0.0	0.0	0.0	0.0	0.0
Said Sadegh	994.4	0.0	837.7	4000.0	156.0	635.3	550.0	933.3	0.0
Dokan	2542.9	456.1	1266.0	2225.0	0.0	250.0	3200.0	1216.7	700.0
Ranya	5875.0	3133.3	3381.8	3523.8	462.2	420.5	0.0	1869.0	869.2
Sharbazher	3750.0	1425.0	2700.0	4018.8	0.0	0.0	0.0	900.0	600.0
Sharazor	0.0	0.0	597.4	1000.0	0.0	0.0	0.0	750.0	0.0
Gharadagh	0.0	1300.0	1346.2	0.0	0.0	0.0	0.0	0.0	0.0
Mawat	2050.0	830.0	1690.0	1470.8	0.0	0.0	300.0	835.1	585.0
Center	622.2	409.3	1514.2	2283.3	0.0	283.3	0.0	1207.7	310.0
Halabja	232.9	1500.0	919.2	2313.0	0.0	347.8	0.0	708.4	325.0

Table 13: yield crops (kg/donum) in Duhok governorate year 2013

District	Eggplant	Tomato	Okra	Rice	Pepper	Armenian cucumber	Tobacco	Potato	Onion	Cucumber
Bardarash	9500.0	13152.5	2321.9	1257.8	4228.1	1022.4	0.0	9880.0	9020.8	14004.7
Duhok	4405.8	3801.6	2542.5	0.0	3321.0	2850.0	0.0	4800.0	2340.9	1565.6
Zakho	4747.4	2346.0	2412.5	0.0	2628.6	1433.3	0.0	4535.0	2312.5	2168.8
Semel	1225.7	3991.9	1591.7	0.0	1250.0	1616.7	0.0	2997.6	2175.0	1536.2
Shekhan	5150.0	4516.4	1550.0	863.8	2170.0	555.5	0.0	6450.0	3363.6	2945.8
Akre	3963.3	2753.6	2762.0	780.0	3122.2	3134.7	0.0	3000.0	2883.6	2116.5
Amedi	1073.1	3631.6	0.0	567.0	574.0	2400.0	990.0	1556.7	2066.9	2259.3

Continue of table 13

District	Watermelon	Corn	Sunflower	Melon	Bean (phasolia)	Squash	Sesame	Pea (lobia)	Mung
Bardarash	6050.0	3150.0	7000.0	862.5	0.0	7500.0	500.0	164.4	500.0
Duhok	2970.2	0.0	476.7	1384.9	0.0	3619.3	0.0	1491.8	147.5
Zazho	2561.8	550.0	0.0	1684.9	0.0	4072.7	0.0	1063.6	0.0
Semel	1358.7	0.0	0.0	1302.0	1500.0	1260.0	0.0	1137.5	0.0
Shekhan	2000.0	3518.8	30.8	505.3	0.0	1890.8	640.0	1591.9	189.0
Akre	3004.3	0.0	625.0	2209.1	0.0	3287.5	452.0	1921.1	251.8
Amedi	1730.0	0.0	0.0	2482.4	0.0	2746.9	299.4	1367.7	530.7

Table 14: yield crops (kg/donum) in Grmian administration year 2013

District	Okra	Eggplant	Rice	Pepper	Armenian	Tomato	Potato	Onion	Cucumber
Khanaghin	1020.0	1209.8	1023.7	766.7	0.0	1298.9	1700.0	0.0	1229.0
Kalar	4495.5	1887.5	680.5	1260.0	550.0	5498.9	0.0	1016.7	2000.0
Kefri	1587.0	1744.8	1303.0	1374.7	1300.0	2514.2	0.0	1407.3	1676.9

Continue of table 14

District	Watermelon	Corn	Melon	Bean (phasolia)	Squash	Sesame	Pea (lobia)	Mung
Khanaghin	840.0	1162.5	1250.0	.00	1290.0	633.3	1114.5	220.0
Kalar	3100	0.0	1208.3	0.0	3780.0	0.0	1800.0	0.0
Kfri	2772.7	1750.0	0.0	0.0	1025.0	0.0	1686.7	0.0

Table 15: the total yield crops (kg/donum) by governorates year 2013

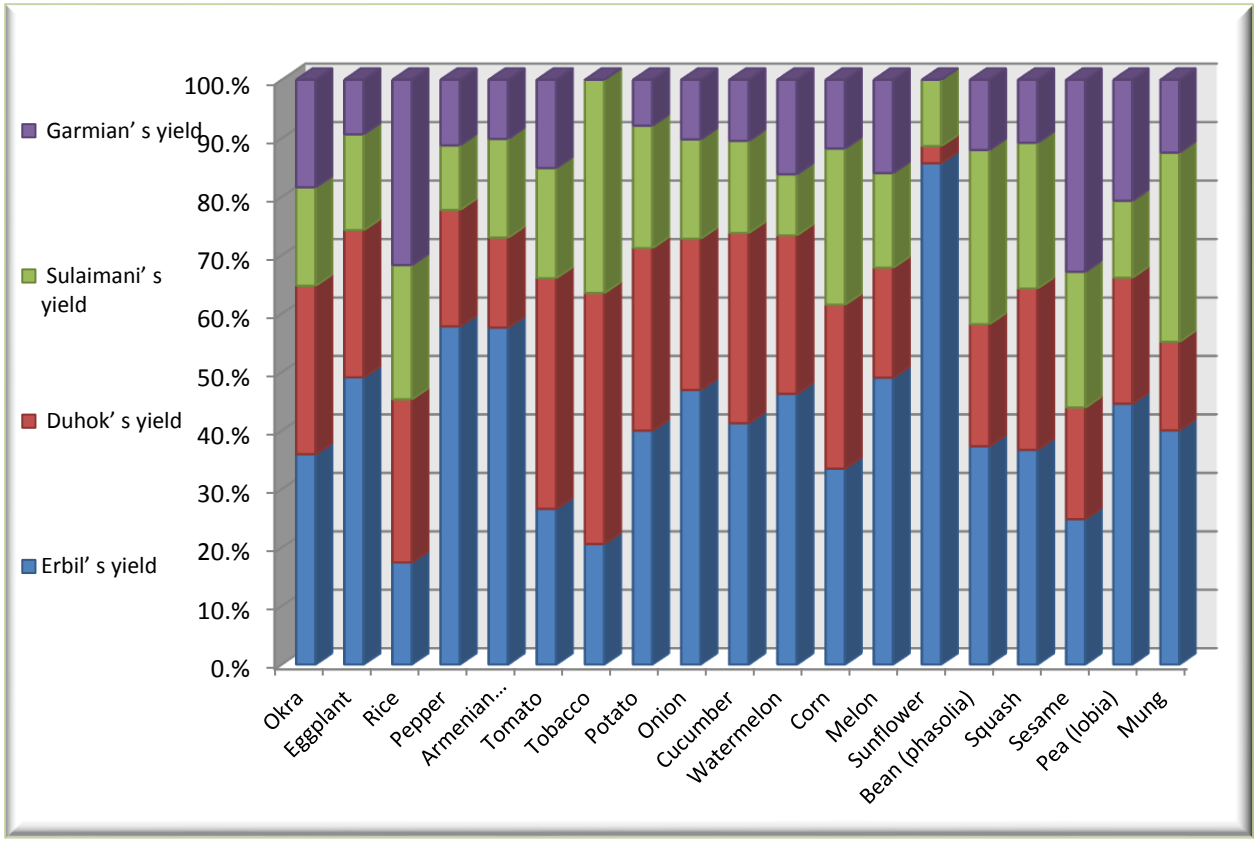
Governorate	Okra	Eggplant	Rice	Pepper	Armenian cucumber	Tomato	Tobacco	Potato	Onion	Cucumber
Erbil	3120	7986	614	6985	3680	4009	487	8664	5592	5682
%	36%	49%	17%	58%	58%	27%	21%	40%	47%	41%
Duhok	2499	4092	981	2406	982	5950	1014	6770	3077	4476
%	29%	25%	28%	20%	15%	39%	43%	31%	26%	33%
Sulaimani	1461	2667	808	1336	1080	2839	862	4537	2021	2171
%	17%	16%	23%	11%	17%	19%	36%	21%	17%	16%
Garmian	1596	1516	1114	1355	645	2275	0.0	1700	1216	1438
%	18%	9%	32%	11%	10%	15%	0.0%	8%	10%	10%

Continue of table 15

Governorate	Watermelon	Corn	Melon	Sunflower	Bean (phasolia)	Squash	Sesame	Pea (lobia)	Mung
Erbil	6249	3388	3716	533	2331	4409	479	3370	679
%	46%	34%	49%	50%	42%	37%	25%	45%	40%
Duhok	3660	2834	1424	109	1304	3314	368	1629	256
%	27%	28%	19%	10%	24%	28%	19%	22%	15%
Sulaimani	1409	2702	1227	422	1861	2995	448	994	549
%	10%	27%	16%	40%	34%	25%	23%	13%	32%
Garmian	2182	1189	1209	0.0	0.0	1293	633	1564	211
%	16%	12%	16%	0.0%	0%	11%	33%	21%	12%

Figure 8 represents the rate difference for 19 types of summer yield crops at the level of Erbil, Slemanya, and Duhok governorates along with Garmian administration in one column with a different colour. Kilogram has been used to measure the yield generated from one donum of cultivated land.

Figure 8: percentage rate of yield crops by governorates year 2013



4. Cultivated land for summer crops

As well as table and figures to represent the data on the cultivated land for each summer crop at the level of districts, it has been tried to briefly express the same data in text form as a different way to represent data at the level of governorates in Kurdistan Region.

Cultivated land for summer crops reached 245604 donums in Kurdistan Region of which 42549 donums located in Erbil governorate, 77166 donums in Sulaimani governorate, 122365 donum in Duhok governorate, and 3523 donums in Garmian administration.

The level of cultivated land for each summer crop:

Okra: the total cultivated land for okra covered a land area of 3988 donums in Kurdistan Region with a decrease of 83% compared to 2012. Of this, 302 donums (8%) were cultivated in Erbil governorate which is the lowest among other governorates in Kurdistan; and Sulaimani governorate with 2399 donums (60%) of cultivated land had the largest area; Duhok governorate had an area of 806 donums (20%); and Gramian administration had cultivated area of 482 donums (12%).

Eggplant: in Kurdistan Region 3292 donums of cultivated land allocated to planting eggplant in 2013 with a decrease of 5% compared to 2012. Of this, the largest land area that amounted to 1602 donums (49%) were in Erbil governorate, 615 donums (19%) in Sulaimani governorate, 782 donums (24%)in Duhok governorate, and 293 donums (9%) located in Garmian administration.

Rice: rice crop covered a cultivated land of 5412 donums in Kurdistan Region in 2013 with an increase of 78% compared to 2012. This land distributed among governorates of Erbil with 99 donums (2%), Sulaimani with 911 donums (17%), Duhok with 3194 donums (59%), and Garmian had a cultivated land of 1209 donums (22%).

Pepper: in Kurdistan Region a land area of 2217 donums is allocated to planting pepper in 2013 that decreased by 25% compared to the same time in 2012. Of this land area, 1065 donums (48%) located in Erbil governorate, 444 donums (20%) in Sulaimani governorate, 604 donums (27%) in Duhok governorate, and 104 donums (5%) cultivated in Garmian administration.

Armenian cucumber: a land area of 26953 donums allocated to planting armenian cucumber in Kurdistan Regione for 2013 where it had an increase of 34% compared to 2012. Of this, the governorates of Erbil covered 766 donums (3%), Sulaimani covered 9292 donums (35%) of this area, Duhok covered 16671 donums (62%), and Garmian administration covered a land area of 25 donums (0.1%).

Tomato: an area of 24394 donums allocated to planting tomato in Kurdistan Region for summer time 2013 with a decrease of 36% compared to 2012. Of this, 9232 donums (38%) located in governorates of Erbil, 11108 donums (46%) in Sulaimani, 3580 donums (15%) in Duhok, and Garmian administration covered 470 donums (2%) of this area.

Tobacco: in Kurdistan Region 25 donums was allocated to tobacco in 2013. 6 donums of this land (22%) cultivated in Erbill governorate, in Sulaimani it reached 16 donums (64%), and in Duhok governorate it covered 3 donums (14%) of this land area.

Potato: a total area of 5094 donums was allocated for planting potato in Kurdistan Region for growing season 2013. Of this, the portion of Erbill governorate was 712 donums (14%), Sulaimani's portion was 200 donums (4%), Duhok's portion was 4152 donums (81%), and Garmian administration had a portion of 31 donums (1%) of this land.

Onion: a land area of 6515 donums was cultivated for onion in Kurdistan Region for growing season 2013 with an increase of 1% compared to 2012. 3775 donums (58%) of this land located in Erbil governorate,1776 donums (27%) in Sulaimani governorate, 915 donums (14%) in Duhok governorate, and 49 donums (1%) in Garmian administration.

Cucumber: in Kurdistan Region a land area of 8743 donums was cultivated for cucumber in growing season 2013 and it decreased by 26% comparing with 2012. 3615 donums (42%) of this land cultivated in Erbil governorate, 2600 donums (30%) in Sulaimani governorate, in Duhok governorate 2319 donums (27%) of the land was allocated to this purpose, and 173 donums (2%) in Garmian administration.

Watermelon: in Kurdistan Region a land area of 23797 donums was cultivated for Watermelon in growing season 2013 and it decreased by 10.7% compared to 2012. Of this land, 7416 donums (31%) located in Erbil governorate, 11343 donums (48%) in Sulaimani governorate, 4900 donums (21%) in Duhok governorate, and 139 donums that is of 1% located in Garmian administration.

Corn: cultivated area for corn has been estimated at 9499 donums in Kurdistan Region for summer time 2013 with an increase of 8% compared to 2012. Erbil governorate covered 7490 donums (79%) of this land, Sulaymani governorate covered 31 donums (0.1%) of the land, Duhok had a land area of 1760 donums (19%), and the share of Garmian administration was 218 donums (2%) for corn cultivation.

Melon: a land area of 115993 donums has been cultivated in Kurdistan Region in summer time 2013 with an increase of 71% compared to 2012 of which 4373 donums (4%) was in Erbill governorate, 31617 donums (27%) was in Sulaymani governorate, 79933 donums (69%) in Duhok governorate, and Garmian's share was 71 donums (0.1%) of the land.

Sunflower: sunflower land cultivation area reached 2295 donums in Kurdistan Region in summer time 2013 with an increase of 426% compared to 2012. Of this, 13 donums (1%) was cultivated in Erbil governorate, 2062 donums (90%) in Sulaimani governorate, and 221 donums (10%) in Duhok governorate.

Bean (phasolia): the land caltivated under Bean estimated at 796 donums at the level of Kurdistan Region for planting time 2013 which rose by 85% compared to 2012. Of this area 154 donums (19%) was under Bean crop in Erbil governorate; in Sulaimani it counted for 629 donums (79%); and in duhok governorate it was estimated at 14 donums (2%).

Squash: in Kurdistan Region the land under squash crop occupied a land area of 2410 donums in planting season 2013 which fell down by 6% compared to 2012. Of this, 1066 donums (47%) in Erbil governorate, 585 donums (26%) in Sulaimani governorate, 743 donums (27%) in Duhok governorate, and 19 donums (1%) were under squash crop in Garmian administration.

Sesame: a land area of 539 donums was under sesame crop in Kurdistan Region in the summer time 2013 which recorded a decrease of 12% compared to 2012. 33 donums (6%) of this land recorded in Erbil governorate, 314 donums (58%) in Sulaimani governorate, 153 donums (28%) in Duhok, and 39 donums (7%) has been registered in Garmian administration.

Pea (lobia): Kurdistan Region as a whole registered a land area of 2769 donums under bean in growing time 2013 and compared to the same time in 2012 it shows a decrease of 40%. 766 donums (28%) of this land were recorded in Erbil governorate, 648 donums (23%) in Sulaimani, 1161 donums (42%) in Duhok governorate, and 195 donums (7%) were covered in Garmian administration.

Mung: an area of 871 donums has been used to plant mung at the Kurdistan Region level in 2013 where it reduced by 7% compared to summertime 2012. Erbil governorate covered 29 donums (3%) of this land, 378 donums (43%) recorded in Sulaimani governorate, 455 donums (52%) in Duhok governorate, and 9 donums (1%) were used for planting mung in Garmian administration.

Table 16: summer crops cultivated land (donum) in Erbil governorate year 2013

District	Okra	Eggplant	Rice	Pepper	Armenian cucumber	Tomato	Tobacco	Potato	Onion	Cucumber
Khabat	8.0	864.5	10.0	171.0	41.0	215.0	0.0	50.0	34.0	1044.0
Dashti hawler	6.0	122.0	3.0	92.0	65.0	391.0	0.0	215.0	581.0	532.0
Rawandoz	7.3	9.3	3.0	3.8	0.0	217.0	0.0	0.0	31.5	124.0
Soran	24.3	11.0	2.0	0.5	36.0	1909.5	0.0	4.0	26.0	416.5
Shaqlawa	1.0	2.0	81.0	0.5	6.0	388.0	2.0	0.0	30.3	165.5
Koya	239.0	182.8	0.0	154.5	513.5	276.8	0.0	0.0	60.0	300.3
Choman	0.5	5.5	0.0	7.8	8.0	3575.3	3.5	3.0	40.0	695.5
Mergasor	1.5	0.0	0.0	0.0	4.0	91.5	0.0	0.0	0.0	18.3
Center	14.5	404.5	0.0	635.0	92.5	2168.0	0.0	440.0	2972.5	355.0

Continue of table 16

District	Watermelon	Corn	Melon	Sunflower	Bean (fasolia)	Squash	Sesame	Pea (lobia)	Mung
Khabat	3074.0	24.0	364.0	0.0	0.0	269.5	0.0	177.5	0.0
Dashti hawler	788.5	5336.0	1284.0	9.0	0.0	57.0	8.0	8.0	0.0
Rawandoz	0.0	0.0	56.5	0.0	0.0	6.5	0.0	1.0	0.5
Soran	46.5	0.0	232.0	0.0	2.0	21.3	1.3	0.3	9.0
Shaqlawa	1099.0	0.0	0.5	0.0	0.0	5.5	0.0	0.0	6.0
Koya	1009.0	0.0	1123.5	0.0	59.3	72.0	0.0	565.3	0.0
Choman	0.0	0.0	35.0	3.5	1.5	451.3	3.0	1.8	2.0
Mergasor	24.0	0.0	682.0	0.0	0.0	0.0	0.0	0.0	3.5
Center	1374.5	2130.0	595.5	0.0	91.0	183.0	21.0	12.0	8.0

Figure 9 represents the cultivated area for summer crops at the level of districts of Erbil governorate. Erbil center district has the biggest share that accounted for 27% of the cultivated area that followed by district of Dashti Hawler with 22%, Rawandoz, and Mergasor district with lowest land cultivation recorded 1% and 2% respectively.

Figure 9: cultivated land in Erbil governorate year 2013

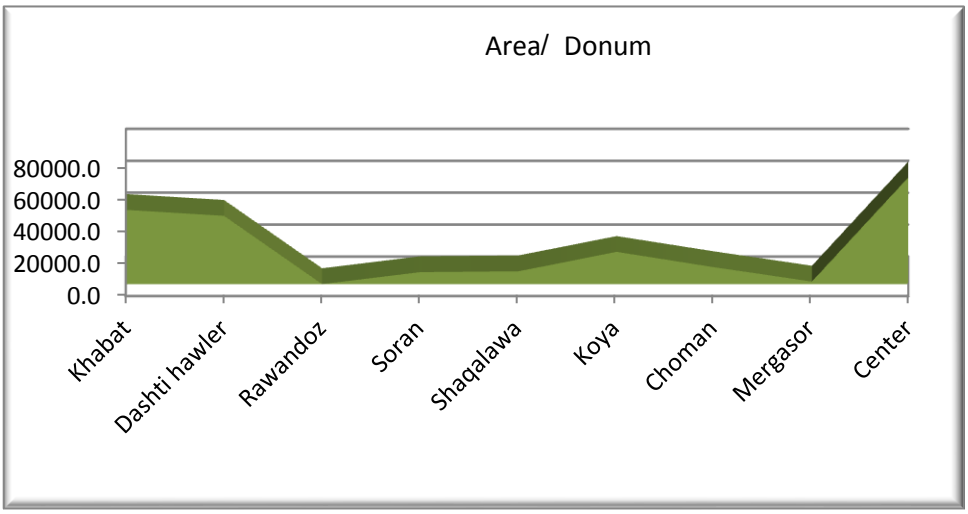


Figure 10 shows the summer land cultivation across districts of Sulaimani governorate. Centeral district stood firs in term of land cultivation that accounted for 19% of land cultivation in Sulaimani. it followed by districts of Sharazor and Peshdar with equal share of 15% and district of Mawat and Qharadakh occupied lowest land cultivation accounted for 1% equally.

Figure 10: cultivated land in Sulaimani governorate year 2013

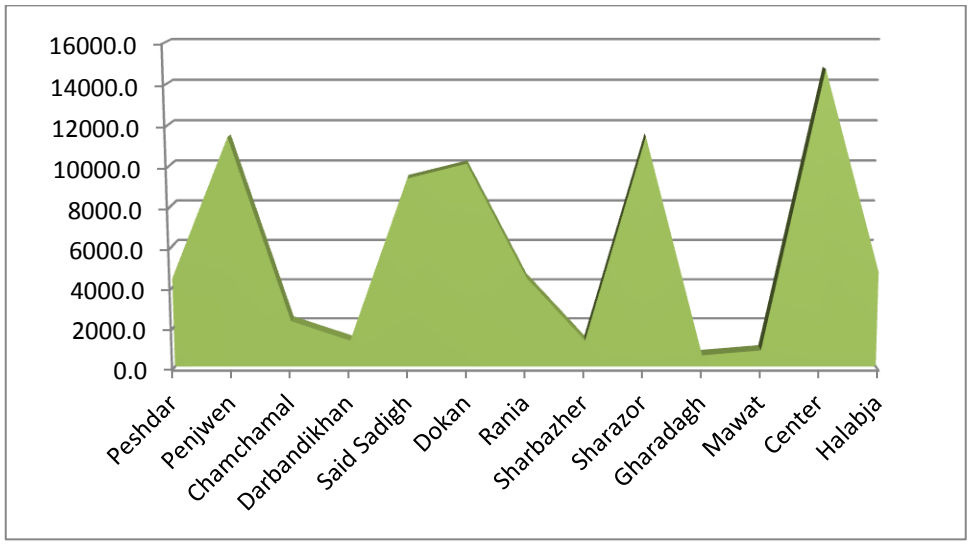


Table 17: summer crops cultivated land (donum) in Sulaimani governorate year 2013

District	Okra	Eggplant	Potato	Rice	Pepper	Onion	Armenian cucumber	Tobacco	Tomato	Cucumber
Peshdar	664.8	18.5	0.0	112.5	10.0	704.8	314.0	11.3	878.0	492.0
Penjwen	7.0	17.0	13.0	99.0	71.5	31.9	23.0	0.0	6970.5	281.5
Chamchamal	238.5	178.5	0.0	8.0	174.0	168.0	23.5	0.5	178.5	62.3
Darbandikhan	23.8	0.5	0.0	96.5	0.3	0.0	432.0	0.0	3.5	0.0
Said Sadegh	388.5	138.5	52.0	7.0	57.5	351.3	1987.5	0.0	154.5	36.5
Dokan	114.3	16.5	0.0	159.3	17.0	81.3	133.5	1.0	774.5	153.0
Ranya	72.0	19.0	2.0	57.5	15.5	62.6	482.0	2.8	354.0	164.8
Sharbazher	12.8	11.5	0.0	0.0	14.0	42.8	0.0	0.0	305.5	215.3
Sharazor	67.5	2.5	125.0	15.0	1.5	16.0	2444.0	0.0	42.0	899.0
Gharadagh	8.8	1.0	0.0	58.5	0.0	2.0	0.0	0.0	143.3	12.0
Mawat	93.5	85.0	0.0	0.0	27.5	21.3	1.8	0.0	260.3	124.8
Center	195.3	44.5	0.0	204.5	15.6	10.5	2457.5	0.0	286.0	32.7
Halabja	512.8	82.3	8.0	93.0	39.8	283.5	1193.5	2.5	757.3	126.0

Continue of table 17

District	Watermelon	Bean (phasolia)	Melon	Squash	Sesame	Sunflower	Corn	Pea (lobia)	Mung
Peshdar	285.0	5.0	572.0	22.0	1.5	52.5	2.0	113.3	185.0
Penjwen	3600.5	8.5	217.5	85.0	0.0	0.0	0.0	0.0	0.0
Chamchamal	541.0	3.0	447.5	29.3	0.0	0.0	0.0	245.0	0.0
Darbandikhan	0.0	0.0	759.0	0.5	0.0	0.0	0.0	0.0	0.0
Said Sadegh	4237.0	0.0	1867.0	3.0	13.0	102.0	3.0	7.5	0.0
Dokan	415.5	37.5	8149.3	7.0	0.0	15.0	25.0	28.0	1.5
Ranya	44.0	312.5	552.0	54.3	299.8	1790.5	0.0	70.8	136.8
Sharbazher	30.0	8.0	494.0	168.0	0.0	0.0	0.0	7.0	7.3
Sharazor	1122.0	0.0	6679.5	40.0	0.0	0.0	0.0	5.0	0.0
Gharadagh	1.5	0.3	344.3	0.0	0.0	0.0	0.0	0.0	0.0
Mawat	25.3	102.8	2.8	16.8	0.0	0.0	1.3	47.3	9.0
Center	337.0	148.8	10911.5	12.8	0.0	51.0	0.0	20.0	3.5
Halabja	704.0	2.5	620.5	146.3	0.0	51.0	0.0	104.0	35.0

Table 18: summer crops cultivated land (donum) in Duhok governorate year 2013

District	Eggplant	Tomato	Okra	Rice	Pepper	Armenian cucumber	Tobacco	Potato	Onion	Cucumber
Bardarash	145.0	841.0	339.8	1353.0	119.0	3918.5	0.0	1189.0	79.5	464.8
Duhok	123.5	827.0	23.0	0.0	27.5	29.0	0.0	2.0	280.0	191.0
Zakho	101.8	104	4.8	0.0	67.5	25.0	0.0	180.0	21.0	36.0
Semel	306.0	622.0	37.0	0.0	211.0	234.0	0.0	605.0	178.0	300.0
Shekhan	17.5	521.5	10.0	18.0	136.0	10548.5	0.0	2095.0	57.0	263.0
Akre	81.7	437.0	391.0	1789.3	38.5	1914.5	0.0	55.5	241.0	1024.5
Amedi	6.9	227.7	0.0	34.2	4.8	1.0	3.5	25.2	58.7	39.9

Continue of table 18

District	Watermelon	Corn	Sunflower	Melon	Bean (phasolia)	Squash	Sesame	Pea (lobia)	Mung
Bardarash	1267.0	154.0	0.0	7555.0	0.0	61.5	4.0	122.0	6.0
Duhok	252.5	0.0	36.0	4574.0	0.0	151.5	0.0	134.5	16.0
Zakho	284.5	150.0	0.0	14065.0	0.0	108.3	0.0	19.3	0.0
Semel	281.0	200.0	0.0	28940.0	10.0	221	0.0	16.0	0.0
Shekhan	37.0	1256.0	183.0	8980.0	0.0	116.5	5.0	49.5	3.0
Akre	2768.8	0.0	2.0	15422.0	3.5	64.8	52.3	779.8	421.5
Amedi	9.5	0.0	0.0	397.0	0.0	19.5	91.3	39.5	8.7

Figure 11 shows the summer land cultivation across districts of Duhok governorate. District of Semel occupied the highest land cultivation area (26%) that is about 32161 donums and the lowest land cultivation (1%) belonged to district of Amedi that covered a land area of 967 donums according to survey 2013.

Figure 11: summer crops cultivated land in Duhok governorate year 2013

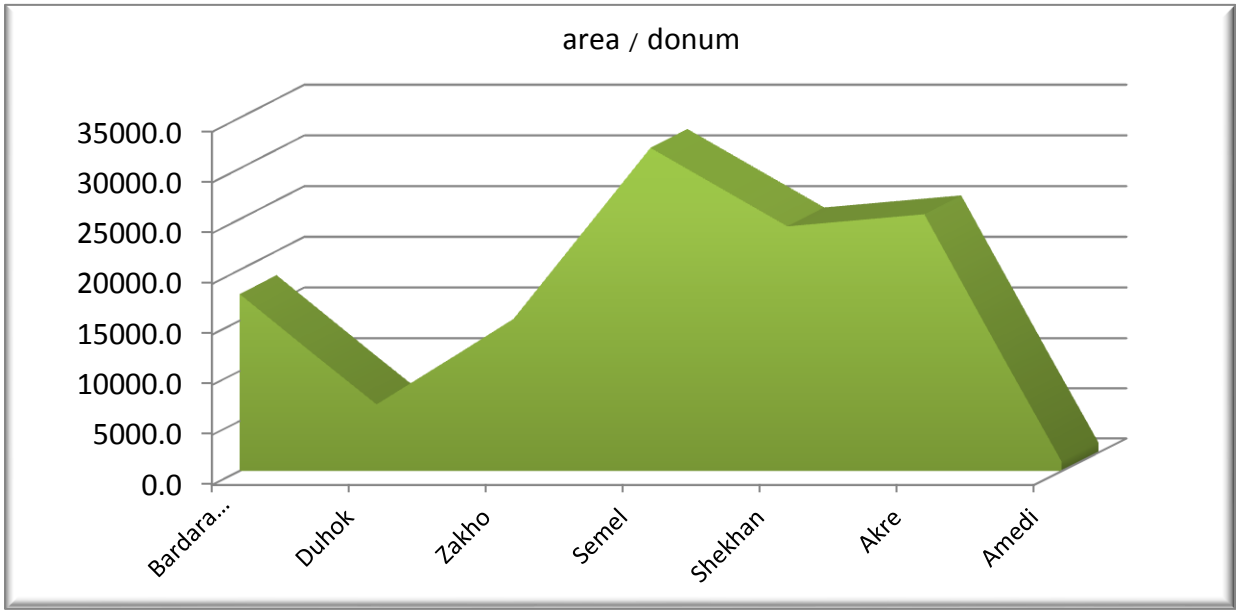


Figure 12 shows the summer land cultivation across Garmian administration borders. The highest level of land cultivation can be observed in district of Khanaghin accounting for 51% of cultivated land throughout Garmian and the lowest level can be observed in Kalar district accounting for 9%. It is worth to say that due to political status some parts of Garmian were-at the time of survey-under control of central governorate of Baghdad so data was calculated only for sub-districts of Bamo, Ghorato, and Maydan that are under control of Garmian administration and other parts were excluded.

Figure 12: summer crops cultivated land in Garmian administration year 2013

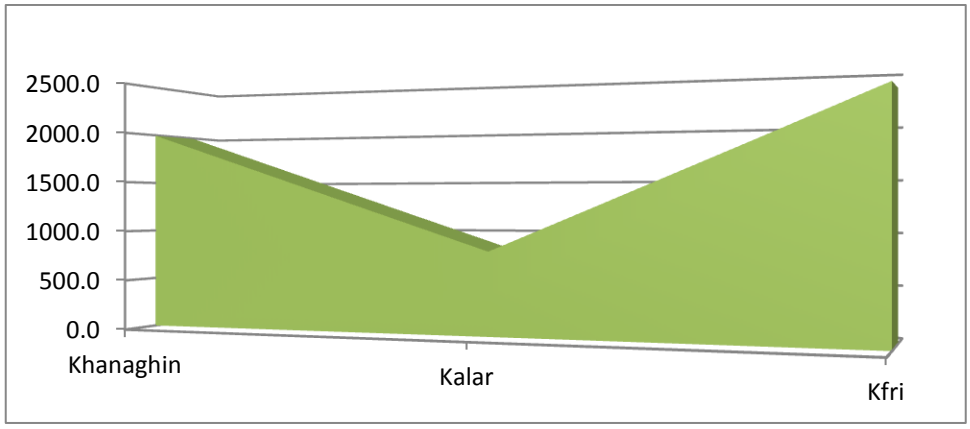


Table 19: summer crops cultivated land (donum) in Garmian administration year 2013

District	Okra	Eggplant	Rice	Pepper	Armenian cucumber	Tomato	Potato	onion	cucumber
Khanaghin	146.3	126.3	778.0	3.3	0.0	262.0	27.0	0.0	99.8
Kalar	30.0	3.3	17.0	0.8	20.0	69.0	0.0	24.0	10.0
Kfri	305.4	163.5	413.5	100.0	4.5	139.0	4.0	25.0	63.5

Continue of table 19

District	Watermelon	Corn	Melon	Bean (phasolia)	Squash	Sesame	Pea (lobia)	Mung
Khanaghin	45.5	208.0	0.5	0.0	16.5	39.0	51.5	9.0
Kalar	18	0.0	70.0	0.0	0.3	0.0	49.5	0.0
Kfri	75.5	10.0	0.0	0.0	2.0	0.0	93.5	0.0

Table 20: total summer crops cultivated land area (donum) by governorates year 2013

Governorate	Okra	Eggplant	Rice	Pepper	Armenian cucumber	Tomato	Tobacco	Potato	Onion	Cucumber
Erbil	302	1602	99	1065	766	9232	6	712	3775	3651
%	8%	49%	2%	48%	3%	38%	22%	14%	58%	42%
Duhok	806	782	3194	604	16671	3580	3	4152	915	2319
%	20%	24%	59%	27%	62%	15%	14%	81%	14%	27%
Sulaimani	2399	615	911	444	9492	11108	16	200	1776	2600
%	60%	19%	17%	20%	35%	46%	64%	4%	27%	30%
Garmian	482	293	1209	104	25	470	0	31	49	173
%	12%	9%	22%	5%	0%	2%	0%	1%	1%	2%

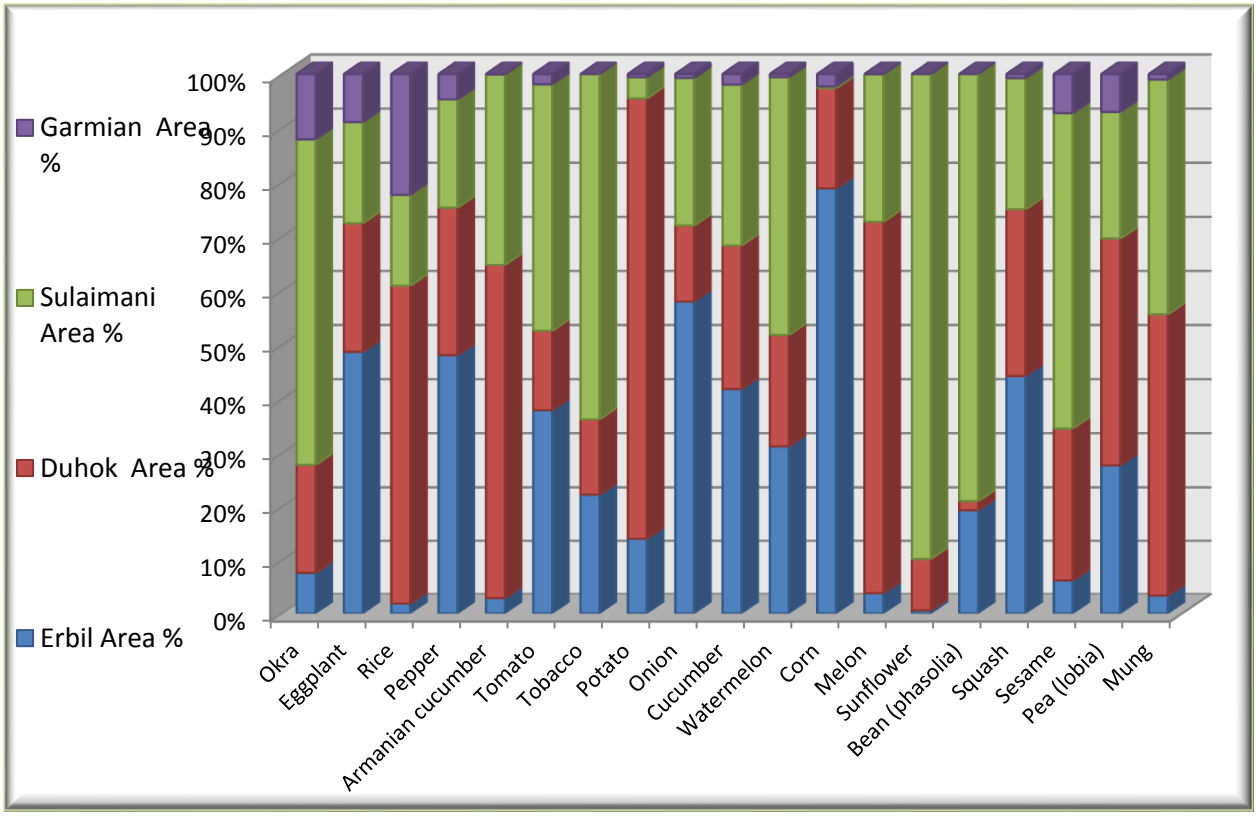
Continue of table 20

Governorate	Watermelon	Corn	Melon	Sunflower	Bean (phasolia)	Squash	Sesame	Pea (lobia)	Mung
Erbil	7416	7490	4373	13	154	1066	33	766	29
%	31%	79%	4%	1%	19%	47%	6%	28%	3%
Duhok	4900	1760	79933	221	14	743	153	1161	455
%	%21	19%	69%	10%	2%	27%	28%	42%	52%
Slaimani	11343	31	31617	2062	629	585	314	648	378
%	48%	0%	27%	90%	79%	26%	58%	23%	43%
Garmian	139	218	71	0	0	19	39	195	9
%	1%	2%	0%	0%	0%	1%	7%	7%	1%

Figure 13 manifests the summer crops land cultivation for all items at the level of governorates of Erbil, Sulaiman, Duhok, and Garmian administration. Erbil governorate covered a land area of 42549 donums (17%); Sulaimani covered 77166 donums (31%); Duhok governorate covered 122365 donums (50%); and Garmian administration occupied 3524 donums that is about 1% of the total cultivated land. Kurdistan as a whole registered a total land area of 245604 donums for summer crops in 2013.

Because of larger cultivated land in Duhok governorate, the highest level of production at the level of Kurdistan Region produced in this governorate.

Figure 13: percentage rate of summer crops land cultivation by governorates year 2013



5. The level of production and land cultivation in Kurdistan Region

The data given in Table 14 shows that Erbil governorate accounted for 37% of product and about 17% of the total summer cultivated land in Kurdistan Region; Sulaimani governorate accounted for 21% of product and about 31% of summer cultivated land; Duhok governorate recorded 41% of product and 50% of cultivated land; and Garmian administration with 1% of product occupied 1% of the total summer cultivated land across Kurdistan Region in 2013.

Figure 14: the total summer crops production and land cultivation by governorates year 2013

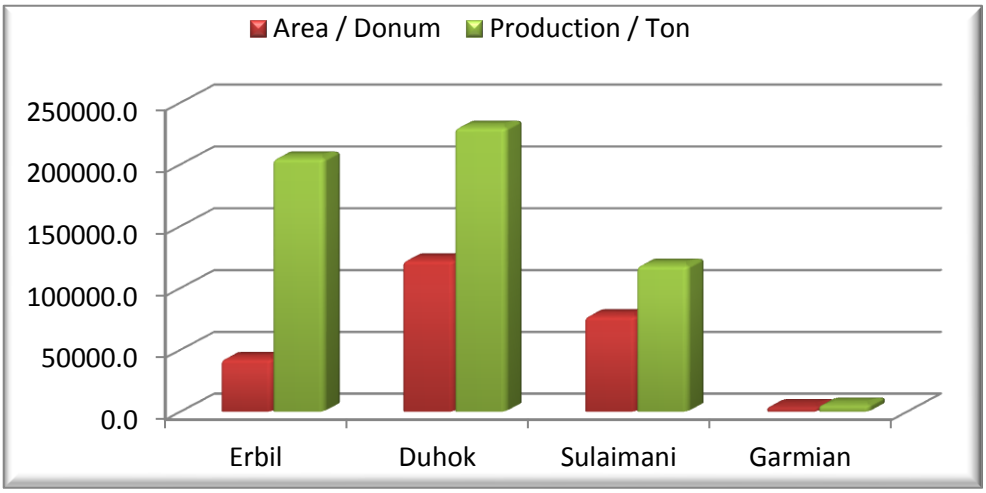


Table 21: total cultivated land, production and yield crops in Kurdistan Region 2013

KRG	Okra	Eggplant	Rice	Pepper	Armenian cucumber	Tomato	Tobacco	Potato	Onion	Cucumber
Area	3988.4	3292.0	5412.7	2217.3	26953.3	24394.4	24.8	5094.7	6515.1	8743.1
Yield	1812	5491	975	4342	1093	3728	798	6916	4232	4234
Production	7228.5	18076.0	5275.7	9627.0	29449.3	90940.0	19.8	35233.9	27573.9	37016.3

Continue of table 21

KRG	Watermelon	Corn	Melon	Sunflower	Bean (phasolia)	Squash	Sesame	Pea (lobia)	Mung
Area	23797.5	9499.3	115993.3	2295.5	796.1	2410	539.1	2768.5	871.2
Yield	3385	3233	1457	390	1942	3725	441	1957	397
Production	80558.1	30707.6	168959.9	895	1545.7	8977	237.5	5418.9	345.6

Figure 15: total production and cultivated land for summer crops (okra, eggplant, pepper, Armenian cucumber, tomato, potato, onion, cucumber, squash,) in Kurdistan Region 2013

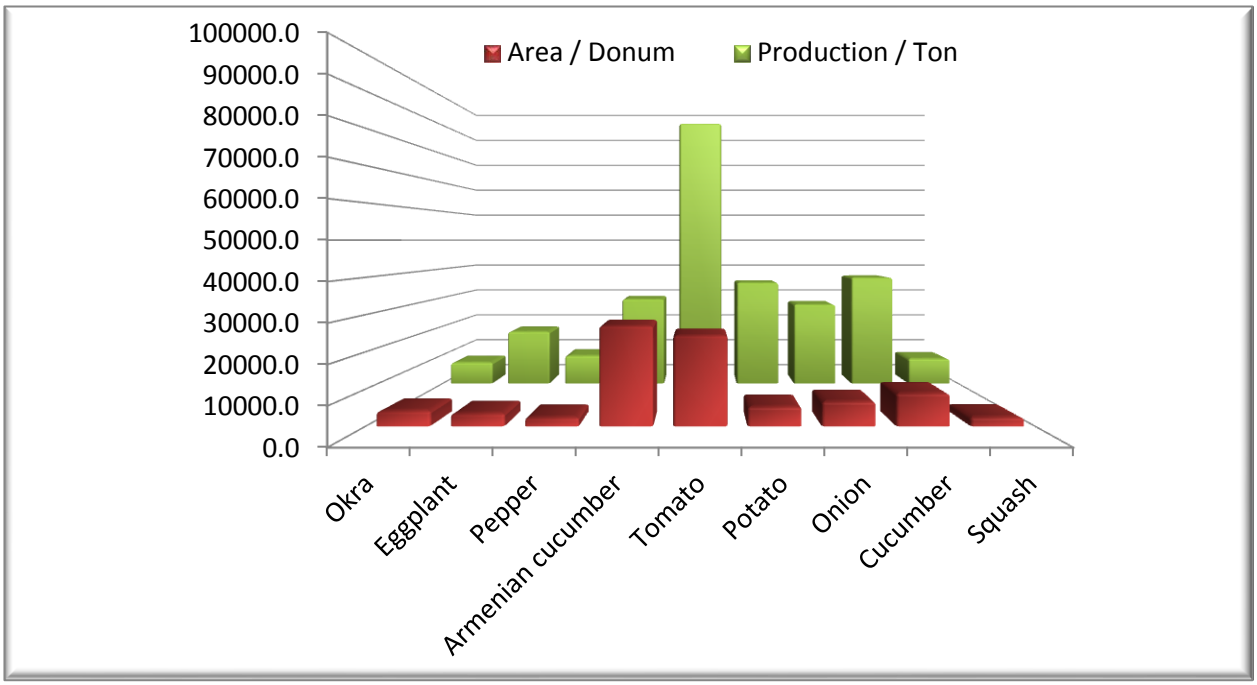


Figure 16: total production and cultivated land for summer crops (rice, corn, Bean, Pea and mung) in Kurdistan Region 2013

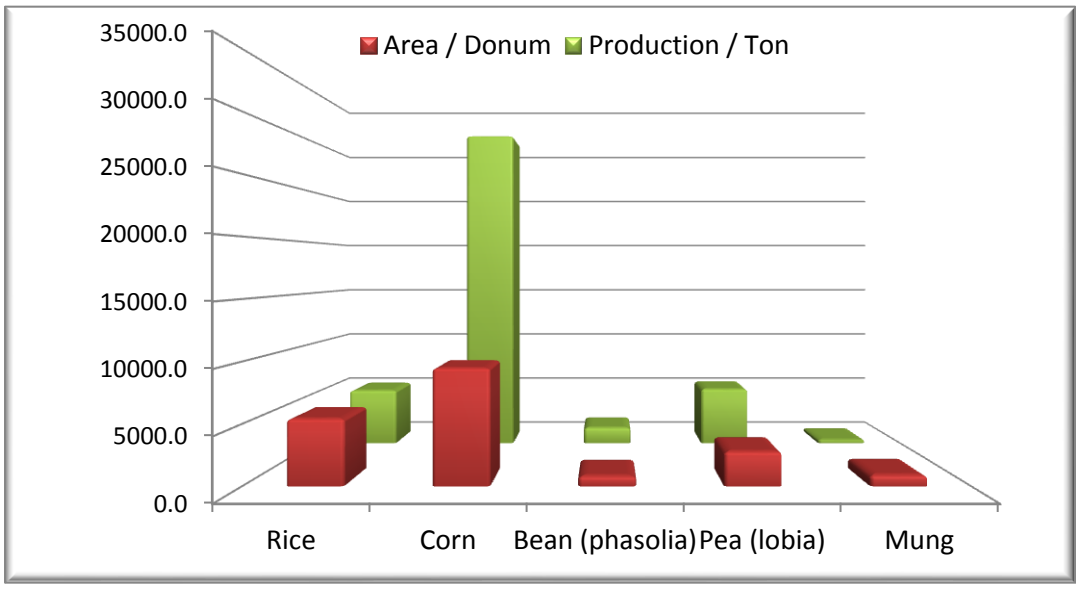


Figure 17: total production and cultivated land for summer crops (sunflower, sesame and tobacco) in Kurdistan Region 2013

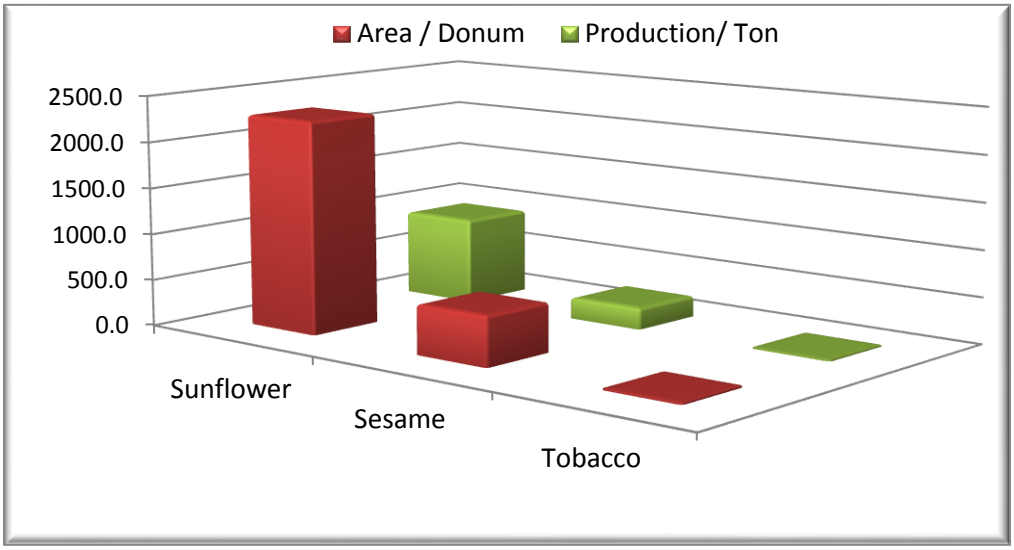
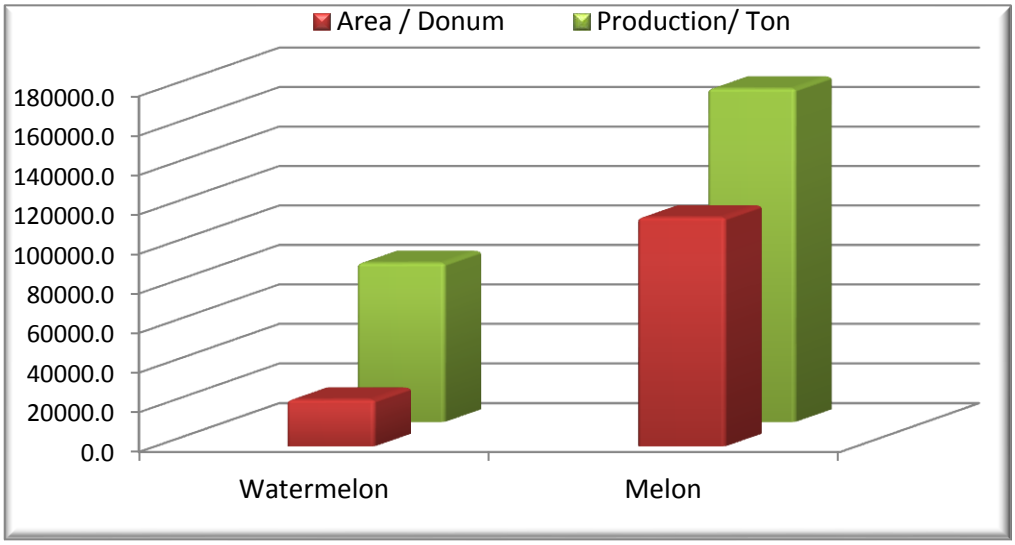


Figure 18: total production and cultivated land for summer crops (watermelon, melon) in Kurdistan Region 2013



6. Summer products cost

No doubt, farmers face many costs during production process, from the first planting stage till it brought to market like plowing, land preparation, irrigation that has a key role in thriving the crops, controlling weeds that leads to high quality crops, fertilizing to increase the fertility of soil, and finally cultivation and marketing. All of these are the main steps of the production process, for this reason they have been considered in the questionnaire of the survey in order to manifest the cost per donum of cultivated land for each stage of crop production. The cost has been estimated by crops at the level of districts of Kurdistan Region to obtain the total cost then the calculation has been done to figure out the followings:

1. The average cost per donum by districts

It shows the cost of all stages of crops production at the level of districts of Kurdistan Region.

2. The average cost per donum by each crop

It shows the cost for each crop separately. For instance, in Erbil district, plowing and preparing the land for okra estimated at 65 thousands Iraqi Dinar (ID); seeding estimated at 64 thousands ID; irrigation costs 189 thousands ID; cleaning, fertilizing, pesticides, and harvesting cost 23, 67, 25, and 157 thousands ID respectively.

1. Average cost per donum by districts

Table 22: the cost per donum for summer crops at the level of Erbil's districts (1000 ID) year 2013

District	plowing & preparing	Seeding	Irrigating	Cleaning	Fertilizing	Pesticiding	Harvesting	Total
Khabat	56	144	154	38	165	47	298	901
Dashti hawler	70	84	69	22	100	19	279	645
Rawandoz	65	45	101	40	37	33	32	353
Soran	71	80	107	67	45	22	128	519
Shaqlawa	42	87	255	38	65	5	170	663
Choman	60	127	267	90	118	35	112	793
Koya	62	47	65	36	37	13	92	353
Mergasor	48	49	58	32	26	16	140	369
Center	75	167	132	48	164	50	227	863
total	61	92	134	46	84	27	164	607

Table 23: the cost per donum for summer crops at the level of Sulaimani's districts (1000 ID) year 2013

District	Plowing & preparing	Seeding	Irrigating	Cleaning	Fertilizing	Pesticiding	Harvesting	Total
Peshdar	74	75	152	40	48	14	200	603
Penjwen	99	85	175	70	54	20	182	686
Chamchamal	96	80	70	37	25	23	121	452
Darbandikhan	99	48	81	30	20	8	153	439
Dokan	82	80	87	67	32	15	131	494
Rania	73	67	77	43	37	22	177	496
Said Sadigh	64	72	94	59	37	18	214	557
Sharbazher	104	96	120	71	67	20	156	635
Sharazor	50	37	40	29	14	9	105	283
Gharadagh	118	128	280	103	64	13	249	955
Mawat	65	84	124	50	46	12	129	510
Center	74	66	103	47	33	9	171	504
Halabja	71	49	112	70	24	19	139	484
Total	82	74	116	55	39	15	164	546

Table 24: the cost per donum for summer crops at the level of Duhok's districts (1000 ID) year 2013

District	Plowing & Preparing	Seeding	Irrigating	Cleaning	Fertilizing	Pesticiding	Harvesting	Total
Bardarash	44	104	208	54	113	36	187	746
Duhok	56	49	217	126	34	15	222	719
Zakho	62	68	175	86	43	14	133	581
Semel	72	51	26	25	69	23	56	322
Shekhan	40	97	92	31	54	20	72	406
Akre	34	36	27	11	45	11	79	242
Amedi	118	59	123	35	49	12	156	550
Total	61	66	124	53	58	18	129	509

Table 25: the cost per donum for summer crops at the level of Garmian's districts (1000 ID) year 2013

District	Plowing & Preparing	Seeding	Irrigating	Cleaning	Fertilizing	Pesticiding	Harvesting	Total cost per donum
Khanaghin	73	71	90	34	86	24	127	505
Kalar	102	81	122	64	47	36	154	606
Kfri	122	70	144	70	77	58	152	694
Total	99	74	119	56	70	39	144	602

The total cost per donum for summer crops in governorates and administrations

The total cost per donum of summer land cultivation in governorates of Kurdistan Region estimated at 607 thousands ID in Erbil governorate, 546 thousands ID in Sulaimani governorate, 509 thousands ID in Duhok governorate, and 602 thousands ID in Garmian administration. And in Kurdistan as a whole the cost has been estimated at 566 thousands ID per donum of land cultivation.

Table 26 represents the cost per donum for summer crops production at the level of governorates of Erbil, Sulaimani, Duhok, and Garmian administration. The highest cost is recorded in Erbil governorate which is equivalent to 607 thousands ID per donum. In general harvesting stage recorded the highest cost in governorates due to lack of high quality harvesting machinery, high cost of labor, and a long period of about four months which spent for this purpose. Comparing to other governorates, a lower cost has been recorded in Duhok governorate which is ascribed to lower cost of labor and fertilizer in this governorate.

Table 26: the cost per donum for summer crops at the level of governorates (1000 ID) year 2013

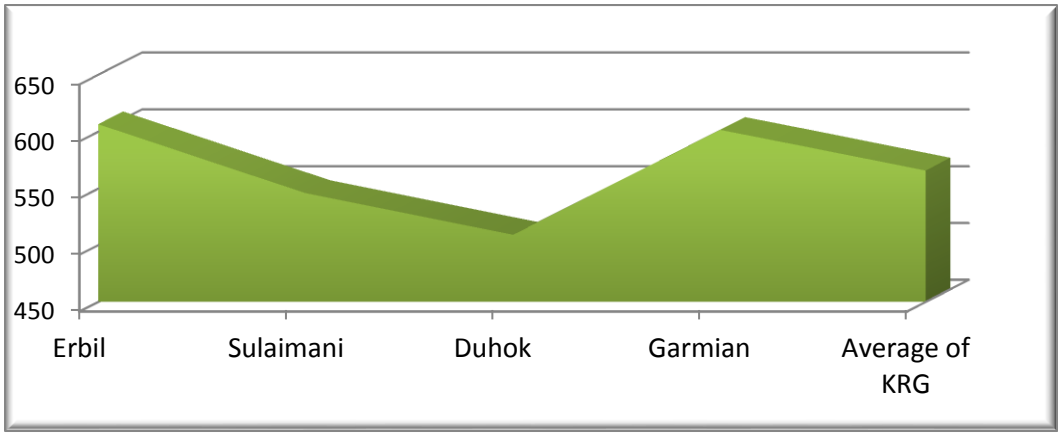
Governorate	Plowing & Preparing	Seeding	Irrigating	Cleaning	Fertilizing	pesticiding	Harvesting	Total cost per donum
Erbil	61	92	134	46	84	27	157	607
%	10%	15%	22%	8%	14%	4%	27%	100%
Sulaimani	82	74	116	55	39	15	164	546
%	15%	14%	21%	10%	7%	3%	30%	100%
Duhok	61	66	124	53	58	18	129	509
%	12%	13%	24%	10%	12%	4%	25%	100%
Garmian	99	74	119	56	70	39	144	602
%	16%	12%	20%	9%	12%	7%	24%	100%
KRG total cost	76	77	123	52	63	25	150	566
%	13%	14%	22%	9%	11%	4%	27%	100%

The cost per donum for each stage of crop production in Kurdistan Region

In Kurdistan Region as a whole the total cost per donum of land cultivation estimated at 566 thousands ID of which plowing and land preparation recorded 76 thousands ID; irrigation recorded 123 thousands ID; seeding, cleaning, fertilizing, pesticides, and harvesting recorded 77, 52, 63, 25 , 150 thousands ID respectively.

The high record of irrigation is ascribed to the crops' need to more irrigation times, once in a period of less than 7 days and this trend continues until harvesting time.

Figure 19: the cost per donum (1000 ID) for summer crops at the level of governorates year 2013



1. The average cost per donum for each crop

Table 27: the cost per donum by crops in Erbil governorate (1000 ID) year 2013

product	Plowing & Preparing	Seeding	Irrigating	Cleaning	Fertilizing	Pesticiding	Harvesting	Total cost per donum
Okra	65	64	189	23	67	25	157	590
Eggplant	62	74	133	37	92	33	196	627
Rice	45	93	64	15	32	0	74	324
Onion	63	192	137	60	94	19	187	725
Pepper	66	60	130	35	83	32	134	541
Armenian cucumber	41	55	42	14	34	10	122	318
Tomato	68	104	155	61	100	30	202	718
Potato	56	359	158	60	170	29	298	1129
Cucumber	68	106	154	57	107	35	208	736
Water melon	59	94	110	40	103	31	207	649
Corn	43	69	83	2	64	11	325	597
Melon	70	54	72	28	30	12	148	413
Sunflower	73	38	85	16	40	13	142	406
Bean (phasolia)	60	57	99	38	61	8	88	412
Squash	66	85	131	35	100	29	149	596
Sesame	63	63	232	29	36	9	80	504
Pea (lobia)	66	51	85	33	76	34	100	444
Mung	30	44	107	10	7	9	111	318

Table 28: the cost per donum by crops in Sulaimani governorate (1000 ID) year 2013

Product	Plowing & Preparing	Seeding	Irrigation	Cleaning	Fertilizing	Pesticiding	Harvesting	Total cost per donum
Okra	78	59	137	61	40	22	272	669
Eggplant	78	72	114	52	37	18	134	505
Potato	72	261	122	65	88	30	320	958
Rice	211	97	396	121	48	22	242	1137
Pepper	84	74	114	56	41	22	166	555
Onion	75	105	80	51	32	9	154	506
Armenian cucumber	49	31	3	35	4	10	82	214
Tobacco	100	139	107	88	58	40	156	687
Tomato	93	100	164	73	56	20	170	676
Cucumber	87	76	133	56	48	18	152	570
Watermelon	74	63	65	44	29	18	65	356
Bean (phasolia)	73	92	143	60	64	13	218	663
Melon	50	35	3	16	5	6	68	182
Sunflower	68	52	80	42	32	5	156	435
Corn	64	80	89	55	48	7	114	457
Squash	78	84	125	54	46	16	166	569
Sesame	63	49	97	40	40	22	142	452
Pea (lobia)	76	58	114	51	40	19	182	540
Mung	69	60	88	43	34	10	138	442

Table 29: the cost per donum by crops in Duhok governorate (1000 ID) year 2013

Product	Plowing & Preparing	Seeding	Irrigating	Cleaning	Fertilizing	Pesticiding	Harvesting	Total cost per donum
Okra	40	27	135	56	67	19	159	504
Eggplant	53	33	191	95	69	24	177	642
Rice	52	64	177	56	120	24	195	689
Pepper	48	50	176	82	92	24	133	604
Tomato	67	49	217	99	96	28	184	740
Armenian cucumber	33	28	10	6	3	7	47	134
Tobacco	310	80	195	95	65	60	495	1300
Potato	44	836	197	36	168	63	166	1510
Onion	71	229	113	54	48	13	109	638
Cucumber	54	46	154	67	78	26	155	580
Watermelon	49	60	120	47	63	21	112	472
Corn	37	107	206	16	62	30	88	545
Melon	49	19	2	3	3	3	69	148
Sunflower	33	14	40	18	25	5	113	248
Bean (phasolia)	30	50	12	15	60	3	15	185
Squash	58	33	178	89	47	18	157	580
Sesame	78	27	71	8	36	7	182	409
Pea (lobia)	61	18	158	75	48	15	169	543
MUng	38	21	43	16	30	7	112	266

Table 30: the cost per donum by crops in Garmian administration (1000 ID) year 2013

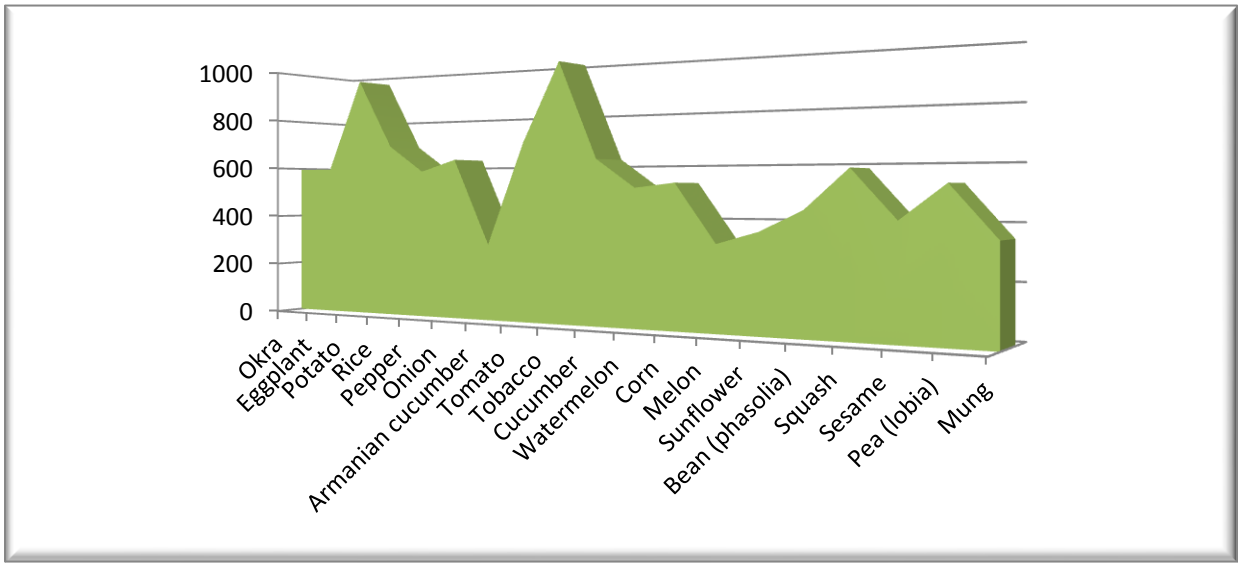
Product	Plowing & Preparing	Seeding	Irrigating	Cleaning	Fertilizing	Pesticiding	Harvesting	Total cost per donum
Okra	101	67	121	55	76	42	159	621
Eggplant	97	74	128	56	79	41	132	607
Rice	115	76	131	37	71	57	107	568
Pepper	112	71	122	57	70	55	144	632
Armenian cucumber	131	57	67	64	87	30	82	519
Tomato	93	78	120	57	79	40	150	617
Potato	67	82	69	20	83	28	228	578
Onion	91	89	116	61	81	43	135	616
Cucumber	96	70	116	55	85	41	145	609
Watermelon	90	79	110	68	81	59	107	594
Corn	72	49	161	43	68	21	124	538
Melon	116	58	37	101	24	25	169	529
Bean (phasolia)	65	75	90	25	100	20	125	500
Squash	75	73	111	47	97	26	141	570
Sesame	44	28	97	0	33	0	100	302
Pea (lobia)	99	72	107	48	82	41	144	594
Mung	32	25	150	0	0	0	160	367

Table 31: the cost per donum by crops in KRG (1000 ID) year 2013

Product	Plowing & Preparing	Seeding	Irrigating	Cleaning	Fertilizing	Pesticiding	Harvesting	Total cost per donum
Okra	71	54	145	49	63	27	187	596
Eggplant	72	63	141	60	69	29	160	595
Potato	72	261	122	65	88	30	320	958
Rice	106	83	192	57	68	26	155	686
Pepper	78	64	135	57	72	33	144	583
Onion	75	154	112	57	64	21	146	628
Armenian cucumber	64	43	31	30	32	14	83	296
Tomato	80	83	164	73	83	29	176	688
Tobacco	205	109	151	91	61	50	326	994
Cucumber	76	75	139	59	79	30	165	624
Watermelon	68	74	101	50	69	32	123	516
Corn	54	76	135	29	61	17	163	534
Melon	71	41	28	37	15	11	113	318
Sunflower	58	35	68	25	33	8	137	363
Bean (phasolia)	57	68	86	34	71	11	112	440
Squash	67	64	140	57	81	25	149	582
Sesame	62	39	133	12	35	5	121	408
Bean (lobia)	75	50	116	52	62	27	149	531
Mung	42	38	97	17	18	7	130	348

Figure 19 shows the cost per donum of summer crops land cultivation at the level of Kurdistan Region's governorates and Figure 20 represents the cost for each crops separately after calculating the total cost (given in Table 31). The cost difference is due to the nature of each crop in term of plowing and land preparation, the crop need for water, the method of irrigation, harvesting and planting time. For instance, tobacco registered the highest cost per donum amounted to 994 thousand ID followed by potato, tomato and rice that recorded 958, 688 and 686 thousand ID respectively. Rainfed crops like armenian cucumber and melon registered the lowest cost of 296 and 318 thousand ID respectively compared to irrigated crops as the irrigation cost has been excluded from other costs for these two crops

Figure 20: the average cost per donum by crops in KRG (1000 ID) year 2013



7. Water sources

Water is one of the most important natural resources that almost cover all aspects of life and need to be consumed in a well-planned way.

In this context we focused on the water resources associated with agriculture. The water sources used in irrigation in Kurdistan Region include confluence, normal and artesian wells, spring, stream, aqueduct and water projects. Farmers were asked about the most water source they use in irrigation and the results have been presented in the form of tables and figures at the level of districts. At the time more than one source had been used by farmer, the farmer was asked about the most water resource used in irrigation. Sources change by geographical location, for instance, in mountainous area in Kurdistan Region, farmers can use both spring and river resources for irrigation but, spring is more popular than river in this area, so spring would be registered. In this way the water source had been registered in all villages.

The level of using water resources in Kurdistan Region for year 2013

Of 17064 farmers that were asked about the water resources they use in irrigation, an average rate of 4% used river, 20% used normal well, 14% artesian well, 16% used spring, 41% stream, 2% aqueduct, and 3% of farmers used water project for irrigation. As the figures show streams are the most water source used by farmers. These streams have not been concreted and using them needs time so, concrete could help to solve this problem. Wells are the biggest water source in plain area but, they have not been able to provide the need for water and resulted in low number of farmers who produce summer crops in this area despite of having a large land area for summer crops.

Table 32: using water source by the number of farmers in Erbil governorate year 2013

District	Confluence	Normal well	Artesian well	Spring	Stream	Aqueduct	Water project	Sampled farmers
Dashti hawler	0	74	299	0	1	0	0	374
Khabat	23	83	183	0	0	0	72	361
Rawandoz	1	0	0	1	279	1	0	282
Soran	0	16	5	6	671	1	0	699
Shaqlawa	1	63	50	69	149	6	12	350
Choman	0	1	47	144	1043	55	0	1290
Koya	15	444	24	1	54	9	0	547
Mergasor	4	5	11	9	73	0	0	102
Center	2	185	402	0	78	0	0	667
Total (Erbil governorate)	46	871	1021	230	2348	72	84	4672

Figure 21: percentage rate of using water resources in Erbil governorate year 2013

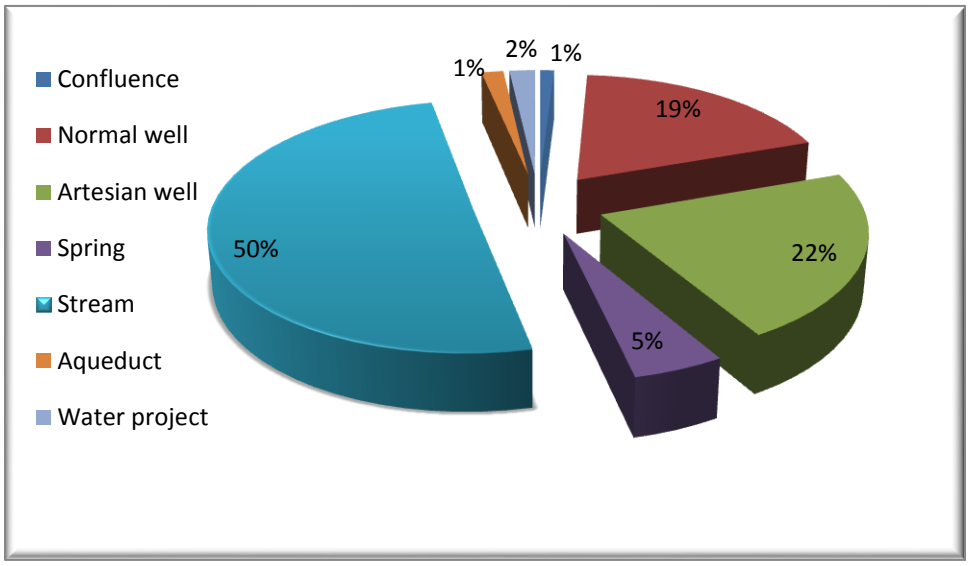


Table 33: using water sources by the number of farmers in Sulaimani governorate year 2013

District	Confluence	Normal well	Artesian well	Spring	Stream	Aqueduct	Water project	Sampled farmers
Peshdar	81	45	7	319	839	51	150	1492
Penjwen	0	310	13	73	235	5	0	636
Chamchamal	23	304	59	28	117	46	21	598
Darbandikhan	0	2	0	109	0	3	0	114
Dokan	1	61	66	358	362	27	15	890
Rania	1	80	1	281	522	0	0	885
Said Sadigh	0	245	20	2	351	18	0	636
Sharbazher	0	58	37	423	89	5	11	623
Sharazor	0	0	29	1	96	1	0	127
Gharadagh	0	22	2	51	102	0	0	177
Center	0	10	14	98	160	18	0	300
Halabja	0	134	167	179	462	0	0	942
Sulaimani governorate (Total)	106	1271	415	1922	3335	174	197	7420

Figure 22: percentage rate of using water sources in Sulaimani governorate year 2013

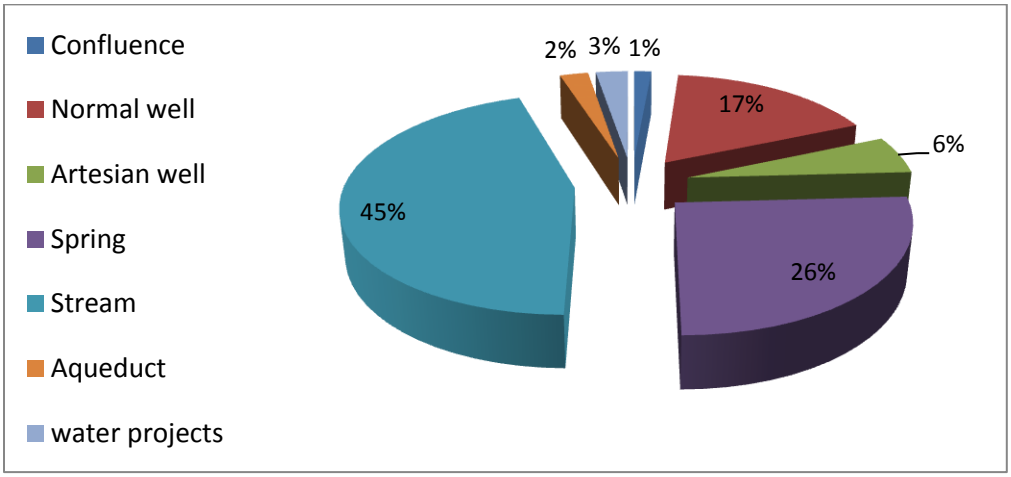


Table 34: using water source by the number of farmers in Dohuk governorate year 2013

District	Confluence	Normal well	Artesian well	spring	Stream	Aqueduct	Water project	Sampled farmers
Duhok	50	97	251	37	40	0	0	475
Bardarash	0	592	298	0	57	0	0	947
Zakho	26	8	13	1	2	0	20	70
Semel	89	41	11	12	100	4	3	260
Shekhan	117	103	68	70	610	0	0	968
Akre	80	407	28	136	107	0	0	758
Amedi	141	19	20	353	0	6	1	540
Duhok governorate (Total)	503	1267	689	609	916	10	24	4018

Figure 23: percentage rate of using water resources in Dohuk governorate year 2013

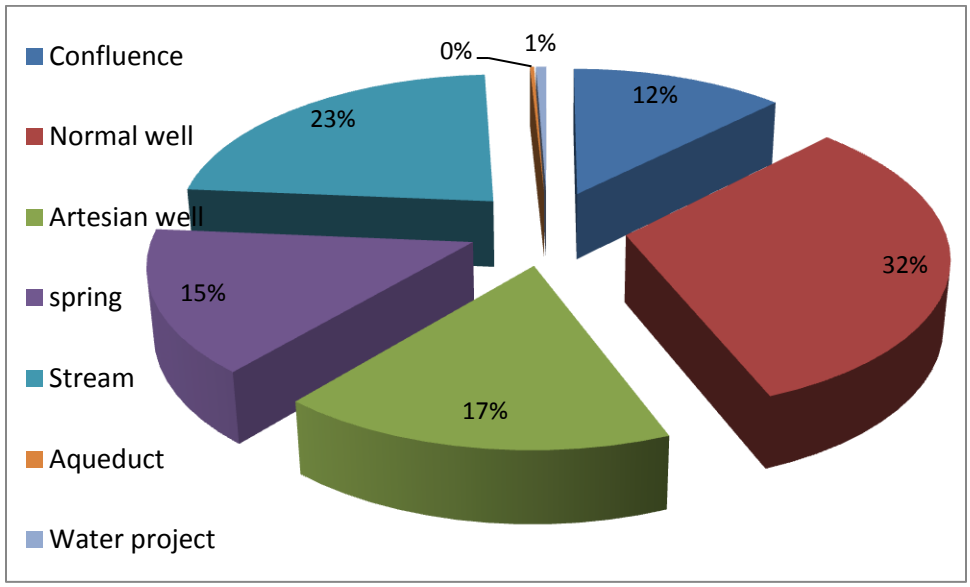


Table 35: using water resource by the number of farmers in Garmian administration year 2013

District	Confluence	Normal well	Artesian well	Spring	Stream	Aqueduct	Water project	Sampled farmers
Khanaghin	16	0	1	0	24	0	189	230
Kalar	0	0	65	4	29	0	0	98
Kfri	78	0	154	0	390	4	0	626
Garmian (Total)	94	0	220	4	443	4	189	954

Figure 24: percentage rate of using water resources in Garmian administration year 2013

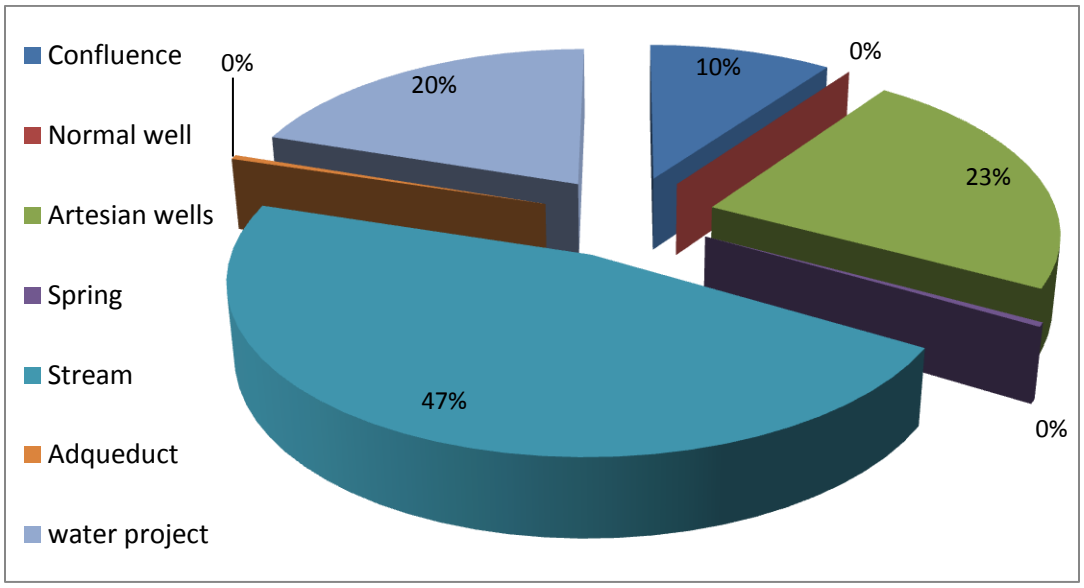


Table 36: the rate of using water resources by farmers in governorates year 2013

District	Confluence	Normal well	Artesian well	Spring	Stream	Aqueduct	Water project	%
Erbil	1%	19%	22%	5%	51%	2%	2%	100%
Sulaimani	1%	17%	6%	26%	45%	2%	3%	100%
Duhok	12%	32%	17%	15%	23%	0%	1%	100%
Garmian	10%	0%	23%	0%	47%	0%	20%	100%
KRG	4%	20%	14%	16%	41%	2%	3%	100%

Figure 25: the rate of using water resources by governorates year 2013

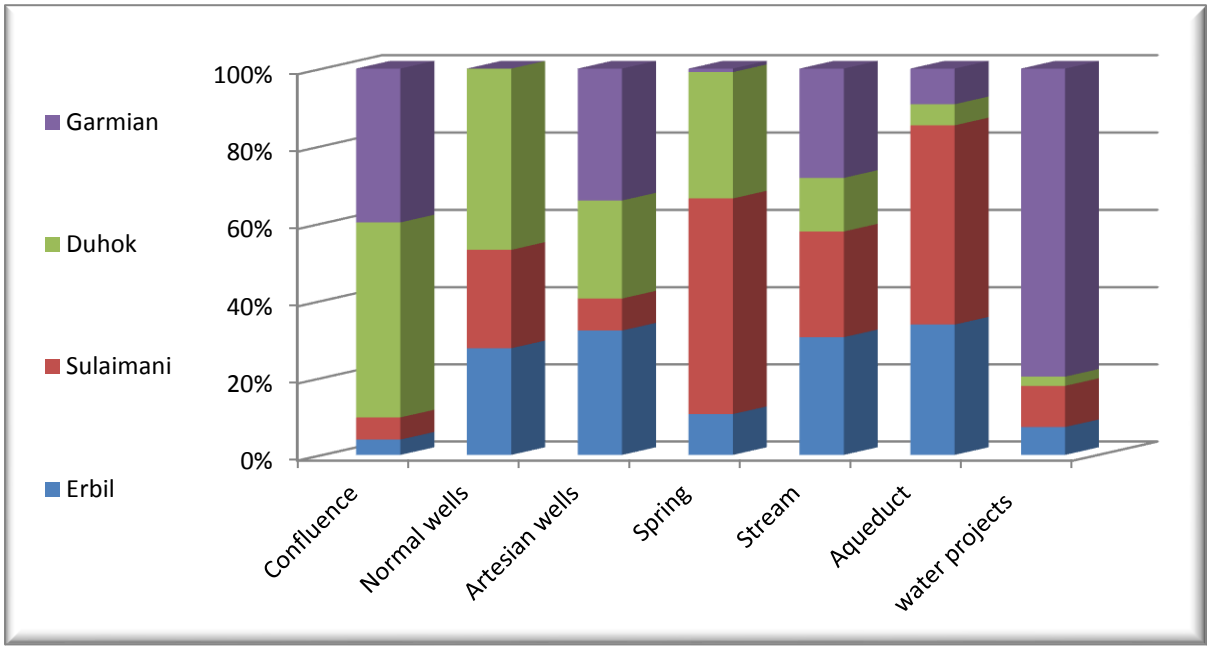
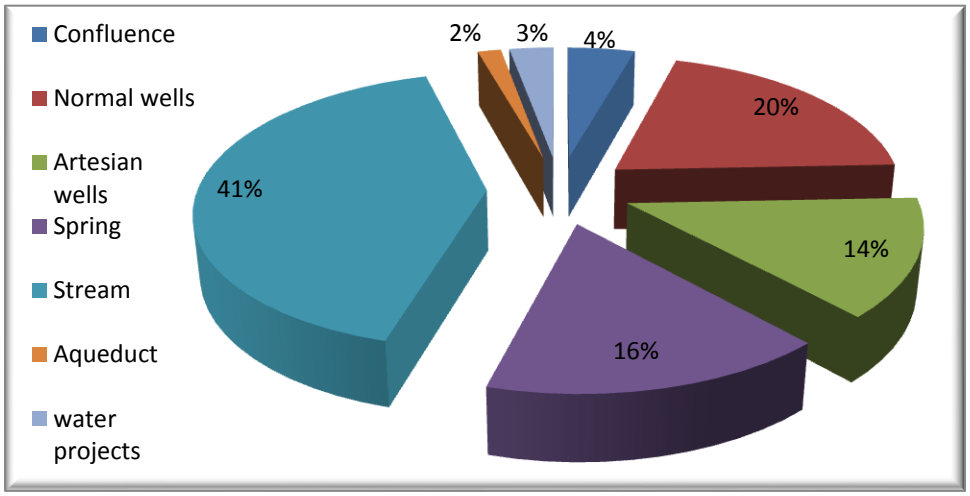


Figure 26: the rate of using water resources in Kurdistan Region 2013



8. Transportation cost

Table 37 shows the transportation cost for one ton of summer production from farm to market. The farmers who used their own vehicles, they calculated the fuel consumption cost together with the loading cost.

Kurdistan Region as a whole averaged 33thousands ID on transportation per ton where Erbil governorate recorded 42 thousands ID accounted for 31%; Sulimani governorate had a record of 37 thousands ID accounted for 28%; Duhok governorate recorded 35 thousands ID accounted for 26%; and Garmian reported 20 thousands ID rated at 15% of the total transportation cost per ton in Kurdistan Region.

Table 37: the total transportation cost per ton for summer crops at the level of Kurdistan Region's districts (1000 ID)

Governorate	District	transportation cost per ton	Governorate	District	transportation cost per ton
Erbil	**Khabat**	**40**	**Sulaimani**	**Peshdar**	**25**
	Dashti hawler	**30**		**Penjwen**	**55**
	Rawandoz	**25**		**Chamchamal**	**45**
	Soran	**55**		**Darbandikhan**	**25**
	Shaqlawa	**35**		**Dokan**	**25**
	Choman	**75**		**Rania**	**30**
	Koya	**30**		**Said Sadigh**	**30**
	Mergasor	**60**		**Sharbazher**	**65**
	Erbil center	**25**		**Sharazor**	**40**
Duhok	**Bardarash**	**25**		**Gharadagh**	**35**
	Duhok	**35**		**Mawat**	**50**
	Zakho	**25**		**Sulaimani center**	**35**
	Semel	**35**		**Halabja**	**25**
	Shekhan	**45**	**Garmian**	**Khanaghin**	**20**
	Akre	**30**		**Kalar**	**20**
	Amedi	**50**		**Kfri**	**20**

9. The production price at the farm gate

Table 38 shows the farm gate price for each summer crops on wholesale. The table shows the prices at which the farmers sold their production at farms. Sometimes, farmers took their production directly to the markets and sometimes they sold on public roadways that caused difference in wholesale and retail price where retail price is always higher than wholesale.

Table 38: Summer crops cost (1000 ID) at the level of Kurdistan Region's governorates

Product	Erbil	Sulaimani	Duhok	Garmian	Kurdistan Region
Okra	2192	1663	1970	2081	1977
Eggplant	505	565	594	595	565
Potato	673	1899	559	467	900
Rice	3917	3793	3234	2237	3295
Pepper	613	913	890	829	811
Onion	504	621	727	606	614
Armenian cucumber	661	619	539	1680	875
Tobacco	0	5750	32500	0	19125
Tomato	673	742	507	552	619
Cucumber	601	677	586	695	640
Watermelon	424	450	504	563	485
Bean (phasolia)	1340	3083	2000	1450	1968
Melon	480	432	327	858	524
Squash	472	649	558	560	560
Sesame	1983	2707	3710	1100	2375
Sunflower	1275	2444	1888	0	1869
Corn	323	913	562	775	643
Pea (lobia)	1203	1349	1407	1477	1359
Mung	1943	1807	2154	1000	1726

10. Data comparison between 2012 and 2013

Comparison between 2012 and 2013 in terms of production level, yield and area shows difference between two years. Knowing about difference is of great importance to who are engaged in agriculture sector. Therefore it has been tried to display the rate difference for all crops that is beneficial to people concerned.

Production in 2010 in comparison with 2013 at the level of governorates

In Erbil governorate the total summer production estimated at 251926 tons for 2012 with a decrease of 19% it reached 204769 tons in 2013; In Sulaimani governorate the total sum of summer production amounted to 145776 tons in 2012 and 123208 tons in 2013, it shows a decrease of 15% comparing to 2012 ; Duhok governorates recorded 154833 tons of summer crops for 2012 and contrary to Sulaimani and Erbil it shows a noticeable increase of 48% for 2013 that amounted to 229711 tons. Contrary to other governorates there is not a noticeable change in summer production between 2012 (552535 tons) and 2013 (557688 tons) in Garmian administration. The little increase rate of 1% for 2013 in Garmian came from low level of grain yield but it could be an implication for higher production in coming years.

Cultivated area in 2012 in comparison with 2013 at the level of governorates

In Erbil governorate the total cultivated area was about 61377 donums in 2012 but, with a decrease of 31% it reached 42548 donums in 2013; Sulaimani recorded 81849 donums of cultivated area in 2012 and 77166 donums in 2013 with a decrease by 6%; Dohuk governorate recorded about 79209 donums for planted area in 2012 with a significant increase at 54% it reached 122365 donums in 2013; in Garmian administration the cultivated area recorded 1147 donums for 2012 with a big increase of 207% it reached 3523 donums in 2013, more than triple the amount in 2013. At the level of Kurdistan Region, a record of 223583 donums has been registered for 2012 compared to 245602 donums in 2013 with an increase of 10%. The growing rate by 10% of cultivated area in Kurdistan Region during one year period resulted in growing summer crops at 1% in 2013.

Number of summer crops farmers in 2010 and 2013

In Erbil governorate, the number of farmers decreased by 16% in 2013 compared to that of 2012; Sulaimani had a decrease of 1% in 2013 compared to 2012; Dohuk governorate registered a decrease of 8% in 2013 compared to 2012; while, Garmian registered an increase of 189% for number of farmers in 2013 compared to that of 2012. In general, Kurdistan Region as a whole reported a decrease by 5% in the number of farmers for 2013 comparing 2012.

Table 39: the rate difference for the crops of okra, eggplant, and rice in Kurdistan Region's governorates

Governorate	Product	Planting time	yield /kg	area /donum	Production / ton
Erbil	Okra	2012	1867	388	724
		2013	3120	302	942.2
		Rate difference	67%	-22%	30%
Sulaimani	Okra	2012	1468	21773	31963
		2013	1528.5	2880.9	4403.4
		Rate difference	4%	-87%	-86%
Duhok	Okra	2012	1804	909	1640
		2013	2499	805.5	2012.9
		Rate difference	39%	-11%	23%
Erbil	Eggplant	2012	3283	2169	7122
		2013	7986.3	1601.5	12790.1
		Rate difference	143%	-26%	80%
sulaimani	Eggplant	2012	2322	608	1412
		2013	2091.5	908.3	1899.6
		Rate difference	-10%	49%	35%
Duhok	Eggplant	2012	3568	695	2479
		2013	4092	782.25	3201
		Rate difference	15%	13%	29%
Erbil	Rice	2012	2591	186	482
		2013	614	99	60.8
		Rate difference	-76%	-47%	-87%
Sulaimani	Rice	2012	1254	554	695
		2013	961	2119.3	2036.6
		Rate difference	-23%	283%	193%
Duhok	Rice	2012	1087	2306	2506
		2013	981	3194.4	3133.7
		Rate difference	-10%	39%	25%

Table 40: the rate difference for the crops of pepper, armenian cucumber, tomato in Kurdistan Region's governorates

Governorate	Product	Planting time	yield /kg	area /donum	production / ton
Erbil	Pepper	2012	2860	1244	3557
		2013	6985.2	1065	7439.2
		Rate difference	144%	-14%	109%
Sulaimani	Pepper	2012	1421	471	669
		2013	1345.5	548.1	737.4
		Rate difference	-5%	16%	10%
Duhok	Pepper	2012	3242	1234	4002
		2013	2406	604.3	1453.8
		Rate difference	-26%	-51%	-64%
Erbil	Armenian cucumber	2012	2415	3181	7681
		2013	3680	766	2818.9
		Rate difference	52%	-76%	-63%
Sulaimani	Armenian cucumber	2012	1225	3758	4604
		2013	862.5	9516.8	8208.2
		Rate difference	-29.60%	153.20%	78.30%
Duhok	Armenian cucumber	2012	2217	13149	29147
		2013	982	16670.5	16370.4
		Rate difference	-56%	27%	-44%
Erbil	Tomato	2012	3990	14969	59727
		2013	4009	9232	37011.1
		Rate difference	0%	-38%	-38%
Sulaimani	Tomato	2012	2281	19287	43994
		2013	2557	11577.8	29604.3
		Rate difference	12%	-40%	-33%
Duhok	Tomato	2012	4774	3618	17272
		2013	5950	3584.6	21328.4
		Rate difference	25%	-1%	23%

Table 41: the rate difference for crops of onion, cucumber, watermelon in Kurdistan Region's governorates

governorate	production	Planting time	yield /kg	area /donum	production /ton
Erbil	Onion	2012	3027	4296	13005
		2013	5592	3775.3	21111.2
		Rate difference	85%	-12%	62%
Sulaimani	Onion	2012	1713	1316	2254
		2013	1618.5	1824.7	2953.3
		Rate difference	-6%	39%	31%
Duhok	Onion	2012	3766	855	3219
		2013	3077	915.2	2815.9
		Rate difference	-18%	7%	-13%
Erbil	Cucumber	2012	4860	6841	33251
		2013	5682	3651	20745
		Rate difference	17%	-47%	-38%
Sulaimani	Cucumber	2012	2187	3056	6683
		2013	1804.5	2773	5003.8
		Rate difference	-17%	-9%	-25%
Duhok	Cucumber	2012	3986	1926	7677
		2013	4476	2319.2	10380.5
		Rate difference	12%	20%	35%
Erbil	Watermelon	2012	5591	8583	47983
		2013	6249	7415.5	46339.5
		Rate difference	11.80%	-13.60%	-3.40%
Sulaimani	Watermelon	2012	2554	7160	18283
		2013	1795.5	11481.8	20615.5
		Rate difference	-30%	60%	13%
Duhok	Watermelon	2012	3789	5752	21796
		2013	3660	4900.2	17934.7
		Rate difference	-3%	-15%	-18%

Table 42: the rate difference for crops of corn, melon, and sunflower in Kurdistan Region's governorates

governorate	product	Planting time	yield /kg	area /donum	production / ton
Erbil	Corn	2012	2348	4976	11686
		2013	3388	7490	25376.1
		Rate difference	44%	51%	117%
Sulaimani	Corn	2012	1067	47	50
		2013	1945.5	249.3	484.9
		Rate difference	82%	430%	870%
Duhok	Corn	2012	1774	3790	6724
		2013	2833.6	1760	4987.1
		Rate difference	60%	-54%	-26%
Erbil	Melon	2012	2802	11323	31731
		2013	3716	4373	16250.1
		Rate difference	33%	-61%	-49%
Sulaimani	Melon	2012	1529	20362	31133
		2013	1218	31687.3	38595.1
		Rate difference	-20%	56%	24%
Duhok	Melon	2012	1419	36059	51168
		2013	1424	79933	113824.6
		Rate difference	0.40%	121.70%	122.50%
Erbil	Sunflower	2012	807	77	62
		2013	533	12.5	7
		Rate difference	٪-34	-84%	-35%
Sulaimani	Sunflower	2012	527	297	156
		2013	422	2062	870.2
		Rate difference	-19.90%	594.30%	457.80%
Duhok	Sunflower	2012	376	62	23
		2013	109	221	24.1
		Rate difference	-71%	256%	5%

Table 43: the rate difference for crops of bean (phasolia), squash, and sesame in Kurdistan Region's governorates

governorate	product	Planting time	yield /kg	area /donum	production / ton
Erbil	Bean (phasolia)	2012	2173	119	258
		2013	2331	153.8	358.4
		Rate difference	7%	29%	39%
Sulaimani	Bean (phasolia)	2012	1077	309	333
		2013	1305.5	628.8	820.9
		Rate difference	21%	103%	147%
Duhok	Bean (phasolia)	2012	1317	3	4
		2013	1304	13.5	17.6
		Rate difference	-1%	350%	340%
Erbil	Squash	2012	5076	1314	6669
		2013	4409	1066	4700
		Rate difference	-13%	-19%	-30%
Sulaimani	Squash	2012	1664	857	1426
		2013	2144	603.5	1293.904
		Rate difference	29%	-30%	-9%
Duhok	Squash	2012	6201	381	2361
		2013	3314	623	20646.2
		Rate difference	-47%	64%	774%
Erbil	Sesame	2012	212	18	4
		2013	479	33.3	15.9
		Rate difference	126%	85%	298
Sulaimani	Sesame	2012	669	71	47.00%
		2013	540.5	353.3	190.9
		Rate difference	-19%	398%	306%
Duhok	Sesame	2012	251	524	132
		2013	368	152.6	56.1
		Rate difference	47%	-71%	-57%

Table 44: the rate difference for crops of pea (lobia)) and mung in Kurdistan Region's governorates

governorate	product	Planting time	yield /kg	area /donum	production / ton
Erbil	Pea (lobia)	2012	2450	995	2438
		2013	3370	765.8	2580.6
		Rate difference	38%	-23%	6%
Sulaimani	Pea (lobia)	2012	1076	1734	1866
		2013	1279	842.3	1077.2
		Rate difference	19%	-51%	-42%
Duhok	Pea (lobia)	2012	2447	1853	4534
		2013	1629	1160.5	1890.5
		Rate difference	-33%	-37%	-58%
Erbil	Mung	2012	2109	103	217
		2013	679	29	19.7
		Rate difference	-68%	-72%	-91%
Sulaimani	Mung	2012	587	344	202
		2013	380	387	147.1
		Rate difference	-35%	13%	-27%
Duhok	Mung	2012	300	485	146
		2013	256	455.2	116.5
		Rate difference	-15%	-6%	-20%

Table 45: the rate difference for crops of okra, eggplant, rice, pepper, armanian cucumber, tomato, and watermelon at the level of Kurdistan Region

item	Planting time	yield /kg	area /donum	production /ton
Okra	2012	1713	23070	34327
	2013	1812	3988.4	7228.5
KRG	Rate difference	6	-83	-79
Eggplant	2012	3058	3472	11013
	2013	5491	3292	18076
KRG	Rate difference	80	-5	64
Rice	2012	1644	3046	3683
	2013	975	5412.7	5275.7
KRG	Rate difference	-41	78	43
Pepper	2012	2508	2949	8228
	2013	4342	2217.3	9627
KRG	Rate difference	73	-25	17
Armenian cucumber	2012	1952	20088	41431
	2013	1093	26953.3	29449.3
KRG	Rate difference	-44	34	-29
tomato	2012	3682	37874	120993
	2013	3728	24394.4	90940
KRG	Rate difference	1	-36	-25
Onion	2012	2835	6467	18478
	2013	4232	6515.1	27573.9
KRG	Rate difference	49	1	49
Cucumber	2012	3677	11824	47610
	2013	4234	8743.1	37016.3
KRG	Rate difference	15	-26	-22
Watermelon	2012	3978	21495	88063
	2013	3385	23797.5	80558
KRG	Rate difference	-14.9	10.7	-8.5

Table 46: the rate difference for crops of corn, melon, sunflower, bean (phasolia), squash, sesame, pea (lobia), and mung at the level of Kurdistan Region

item	Planting time	yield /kg	area /donum	production / ton
Corn	2012	1730	8813	18459
	2013	3233	9499.3	30707.6
KRG	Rate difference	87	8	66
Melon	2012	1917	67744	114032
	2013	1457	115993.3	168959.9
KRG	Rate difference	-24	71	48
Sunflower	2012	570	436	242
	2013	390	433.5	895
KRG	Rate difference	-32	0	270
bean (phasolia)	2012	1522	431	595
	2013	1942	796.1	1545.7
KRG	Rate difference	28	85	160
Squash	2012	4314	2552	10456
	2013	3725	2410	8977
KRG	Rate difference	-14	-6	-14
sesame	2012	377	613	183
	2013	441	539.1	237.5
KRG	Rate difference	17	-12	30
pea (lobia)	2012	1991	4582	8837
	2013	1957	2768.5	5418.9
KRG	Rate difference	-2	-40	-39
Mung	2012	999	932	565
	2013	397	871.2	345.6
KRG	Rate difference	-60	-7	-39

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