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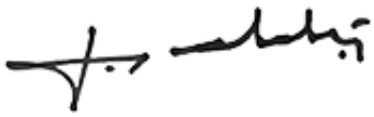
Dear Burcu TUNCER ,

This is official notification to inform you that your Oral Presentation proposal entitled -"The Present Status of World Vegetable Seed Trade "- submitted to *International Conference on Food, Agriculture and Animal Sciences* has been accepted as a result of blind reviews.

On behalf of the organizing committee, I would like to congratulate you.

We are looking forward to seeing you at the conference in Antalya between 8 - 11 November 2019.

Best regards.



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The Present Status of World Vegetable Seed Trade

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Abstract

This study was conducted to assess the present status of world vegetable seed trade. According to 2016 data of International Seed Federation (ISF), vegetable seed export was 114 661 tons with a monetary value of 397 million dollars. The vegetable species with the greatest seed exports were identified as squash (46%), potato (23.3%), broad bean (12.7%), pea (5.3%), bean (3%) and onion (2.4%). The greatest revenue in export generating seed species were identified as tomato (25.5%), cucumber (15.5%), squash (14.8%), melon-watermelon (11.3%), onion (9.3%) and pepper (7%). The leading countries in world vegetable seed export were identified as the USA (15.6%), Netherlands (12.8%), Italy (12%), China (10.9%), France (9.5%), Denmark (9.2%) and New Zealand (9%). With the regard to monetary value of the exports, again the Netherlands (43.1%), USA (19.5%) and France (12.9%) were leading countries. World vegetable seed import was 124 664 tons with a monetary value of 3 828 million dollars. The seed vegetable species with the greatest imports were identified as potato (88.2%), pea (6.3%), spinach (1.8%) and bean (1.3%). The seed species with the greatest import monetary values were identified as tomato (33.2%), potato (14.2%), pepper (8.4%), cucumber (7.6%), melon-watermelon (7.6%) and squash (4.2%). With regard to vegetable seed imports, China (13.4%), the USA (12.8%), United Kingdom (12.6%), Netherlands (10.1%) and Italy (7.6%) were the leading countries. With regard to monetary value of the imports, The Netherlands (15.4%), USA (12.7%), Mexico (11.4%) and Spain (9.9%) were the leading countries.

Keywords: Vegetable seed, poduction, export, import.

Introduction

Good and quality seeds constitute the bases of a successful agricultural production. World seed trade mostly includes cereals, oil seeds, vegetables, flowers and grass seeds. High quality seed is especially important in vegetable production activities. Vegetable culture is either practiced in open fields or undercover in greenhouses and it is a costly labor-intense production branch of agriculture. The sector has been more integrated into seeds than several other agricultural products. This paper was prepared to assess the present status of world vegetable seed trade and to put forth the place of Turkey in world vegetable seed trade.

World Vegetable Seed Trade

2.1. Export Quantity and Monetary Value

The data for world vegetable seed trade between the years 2011 – 2016 and distribution of world vegetable seed export quantity (kg) based on species are provided in Table 1 and Table 2.

Table 1. Quantity and monetary value of world vegetable seed export

Year	Quantity (tons)	Annual change (%)	Monetary Value (Million Dollars)	Annual change (%)
2011	117 144	-	3 309	-
2012	116 400	-1	3 447	4
2013	114 065	-2	3 564	3
2014	117 854	3	3 791	6
2015	115 747	-2	3 630	-4
2016	114 661	-1	3 976	9

Source: International Seed Federation (ISF)

Table 2. Distribution of world vegetable seed export quantity (kg) based on species

Species	2012	2013	2014	2016	Change (%)	Part (%)
Potato	149 250	2 200 175	3 134 640	833 020	458	23.3
Sweet corn	36 247	22 722	3 139	82 996	128	2.3
Squash	1 280 673	364 545	356 885	1 642 370	28	46.0
Cucumber	4 051	4 314	3 083	9 299	129	0.2
Melon-Watermelon	9 496	8 231	9 206	13 981	47	0.4
Tomato	2 994	581	466	1 903	-37	0.05
Pepper	1 209	1 593	688	2 261	87	0.06
Eggplant	287	186	52	531	85	0.01
Okra	93	151	1 038	3 932	4 128	0.11
Onion	40 940	47 070	10 754	84 893	127	2.4

Carrot	489	209	1 485	2 264	362	0.06
Lettuce	229	77	248	1 090	375	0.03
Parsley	4 635	216	8 689	34 803	650	1.0
Spinach	3 300	3 721	3 753	3 686	11	0.1
Cauliflower	94	100	302	65	-31	0.001
Red beet	40	0	0	60	50	0.001
Radish	96	1 173	1 856	6 112	6 266	0.2
Pea	83 800	35 149	18 000	189 048	125	5.3
Beans	10 627	20 941	22 508	106 433	900	3.0
Broad Bean	808 205	334 459	162 900	455 740	-44	12.7
Kidney bean	200	-	-	21 788	1089	0.6
Other vegetable seeds	24 991	46 627	30 516	77 506	210	2.1
Total	**2 461 946**	**3 092 240**	**3 770 208**	**3 573 781**	**45**	**100**

Source: TUİK Foreign Trade Statistics

Despite the slight fluctuations in vegetable seed exports of the years, there were not distinctive differences. In 2016, there was 1% decrease in export quantity, but 9% increase in monetary value as compared to previous year. According to 2016 data, world vegetable seed export was 114 661 tons with a monetary value of 3 976 million dollars (Table 1). When the world vegetable seed exports were assessed based on plant species, it was observed that although there were distinctive decreases in squash seed exports in the years 2013 and 2014, squash had the first place with 46% (1 642 370 kg) share in seed exports of the year 2016. Squash seed exports of the years varied between 356 885–1 642 370 kg. Squash seeds were respectively followed by potato (23.3%, 833 020 kg), broad bean (12.7%, 455 740 kg), pea (5.3%, 189 048 kg), bean (3.0%, 106 433 kg) and onion (2.4%, 84 893 kg) seeds. While there was 37% decrease in tomato seed export, 31% in cauliflower and 44% in bean seed export, there were increases in export of the other vegetable seeds as compared to the year 2012.

Except for 2014, there were increases in monetary value of vegetable seed exports. Based on exports of the years, tomato seeds had the first place with a share of 25.5%. With regard to monetary value of the export, tomato seed was followed respectively by cucumber (15.5%), squash (14.8%), melon-watermelon (11.3%), onion (9.3%) and pepper seed (7%) (Table 3). Vegetable seed exports of the countries between the years 2011-2016 are provided in Table 4. With regard to quantity of vegetable seed export of the countries, the USA had the first place with a share of 15.6%. It was respectively followed by the

Netherlands (12.8%), Italy (12%), China (10.9%), France (9.5%), Denmark (9.2%) and New Zealand (9%) (Table 4).

Table 3. Distribution of monetary value (dollars) of vegetable seed exports based on species

Species	2012	2013	2014	2016	Change (%)	Part (%)
Potato	66 761	1 523 008	2 109 033	392 949	488	1.4
Sweet corn	214 955	376 414	77 651	981 553	356	3.4
Squash	3 009 043	2 212 792	1 401 274	4 253 623	41	14.8
Cucumber	2 450 018	2 661 168	2 007 301	4 469 932	82	15.5
Melon-Watermelon	2 361 988	2 038 768	1 564 330	3 253 792	38	11.3
Tomato	2 411 971	2 729 334	2 123 181	7 328 659	204	25.5
Pepper	418 910	1 100 631	627 211	2 018 306	382	7.0
Eggplant	1 962 590	1 542 899	124 782	373 708	-81	1.3
Okra	2 011	4 700	7 760	51 706	2 471	0.18
Onion	1 440 158	1 709 545	441 234	2 663 246	84	9.3
Carrot	25 923	20 527	40 573	112 877	335	0.4
Lettuce	13 778	12 370	5 480	73 606	434	0.3
Parsley	122 004	4 424	39 646	125 474	3	0.4
Spinach	22 519	21 711	13 551	54 284	141	0.2
Cauliflower	3 868	3 500	11 508	5 759	49	0.02
Red beet	1 549	0	0	1 345	-13	0.004
Radish	36 679	29 781	19 900	104 246	184	0.4
Pea	209 201	84 197	36 968	432 554	107	1.5
Beans	40 921	91 207	90 698	346 833	748	1.2
Broad Bean	1 642 518	756 096	307 500	1 150 957	-29	4.0
Kidney bean	1 071	-	-	83 283	7 676	0.3
Other vege. seeds	584 428	355 414	235 368	462 985	-21	1.6
Total	**17 042 864**	**17 278 486**	**11 284 949**	**28 741 677**	**68.6**	**100**

Source: TUİK Foreign Trade Statistics

Table 4. Distribution of vegetable seed exports (tons) based on countries

Countries	2011	2012	2013	2014	2015	2016	Chang (%)	Part (%)
France	8 700	8 084	8 254	8 696	9 454	9 674	11	9.5
Netherlands	10 426	11 596	12 340	13 178	12 364	13 088	25	12.8
USA	17 853	17 626	14 678	14 526	15 007	15 966	-11	15.6
Germany	1 691	1 271	1 429	1 789	1 715	1 914	13	1.8
Hungary	2 200	1 600	1 025	2 045	2 280	2 654	20	2.6
Ukraine	12 900	12 916	7 117	7 226	10 142	-	-22	-
Italy	10 827	10 153	9 548	11 000	12 390	12 212	12	12.0
Denmark	6 985	7 855	10 396	10 465	10 700	9 414	34	9.2
U.Kingdom	1 191	922	1 233	1 148	887	915	-23	0.9
Indonesia	1 453	2 944	3 992	4 788	-	1 767	21	1.7
China	6 280	7 776	7 619	6 041	7 202	11 101	76.8	10.9
Spain	3 108	2 011	887	2 379	2 445	2 248	-28	2.2
New Zeland	7 400	8 427	8 787	8 683	8 885	9 200	24	9.0
Thailand	3 000	2 037	1 809	2 198	2 500	1 700	-44	1.6
S. Africa	1 392	1 436	1 553	1 502	1 463	1 653	19	1.6
India	6 200	6 589	7 307	5 709	3 130	3 544	-43	3.4
Bulgaria	927	1 804	2 242	2 019	1 890	898	-3	0.8
Sweden	132	345	1 692	2 088	1 475	2 180	1 551	2.1
Turkey	2 544	1 458	1 470	1 174	1 335	1 870	-26	1.8
Total	**105 209**	**106 850**	**103 378**	**106 654**	**105 264**	**101 998**	**-3.1**	**100**

Source: International Seed Federation (ISF)

Table 5. Distribution of monetary value of vegetable seed exports based on countries (million dollars)

Countries	2011	2012	2013	2014	2015	2016	Change (%)	Part (%)
France	366	349	404	436	409	444	21	12.9
Netherlands	1 146	1 255	1 273	1 361	1 221	1 486	29	43.1
USA	507	529	550	581	624	671	32	19.5
Germany	73	58	**66**	79	70	84	15	2.4
Hungary	18	11	10	18	16	16	-12	0.5
Ukraine	32	26	16	18	15	-	-53	-
Italy	118	116	121	128	111	115	-3	3.3
Denmark	46	42	62	63	56	54	17	1.6
U.Kingdom	23	21	28	28	23	25	8	0.7
China	105	158	146	176	161	113	7	3.3
Spain	64	51	61	59	56	79	23	2.3
New Zeland	43	57	67	51	49	47	9	1.4
Thailand	80	73	74	71	94	72	-10	2.1
S. Africa	21	26	21	22	25	33	57	0.9
India	29	36	10	44	41	48	65	1.4
Israel	117	105	105	112	131	132	12	3.8
Turkey	18	12	12	18	16	22	22	0.6
Total	**2 806**	**2 925**	**3 026**	**3 265**	**3 118**	**3 441**	**22.6**	**100**

Source: International Seed Federation (ISF)

While the was 11% increase in vegetable seed export of the leading exporter country USA between 2011 – 2016, there were also increases in vegetable seed export of the other leading countries the Netherlands (25%), Italy (12%), France (11%), China (76.8%), Denmark (34%) and New Zealand (24%) (Table 4). With regard to monetary value of vegetable seed exports, the Netherlands (43.1%), USA (19.5) and France (12.9%) were again the leading countries (Table 5).

Import Quantity and Monetary Value

World vegetable seed imports varied in years (Table 6 and Table 7).

Table 6. Quantity and monetary value of world vegetable seed import

Year	Quantity (tons)	Annual change (%)	Monetary Value (Million Dollars)	Annual change (%)
2011	132 752	-	3 152	-
2012	128 039	-4	3 247	3
2013	132 529	3	3 436	5
2014	135 869	2	3 650	6
2015	133 395	-2	3 521	-4
2016	124 664	-6	3 828	8

Source: International Seed Federation (ISF)

Table 7. Distribution of world vegetable seed import quantity (kg) based on species

Species	2012	2013	2014	2016	Chan (%)	Part (%)
Potato	18 966 835	8 040 979	18 823 420	26 386 320	39	88.2
Sweet corn	18 660	55 564	42 555	93 447	402	0.3
Squash	856 815	2 394 383	1 068 720	195 362	-77	0.7
Cucumber	25 007	16 842	12 193	30 383	21	0.1
Melon-Watermelon	75 623	22 425	243 459	37 227	-51	0.1
Tomato	9 582	9 635	5 172	8 439	-12	0.02
Pepper	2 125	1 029	130 778	1 557	-27	0.005
Eggplant	605	452	318	765	26	0.002
Onion	43 099	3 108	11 104	48 970	13	0.2
Carrot	29 273	28 374	13 182	26 964	-8	0.09
Lettuce	11 888	14 934	16 770	44 550	275	0.1
Parsley	63 232	35 685	34 175	114 111	80	0.4
Spinach	373 080	311 384	150 549	527 325	41	1.8
Cauliflower	1 498	997	855	1 543	3	0.005

Red beet	6 629	2 598	3 570	9 848	48	0.03
Radish	15 560	7 390	11 270	13 824	-11	0.04
Pea	1 557 288	1 318 212	126 522	1 870 596	20	6.3
Beans	296 268	321 015	272 152	383 716	29	1.3
Broad Bean	89 055	23 514	11	3 000	-96	0.01
Kidney bean	1 000	-	9 300	42 924	4 192	0.1
Other vegetab. seeds	29 683	12 479	8 068	43 359	46	0.1
Total	**22 472 805**	**12 620 999**	**20 984 143**	**29 884 230**	**33**	**100**

Source: TUİK Foreign Trade Statistics

According to 2016 data, total vegetable seed import was 124 664 tons with a monetary value of 3 828 million dollars (Table 6). With regard to imported vegetable seeds, potato (26 386 320 kg) had the first place with a share of 88.2%. Potato was respectively followed by pea (6.3%, 1 870 596 kg), spinach (1.8%, 527 325 kg) and bean (1.3%, 383 716 kg) (Table 7).

While there were decreases in squash, melon-watermelon, broad bean, pepper, tomato, carrot and turnip seed imports in 2016, there were distinctive increases especially in sweet corn, lettuce, parsley and kidney bean seed imports (Table 7). With regard to monetary value of vegetable seed imports based on species, it was observed that tomato (33.2%) had the first place and it was respectively followed by potato (14.2%), pepper (8.4%), cucumber (7.6%) and melon-watermelon seeds (7.6%) (Table 8).

Table 8. Distribution of monetary value (dollars) of vegetable seed import based on species

Species	2012	2013	2014	2016	Chan (%)	Part (%)
Potato	14 821 698	7 123 648	16 505 141	19 285 929	30	14.2
Sweet corn	632 532	1 733 723	927 866	2 423 636	283	1.8
Squash	10 470 231	13 908 250	5 679 505	5 649 372	-46	4.2
Cucumber	15 990 694	11 705 508	3 235 308	10 375 848	-35	7.6
Melon-W.melon	9 392 236	6 581 640	2 766 265	10 351 508	10	7.6
Tomato	59 656 688	59 076 820	59 076 820	45 095 054	-24	33.2
Pepper	10 022 297	8 923 951	2 219 291	11 378 100	13	8.4
Eggplant	5 116 166	5 495 789	3 569 587	4 851 816	-5	3.6
Onion	2 706 491	376 126	633 442	2 065 514	-24	1.5
Carrot	4 479 523	5 111 516	1 613 058	3 182 167	-29	2.3

Lettuce	2 473 887	3 613 309	2 958 408	5 117 490	107	3.8
Parsley	308 771	172 339	158 062	434 523	41	0.3
Spinach	3 421 191	4 357 131	2 140 736	4 573 676	34	3.4
Cauliflower	2 775 879	1 944 113	2 005 375	1 901 133	-32	1.4
Red beet	222 196	118 245	92 824	332 204	49	0.2
Radish	349 666	272 321	323 412	359 604	3	0.3
Pea	2 640 979	2 242 899	193 625	2 623 028	-1	1.9
Beans	1 712 343	2 084 611	1 803 876	1 964 673	15	1.4
Broad Bean	75 337	27 002	217	118 409	57	0.08
Kidney bean	5 574	-	36 947	142 049	2 548	0.1
Other veg. seeds	4 536 809	3 972 628	2 064 229	3 617 791	-20	2.6
Total	**151 811 188**	**138 841 569**	**108 003 994**	**135 843 524**	**-11**	**100**

Source: TUİK Foreign Trade Statistics

According to ISF 2016 data on vegetable seed import quantities, the first 5 countries were ordered as China (13.4%), the USA (12.8%), United Kingdom (12.6%), Netherlands (10.1%) and Italy (7.6%) (Table 9). These leading countries in world vegetable seed export were also taking the leading positions in import (Table 4). For monetary value of the imports (in dollars), the Netherlands (15.4%), USA (12.7%), Mexico (11.4%) and Spain (9.9%) had the leading positions (Table 10). Turkey has a quite small share in world vegetable seed trade. According to ISF data, Turkey had 1.8% share (1 870 ton) in world vegetable seed export in 2016 and shared the 12th place with Germany among 19 countries (Table 4). For monetary value of the export, Turkey had 0.6% share (22 milyon dolar) and 16th place among 17 countries (Table 5). For world vegetable seed imports, Turkey had 1.1% share (1 067 ton) and 18th place among 20 countries (Table 9). For monetary value of the imports, Turkey with 98 million dollars had the 11th place among 18 countries (Table 10).

Table 9. Distribution of vegetable seed imports (tons) based on countries

Countries	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**Cha(%)**	**Part**
USA	15 562	14 616	13 540	15 854	14 190	12 350	-21	12.8
Netherlands	12 253	15 398	17 960	14 796	13 590	9 778	-21	10.1
China	12 291	11 394	11 300	14 088	13 055	13 365	8.7	13.4
Italy	5 856	5 539	5 725	14 292	6 866	7 298	25	7.6
U.Kingdom	5 627	4 162	3 700	6 813	13 688	12 163	116	12.6

France	4 389	5 908	3 600	3 975	4 050	4 215	-4	4.4
Germany	5 913	4 148	2 390	2 913	2 934	2 825	-52	2.9
Spain	6 462	7 201	5 300	2 578	2 965	2 217	-66	2.3
Canada	4050	2 933	3 460	3 491	3 751	4 250	5	4.4
Japan	4 793	5 413	5 380	4 703	4 775	4 998	4	5.2
Pakistan	4 254	4 604	2 540	3 118	3 035	3 110	-27	3.2
Russian Fed.	3 691	2 861	2 020	1 182	981	1 240	-67	1.3
Mexico	1 728	2 098	1 580	1 601	1 353	2 005	16	2.1
Hungary	2 309	1 347	900	1 193	1 070	1 084	-54	1.1
India	2 023	1 862	2 555	2 340	3 385	4 040	99	4.2
Belgium	2 872	2 726	3 300	3 508	3 000	3 452	20	3.6
Greece	2 195	1 945	2 100	2 133	2 055	2 031	-8	2.1
Korea	2 253	2 605	2 970	2 547	2 508	2 182	-3	2.3
Australia	2 005	1 599	1 888	2 448	2 170	2 675	33	2.7
Turkey	1 844	1 468	2 830	1 992	771	1 067	-43	1.1
Total	**102 370**	**99 827**	**95 038**	**105 565**	**100 192**	**96 345**	**-6.1**	**100**

Source: International Seed Federation (ISF)

Table 10. Monetary value of vegetable seed imports based on countries (million dollars)

Countries	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**Cha.(%)**	**Part(%)**
France	150	137	151	154	143	168	12	5.7
Netherlands	330	373	421	436	420	450	36	15.4
USA	318	369	368	383	381	371	16	12.7
Germany	97	90	84	88	74	130	34	4.5
Russian Fed.	70	58	62	75	57	66	-6	2.3
Italy	177	170	188	193	180	198	11	6.8
U.Kingdom	83	70	72	76	73	74	-11	2.5
Mexico	215	221	230	265	295	331	54	11.4
China	114	111	125	152	172	177	55	6.1
Spain	195	197	211	238	214	289	48	9.9
Canada	78	75	81	85	97	113	44	3.9

India	47	52	56	67	73	64	36	2.2
Korea	-	73	81	79	76	69	-6	2.4
Japan	94	113	126	121	125	135	43	4.6
Australia	57	53	52	53	45	56	-2	1.9
Turkey	104	122	119	109	105	98	-6	3.4
Brazil	64	67	70	77	72	72	12	2.5
Poland	45	50	54	56	46	47	4	1.6
Total	**2 238**	**2 401**	**2 551**	**2 707**	**2 648**	**2 908**	**29.9**	**100**

Source: International Seed Federation (ISF)

CONCLUSION

Seeds, especially the vegetable seeds are significant inputs of agriculture. They are produced with the aid of high technology and they have quite high economic value. There are quite distinctive relationships between seed production levels and agricultural success of the countries. The leading countries of world vegetable seed trade generally do not have export/import deficits or a balanced export/import. Turkey had the last places in world vegetable seed trade. According to 2016 ISF data, monetary value of seed import of Turkey was 98 million dollars and monetary value of seed export was 22 million dollars. So, the export deficit of Turkey in vegetable seed trade is around 76 million dollars. Despite decreasing export deficit in years, international payments for vegetable seeds are still at high levels and still negatively influence export/import balance of the country.

ACKNOWLEDGEMENT

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[1] ISF, International Seed Federation, 2016 https://www.worldseed.org/ (Access Date: 05.02.2019)

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ICOFAAS 2019

2ND INTERNATIONAL CONFERENCE ON FOOD, AGRICULTURE AND ANIMAL SCIENCES
8-11 NOVEMBER 2019, Antalya/TURKEY
SCIENTIFIC PROGRAM

	NOVEMBER 8, 2019
08:00-23:59	**Check in**

	NOVEMBER 9, 2019 (9:00-11:15)
	PASIFIC
09:00-09:15	*Opening Ceramony*
09:15-09:45	*Assoc. Prof. Dr. Fatih DADAŞOĞLU (Chair) Atatürk University -Turkey*
09:45-10:00	**Coffee Break**
10:00-10:30	Prof. Dr. Osama EISA MOHAWESH *Mutah University- Jordan*
10:30-11:00	Prof. Dr. Ir. V. M. Ani NURGIARTININGSIH *Universitas Brawijaya, Indonesia*
11:00-11:30	Prof. Dr. Tiago Neves PEREIRA VALENTE *Federal Institute Goiano, IFGoiano – Brazil*
11:30-11:15	**Coffee Break**

	NOVEMBER 9, 2019 (11:15-14:00)
	HAZAR 2
	Session Chair: Assoc. Prof. Dr. Abdulahad DOĞAN
11:15-11:30	Hydrogen Peroxide and ABTS Radical Scavenging Activity of *Santolina chamaecyparissus* Ethanol Extract. **D. MESSAOUDI, H. BOURICHE, A. SENATOR**
11:30-11:45	The Potential Use of Biochar to Enhance Soil Properties and Plant Growth Performance Under Arid Environment. **O. MOHAWESH, M. ALIEDEH, B. AL-SOUB, A. MAHADEEN**
11:45-12:00	Effects of Humic Acid and Zinc Applications on Yield and Agronomic Features of Oat Genotypes Sown in Winter or Spring. **İ. KUTLU, N. GÜLMEZOĞLU**
12:00-12:15	Effects of Applied Nitrogen and Potassium on Seed Yield and Oil content of Black Cumin (*Nigella sativa* L.). **T. SAĞLAM, Y.S. TEKİN, N. GÜLMEZOĞLU**
12:15-12:30	Classification of Triticale Cultivars Using Common Vector Approach and Support Vector Approach. **N. GÜLMEZOĞLU, M.B. GÜLMEZOĞLU**
12:30-12:45	The Nutritional Interest of *Atriplex halimus* in Arid Areas of Algeria. **H. ARAB, S. SELLAOUI, S. DEKHINAT, N. BOUFEDDA, S. MEHENNAOUI**
12:45-13:00	Impact of Barley Heading Date on Yield in Semi-Arid Conditions. **N. BENKHERBACHE, M. MEFTI, M. NAIDJI, A. DJELLAL, A. AICHAOUI, S. BOUGUERRA, K. BENSADEK**
13:00-13:15	The Effects of Different Salinity Levels on Germination and Seedling Development of Ulkem Forage Cowpea Variety (*Vigna unguiculata* L. Walp). **M. OKCU**
13:15-13:30	The disease of abscesses in sheep increases the vulnerability of the pastoral system in Algeria (Case of the East Ziban). A. **HICHER, A. BAIRI, A. HUGUENIN, J. CHERGUIM**
13:30-14:00	**Lunch**

	NOVEMBER 9, 2019 (14:00-20:00)
	HAZAR 2
	Session Chair: Prof. Dr. Ir. V. M. Ani NURGIARTININGSIH
14:00-14:15	Investigation on Selenium of Bidkhesht Willow Manna in Iran. **P. ZIARATI, B. HOCHWIMMER, B. SAWICKA, V. VAMBOL, S. ASDAGHI**
14:30-14:45	Bioremediation of Contaminated by Water Heavy Cadmium and Cobalt Herbal Tea (Viola and Black). **S. ARABIYAN, P. ZIARATI**
14:45-15:00	Drying Kinetics, Energy Analysis of Moroccan Carob Leaves (*Ceratonia siliqua*). **Z. TAGNAMAS, Y. BAHAMMOU, M. KOUHILA, A. LAMHARRAR, A. IDLIMAM**
15:00-15:15	Effect of *Punica granatum* L. Peel Extract on Phytopathogenic Bacteria. **D. RUZGAR, D. EFE, A. GORMEZ**
15:15-15:30	Influence of Climatic Disturbances on the Appearance of Alleniautique Growth Records of *Aleppo pine* in the Southern Mediterranean. **A. A.M. BELLIFA, K. BENCHERIF**
15:30-15:45	**Coffee Break**
	Session Chair: Prof. Dr. Ramazan ÇAKMAKÇI
15:45-16:00	The Current State of Agricultural Cooperatives in Turkey, Issues and Comparison with The Cooperatives in Agriculturally Developed Countries. **S. ÖZGİRGİN, O. ATAY, Ö. GÖKDAL**
16:00-16:15	Water Demand Simulation of Irrigated Crops Under Climate Change Scenarios Over Setif Region. **T. BOUREGAA**
16:15-16:30	Maize Stover Silage adding Molasses with Different Time Incubation on Physical Quality, pH and Nutritive Value. **H. HARTUTIK**
16:30-16:45	Ecological study on the Stéppic Spontanéous Plants in West Part of the Région of Biskra –Algéria. **M.F. BACHAR, F. BEN AMMAR**
16:45-17:00	Role of Wild and Honey Bees (Hymenoptera: Apoidea) in the Pollination of *Vicia faba* L. var. *minor* (Fabaceae) in Constantine Area (Algeria). **K. BENACHOUR, I. LAADJABI**
17:00-17:15	**Coffee Break**
	Session Chair: Asist. Prof. Dr. Dragana SUNJKA
17:15-17:30	Development of Process of Vacuum-Atmospheric Drying of *Helianthus tuberosus*. **B.T. ABDIZHAPPAROVA, N.S. KHANZHAROV, G.E. ORYMBETOVA**

17:30-17:45	The Behavior of Sunflower Cultivation Under the Conditions of Water Deficit in the Region of Chlef (Algeria). **A. BOUTHIB, P. DEBAECKE, A. BOUTHIBA**
17:45-18:00	A New Colorimetric Method From Qualitative to Quantitative. **A. BESIR, F. YAZICI, M. MORTAS, O. GUL**
18:00-18:15	Determination of Some Characteristics of *Origanum acutidens* (Hand.-Mazz.) Ietswaart Genotypes in Erzincan. **H. KARAGÖZ, R. ÇAKMAKÇI**
18:15-18:30	Effect of Inoculation with Plant-Growth Promoting Rhizobacteria on Development Root Systems of Lemon Basil (*Osmium* x *citriodorum* Vis.). **R. ÇAKMAKÇI, A.H. MILTON**
	Session Chair: Assoc. Prof. Dr. Hilal YILDIZ
18:30-18:45	**Coffee Break**
18:45-19:00	Novel *Sorghum bicolor* (L.) Seed Polysaccharide Structure and Antioxidant Activities, and Laser Burn Wound Healing Effect. **S.B. SLIMA, I. TRABELSI, N. KTARI, R.B. SALAH**
19:00-19:15	Investigation of the Presence of Citrus Tristeza Virus in Citrus Orchards of Chlef Area (Algeria). **M. MALIKA, A.A. SAMIR, K. MAAMAR, H.F. ZOHRA**
19:15-19:30	Analysis of Phytosanitary Practices of Farmers in Khenchela Algeria. **L. BOUDRAA, H.H. BOUKHALFA**
19:30-19:45	Date Palm (*Phoenix dactylifera* L.) Genetic Erosion in Southeastern Algerian Groves. **H. BEDJAOUI, M.S. MEHAOUA, H. HIZI**
19:45-20:00	Investigation of the relationship between morphological features of different Hyacinth (*Hyacinthus orientalis* L.) cultivars by Path Analysis. **N. Mikail, A. ÇIĞ, N Türkoğlu**
20:00	**Dinner**

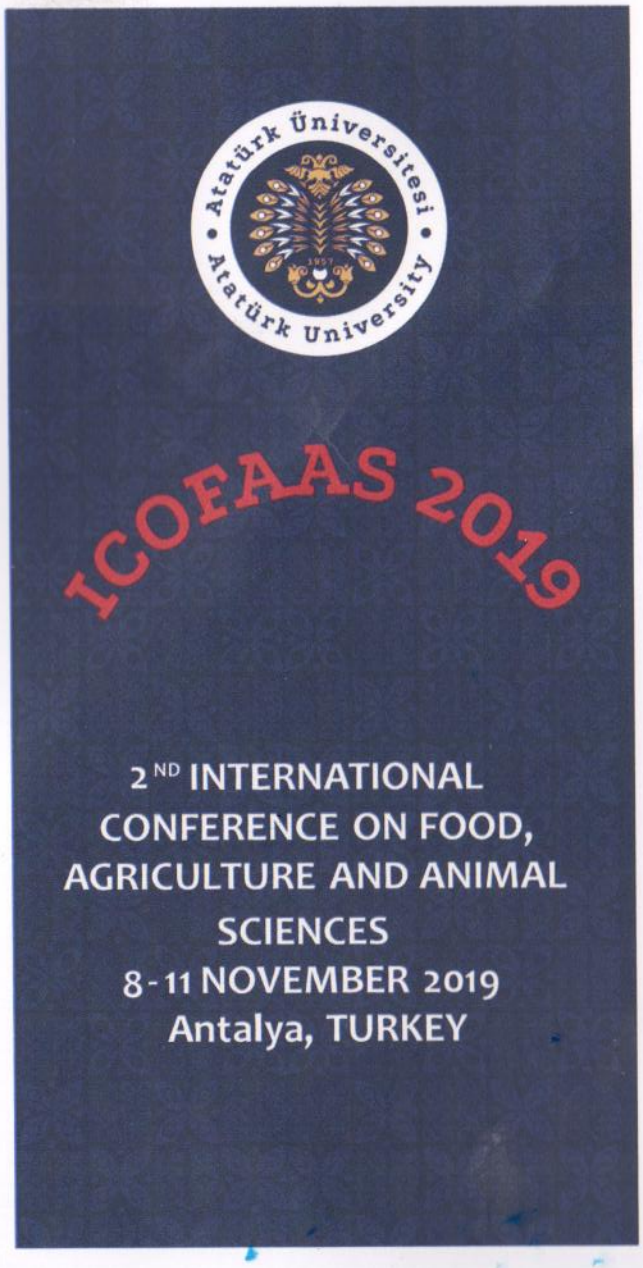
	NOVEMBER 10, 2019 **(08:00-09:00)**
	HAZAR 2
	Session Chair: Fatih DADAŞOĞLU
08:00-08:15	Nicking on Seed Coat Increases Germination Rate of Medicinally Important Deve Gülü Marshmallow Plant. **A. BATTAL, G. GÖRMEZ, M. TÜRKER**
08:15-08:30	Optimization of Mature Embryo Based Regeneration of Mirzabey 2000 Cultivar (*Triticum turgidum durum* L.). **A. BATTAL, H.A. ÖKTEM, M. YÜCEL**
08:30-08:45	Effect of Treating Maize Cobs with Urea and Wood Ash on Chemical Composition and Gas Production Substrates. **A. ABDULAZEEZ, C.M. TSOPITO, O.R MADIBELA**
08:45-09:00	**Coffee Break**

	NOVEMBER 10, 2019 **(09:00-10:45)**
	PASIFIC
09:00-09:30	Assist Prof. Dr. Selma HOUCHI *Setif University, Algeria*
09:30-10:00	Assist. Prof. Dr. Dragana ŠUNJKA *Novi Sad University, Serbia*
10:00-10:30	Prof. Dr. Fikrettin ŞAHİN *Yeditepe University, Turkey*
10:30-10:45	**Coffee Break**

	NOVEMBER 10, 2019 **(10:45-14:00)**
	HAZAR 2
	Session Chair: Fatih ÇIĞ
10:45-11:00	The Effect of Some PGPBs on Post-Harvest Weight, Length and Width of Hyacinth Bulbs Planted in Different Areas. **A. ÇIĞ, F. ÇIĞ**
11:00-11:15	Toxicity and Sublethal Effect of Citrus Peels Essential Oils Formulations to Aphidophagous Coccinellid Predators. **L. ALLAL-BENFEKIH, F. GUICHENITI, I. FENNICHE, A.N. E.H. HAMEL, N. AYACHI**
11:15-11:30	Dissipation dynamics of imidacloprid insecticide in pepper fruits grown in a greenhouse. **S. LAZIC, D. SUNJKA, S. VUKOVIC, D. BOSKOVIC, A. ZUNIC**
11:30-11:45	The Present Status of World Vegetable Seed Trade. **B. TUNCER**
	Coffee Break
	Session Chair: Assoc. Prof. Dr. Arzu ÇIĞ
11:45-12:00	The Effect on Plant Growth and Yield in Curly Leaf Lettuce (*Lactuca sativa var. Crispa*) of Different Nutritional Recipes. **O. UZAL, F. YASAR**
12:00-12:15	Investigation of Macro Element Intake of Magnesium (Mg^{+2}) and Salt Stress Applied Pepper Plants. **O. UZAL, F. YASAR**
12:15-12:30	Determination of Malondialdehyde and Chlorophyll Amounts by Applying Potassium to Salt Stressed Pepper Plant. **F. YASAR, O. UZAL**
12:30-12:45	The Effect of Different Commercial Fertilizer Applications on the Pomological Properties and the Amount of Vitamin C, Water Soluble Dry Matter of Pepper. **O. UZAL, F. YASAR**
12:45-13:00	*Thymus fontanesii* Biss & Reut against human and plant fungi. F. **MOSTEFA SARI, A. RACHIDA, T. MOHAMED**
13:00-13:15	*Cedrus atlhicantica* M. needles essential oil: active ingredient of dermal cream with pronounced anti-inflammatory effect. **F. BENOUAKLIL, F. HAMAIDI-CHERGUI, M.S. HAMAIDI, S. AOUICHA, K. AZINE, F. SAIDI**
13:15-14:30	**Lunch**

SOCIAL PROGRAMME
NOVEMBER 10, 2019 **14:30-19:00**

	NOVEMBER 11, 2019 **(10:00-10:30)**
	PASIFIC
10:00-10:30	Prof. Dr. Recep KOTAN *Atatürk University –Turkey*



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