Determined Of the Phylogenetic Relationships the Intergenomic (A, C, G) of the Cotton Species

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Abstract: ***In this article was analyzed the different species of G.arboreum L. and Australian wild cotton, which used as the research object. The main part of studied cotton species have the difficult hybridization process between itself was determined and showed that they have comparatively distant phylogenetic relationships. The received results by hybridization between cotton species showed that the morphological characters of F_1 plants were in the interval condition. Sometimes, the analyzed hybrid plant by the morphologic notes shows that it has familiar to parent plants, specially it is much closer to mother plants. F_1 ssp. obtusifolium x G.australe, ssp. obtusifolium x G.bickii, ssp. perenne x G.nelsonii, G.australe x ssp. neglectum f. sanginium, F_1 hybrid combination were without generation. There were no any growing of bolls and in hybrid combinations the viability of pollen grain showed 0,0%. As such as hybridization between G.arboreum L. species and Australian cotton species in a morphological comparative, by learning the result of genetic morphological characters of genetic F_1, by using the white fiber of subspecies ssp. nanking was chosen as the mother plant. It was familiar to G.nelsonii wild species.***

Keywords: cotton, species, anther, interspecific crossing

1. Introduction

At present time, the classification of the species of cotton such as *Gossypium* L. was not fully analyzed and it needs to solve the problems by learning the phylogenetic relations of cotton species, selection process of unused resources such as forms and types of biologic and valuable agriculture materials, analyze the contributions and use in practices are the main tasks. A type of *Gossypium* L ancestries the poly-top – monophyletic group. Most of it's species were founded in the period of ending triangle century. The types of cottons divided by subspecies such as Old world cotton (*Eugossypium*), New world cotton (*Karpas*) and Australian cotton (*Sturtia*) [7].

By Fryxell opinion [16-17] the foundation of groups and it`s discrepancy were in mesophyte conditions of Mesozoic era. In the early triangle century these species specially *Sturtia* subspecies were adapted to the kserofit condition.

According to the Brubaker, Paterson, Wendel [13] notes *Gossypium* L. has several ancestries' centers Central-Western and South Mexico (18 species) Northern- Eastern Africa an Arabian countries (14) and Australia (17 species). These species are familiar to each other's by their 8 chromosomes (A, B, C, D, E, F, G and K) divided in to gen groups. [14-15, 19].

The evolution of Old world cotton G.*arboreum* L. belongs to the real wild. Later according to the human living stile, it founded in half wild bushes. And later there were founded the anniversary and several years cultural brands [4, 7]. There were mix grown 5 brands of *G.arboreum* L. which distinct each other by the agricultural notes. F_1 and F_2 plants were grown three times in the experimental field. There were analyzed the fertileness, fiber marks length of fiber of F_2 plants, parent plants and F_1 plants [11]. The phylogenetic relations of *G.arboreum* L. and it`s species discriminations [5, 8], morphometric and comparative policario-gramma of chromosomes in subspecies [3], separate forms subspecies of *G.arboreum* L. and anatomic structure of vegetative and generative organs of Australian cotton types were learned [6].

Australian (*Sturtia*) cotton subspecies had been grown in Bur period, specially in Pangaea, Australian continent [7]. By hybridization of Australian cotton among species [10] and their relatively degrees, caryo-structure of several wild species [2] were studied by scientists.

Learning the cotton species of the nature and putting them in one systematically group have searched firstly in XVII century. The founder scientist was A.Todaro [20]. Nowadays, tucsonomic scientists of the world botanic committee admitted P.Fryxell methods which the classification of *Gossypium* L. which 50 species had been united in 4 subspecies, 8 sections, 9 subspecies section [18]. There is not complite classification information about species differential of *Gossypium* L. by F.M.Mayer [7].

Above mentioned literature gives to conclude that the foundation of *G.arboreum* L. and Australian cotton species, their evolution, phylogenetic relations and searching their involvement possibilities in practical selection period and tucsonomic features were not learned enough and making the dispute among scientists. It needs generally searching in this field. By coming to this idea, our scientific research tried to analyze different of species of *G.arboreum* L. with Australian cotton, hybridization their systematic role by comparative morphologic methods, phylogenetic relative stage. According evaluation foundation theoretical and practical results on genetic and practical selection, which collected, analyzed phylogenetic, morphologic and genetic directions will be enriched with new information.

2. Materials and Methods

The research was carried out in the Laboratory of Cotton Systematics and Introduction of Institute of Genetics and Plant Experimental Biology of the Academy of Sciences of the Republic of Uzbekistan. There was used the material from the general fond of the laboratory materials such as of

G.arboreum L (A_2) intraspecific varieties *ssp. obtusifolium* (Roxb.) Mauer, *ssp. obtusifolium var. indicum*, *ssp. perenne* (Blanco) Mauer, *ssp. neglectum* (Tod) *f. sanguineum*, *ssp. nanking* (with brown fiber), *ssp. nanking* (with white fiber) and Australian wild species *G.sturtianum* Willis *var. sturtianum* (C_1) *G.sturtianum var. nandewarense* (Der.) Fryx. (C_{1-n}) *G.australe* F.Muell. (G_3), *G.nelsonii* Fryx. (G); *G.bickii* Prokh. (G) which used as the object of the research. The anther of flowers in plants and the numbers of pollen grain in anther, viability of pollen grains and also cotton boll seeding, complete seeds setting in F_0 hybrid combinations, the numbers of bolls per plant, the percent of complete seeds setting of an unripe boll, F_1 hybrid combinations, morphological, genetic notes are searched and given as the results of research.

3. Results

It was founded that different species of *G.arboreum* L. and the anther of flowers in Australian wild cotton and the numbers of pollen grain in anther, viability of pollen grains abruptly distinguished. Specially, the numbers of pollen grain in anther, viability of pollen grains of Australian wild cotton (107,8-177,6; 214,1-263,1) consisted. The numbers of anther in flower of various species of *G.arboreum* L. as low degree were (30,3-101,8) and the numbers of pollen grain in anther as high degree were (206,5-273,7) (1- table). By hybridization between *G.arboreum ssp.obtusifolium* subspecies with *var. nandewarense, G.australe* and *G.bickii* cotton the numbers

Table 1: Parent plant forms and numbers of pollen grain in anther, grain viability, number of anther in F_1 plants.

F_1 species in hybrid combinations	Number of flowers, piece	Numbers of anther, piece			Numbers of pollen grain in anther			Numbers of pollen grain	Viability, %		
		$\bar{x} \pm S\bar{x}$	M ± m	V%	$\bar{x} \pm S\bar{x}$	M ± m	V%		$\bar{x} \pm S\bar{x}$	M ± m	V%
1	2	3	4	5	6	7	9	10	11	12	13
Parent plant forms											
ssp.obtusifolium	10	77,0 ± 2,4	65-90	9,9	235,7 ± 5,6	210-260	7,5	322	95,0 ± 1,49	86,7-100,0	4,9
ssp.obtusifolium var.indicum	10	101,8 ± 3,1	86-115	9,6	273,7 ± 6,1	235-300	7,0	265	95,4 ± 1,63	85,7-100,0	5,4
ssp.perenne	10	77,3 ± 1,9	65-85	7,7	271,4 ± 7,1	250-320	8,2	173	91,8 ± 2,67	80,0-100,0	9,2
ssp.neglectum f.sanginium	10	63,5 ± 2,2	55-75	11,0	233,2 ± 11,3	200-305	15,3	225	95,3 ± 1,70	87,5-100,0	5,8
ssp. nanking (with brown fiber)	10	30,3 ± 0,8	27-35	8,5	212,4 ± 13,5	160-275	20,1	238	94,8 ± 1,69	87,5-100,0	5,6
ssp. nanking (with white fiber)	10	33,8 ± 0,8	30-38	7,1	206,5 ± 10,4	145-255	16,0	248	93,7 ± 1,82	85,7-100,0	6,1
var. sturtianum	10	150,2 ± 3,7	130-170	7,9	260,3 ± 4,0	240-278	4,9	525	98,1 ± 1,08	86,4-100,0	3,5
var. nandewarense	10	177,6 ± 4,3	160-200	7,7	263,1 ± 4,6	245-285	5,5	546	98,6 ± 1,04	85,7-100,0	3,3
G.australe	10	138,5 ± 3,9	124-160	9,0	228,9 ± 6,3	196-250	8,7	449	96,2 ± 1,65	83,3-100,0	5,4
G.nelsonii	10	129,1 ± 5,5	105-150	13,5	230,4 ± 5,7	201-255	7,8	510	97,1 ± 1,20	90,0-100,0	3,9
G.bickii	10	107,8 ± 3,3	90-125	9,8	214,1 ± 5,6	210-260	7,5	605	95,8 ± 1,64	84,6-100,0	5,4
Hybrids F_1											
ssp. obtusifolium x *var. nandewarense*	10	69,8 ± 0,8	57-80	3,4	147,9 ± 2,5	137-165	5,4	321	94,2 ± 1,86	83,3-100,0	6,2
ssp. obtusifolium x *G.australe*	10	17,4 ± 0,9	15-24	15,6	132,7 ± 0,8	129-137	1,9	192	0	0	0
G.australe x *G.arboreum* L. *ssp. obtusifolium*	10	111,5 ± 2,5	100-120	7,0	154,4 ± 1,1	150-160	2,3	386	96,3 ± 1,55	83,3-100,0	5,1
ssp. obtusifolium x *G.bickii*	10	50,1 ± 1,1	45-55	7,2	99,5 ± 1,1	95-105	3,5	221	0	0	0
ssp. obtusifolium var. indicum x *var. sturtianum*	10	54,6 ± 2,3	45-63	13,2	134,0 ± 1,9	125-143	4,5	316	88,7 ± 1,54	80,0-100,0	7,7
ssp. obtusifolium var. indicum x *G.australe*	10	77,6 ± 3,4	67-94	13,7	123,5 ± 0,7	120-127	1,8	310	96,5 ± 1,54	86,7-100,0	5,0
G.australe x *ssp. obtusifolium var. indicum*	10	77,8 ± 1,4	70-85	5,9	79,3 ± 1,0	75-85	4,1	190	72,7 ± 1,46	66,7-81,8	6,4
ssp. perenne x *G.nelsonii*	10	45,1 ± 1,6	38-53	11,5	113,8 ± 0,9	110-118	2,4	198	0	0	0
G.nelsonii x *ssp. perenne*	10	80,3±1,5	75-87	6,0	85,5 ± 1,0	85-90	3,9	261	92,4 ± 1,66	85,7-100,0	5,7
ssp. neglectum f. sanginium x *var. nandewarense*	10	20,7 ± 1,2	15-27	18,2	97,8 ± 3,2	81-113	10,3	291	77,1 ± 2,00	62,5-88,9	8,2
ssp. neglectum f. sanginium x *G.australe*	10	65,8 ± 1,5	60-75	7,1	188,8 ± 1,1	185-195	1,9	327	0	0	0
G.australe x *ssp. neglectum f. sanginium*	10	36,4 ± 1,1	30-42	9,9	123,0 ± 0,7	120-125	1,8	300	72,7 ± 1,67	62,5-83,3	7,3
ssp. nanking (with brown fiber) x *var. sturtianum*	10	28,1 ± 1,2	24-34	13,0	126,5 ± 1,6	120-135	4,1	325	94,4 ± 1,96	80,0-100,0	6,5
ssp. nanking (with brown fiber) x *G.australe*	10	37,6 ± 1,9	30-45	16,2	154,1 ± 1,0	150-160	2,0	306	98,5 ± 0,99	90,9-100,0	3,2
G.australe x *ssp. nanking*	10	15,9 ± 0,6	12-18	6,0	131,6 ± 0,9	127-135	2,3	261	93,4 ± 2,09	83,3-100,0	7,1

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(with brown fiber)											
ssp. nanking (with brown fiber) x *G.nelsonii*	10	36,7 ± 3,3	28-59	28,3	134,6 ± 0,7	130-137	1,7	252	97,7 ± 1,35	87,5-100,0	4,4
G.nelsonii x *ssp. nanking* (with brown fiber)	10	72,5 ± 1,7	65-80	7,4	113,5 ± 0,8	110-117	2,3	287	93,8 ± 1,58	87,5-100,0	5,3
ssp. nanking (with white fiber) x *G.australe*	10	22,1 ± 1,1	16-28	15,7	133,1 ± 0,7	130-136	1,7	278	96,1 ± 1,56	87,5-100,0	5,1
G.australe x *ssp. nanking* (with white fiber)	10	78,3 ± 1,8	70-86	7,1	73,1 ± 2,0	65-84	8,6	280	67,5 ± 1,42	60,0-77,7	6,6
ssp. nanking (with white fiber) x *G.nelsonii*	10	40,3 ± 3,4	26-57	26,8	164,6 ± 0,9	160-168	1,8	326	93,5 ± 1,48	87,5-100,0	5,0
ssp. nanking (with white fiber) x *G.bickii*	10	39,8 ± 1,2	35-45	9,4	125,2 ± 1,1	125-130	2,8	255	97,4 ± 1,28	90,0-100,0	4,2

of anther in flower of various species F_1 *ssp. obtusifolium* x *G.bickii, ssp. obtusifolium x var. nandewarense* were 50,1-69,8 F_1 ssp. *obtusifolium* the numbers of anther in flower of plants 111,5 (the changeability amplitude was 100-120) the numbers of pollen grains in anther 154,4 (the changeability amplitude was 150-160) highest degree in hybrid combinations. The numbers of anther in flower of plants F_1 *ssp. obtusifolium* x *G.australe* reciprocal hybrid combinations showed low degree (17,4), the changeability amplitude was between 15-24 and highest coefficient of variation was 15,6%. *G.arboreum ssp. obtusifolium var. indicum* variation *var. sturtianum G.australe* wild cotton hybrid between species F_1 *ssp. obtusifolium var. indicum* x *var. sturtianum ssp. obtusifolium var.* x *G.australe* hybrid combinations of the numbers of anther in flower of plants 54,6-77,6 and the numbers of pollen grain in anther 123,5-134,0 (the changeability amplitude were 45-63 and 67-94) coefficient of variation was 13,2-13,7%. F_1 *G.australe* x *ssp. obtusifolium var. indicum* hybrid combinations the numbers of pollen grain in anther (77,8; 79,3) coefficient of variation was 5,9%.

G.arboreum ssp. perenne subspecies hybrid with *G.nelsonii* species F_1 *ssp. perenne* x *G.nelsonii, G.nelsonii* x *ssp. perenne* reciptorical hybrid combinations showed the numbers of anther in flower of plants 45,1 and 80,3 and the changeability amplitude were 38-53 and 75-87, coefficient of variation was 5,2 and 4,8%.

The numbers of pollen grain in anther were 113,8 -85,5 and the changeability amplitude were 110-118 and 85,5-90.

G.arboreum ssp. neglectum f. sturtianum x *var. nandewarense* and *G.australe* subspecies hybrid with F_1 *ssp. neglectum f. sturtianum* x *var.nandewarense* and *G.australe* hybrid combinations of the numbers of anther in flower of plants (20,7-65,8) coefficient of variation was 3,6-4,7%. F_1 *ssp. neglectum f. sturtianum* x *var. nandewarense, G.arboreum ssp. neglectum f. sturtianum* x *var. nandewarense* and *G.australe* hybrid combinations the numbers of pollen grain in anther highest degree (97,8-188,8). *G.arboreum ssp. nanking* (with brown fiber) subspecies *var. sturtianum, G.australe, G.nelsonii* wild cotton species with species F_1 *ssp. nanking* (with brown fiber) x *var sturtianum* hybrid combinations showed the numbers of anther in flower of plants 28,1 and the changeability amplitude was 24-34, the numbers of pollen grain in anther were 126,5 coefficient of variation was (4,1%) low degree. F_1 *ssp. nanking* (with brown fiber) x *G.australe ssp. nanking* (with brown fiber) x *G.nelsonii* hybrid combinations showed the numbers of anther in flower plant 36,7-37,6, coefficient of variation in middle and highest degree were 16,2-28,3% the numbers of pollen grain in anther were 134,6-154,1. F_1 *G.australe* x *ssp. nanking* (with brown fiber) reciptorical hybrid combinations showed the numbers of anther in flower of plants were low degree (15,9) and the changeability amplitude was between 12-18, coefficient of variation also was (6,0) in low degree. *G.arboreum ssp. nanking* (with white fiber) subspecies *G.australe*, *G.nelsonii*, *G bickii* wild cotton species with species F_1 *ssp. nanking* (with white fiber) x *G.nelsonii* hybrid combinations the numbers of anther in flower of plants (22,1-40,3) highest coefficient of variation was 9,4-26,8% the numbers of pollen grains in anther highest degree (125-164,4) and the changeability amplitude were among 125-130; 130-136;160-168 coefficient of variation was 1,7-2,8. F_1 *G.australe ssp. nanking* (with white fiber) hybrid combinations the numbers of anther in flower of plants 78,3 and the changeability amplitude were between 70-86, the numbers of pollen grain in anther 73,1 coefficient of variation was 8,6%. Summing up all analyzed results of parent plants` notes are abruptly discriminated.

G.arboreum L. species hybridization with Australian wild cotton the numbers of anther in flower of plants and the numbers of pollen grain in anther of F_1 was different. F_1 *G.australe* x *ssp. obtusifolium var. indicum,* F_1 *G.nelsonii* x *ssp.perenne* the numbers of anther in flower of plants and the numbers of pollen grain in anther was not different. It should be stressed that by analyzing criteria of cotton in systematic and phylogenetic features the numbers of anther in flower of plants and the numbers of pollen grain in anther character in F_1 hybrid combinations are different or lower than the parent plants.

By research of the viability of pollen grain s *G.arboreum* L. of the highest degree in one flower are shown 91,8-95,4% and the viability of pollen grains of wild Australian sorts highest degree in one flower are shown 95,8-98,6%.

The viability of pollen grains of *G.arboreum* L. and Australian wild cotton type the type F_1 hybrid combinations viability of pollen grains of the flowers of cotton carefully analyzed and noted as the results of the research. F_1 *ssp. obtusifolium* x *var. nandewarense*, *G.australe* x *ssp. obtusifolium* hybrid combinations viability of pollen grains of the flowers of plant are shown the highest degree 94,2-96,3%, and the changeability amplitude are shown the highest degree 83,3-100,0%, coefficient of variation are shown 5,1-6,2%. F_1 *ssp. obtusifolium* x *G.australe*, *ssp. obtusifolium* x *G.bickii* hybrid combinations viability of pollen grains are shown 0,0%. Here we can see that the pollen grains are in sterile condition. F_1 *ssp. obtusifolium var. indicum* x *var. sturtianum*, *ssp. obtusifolium var. indicum* x *G.australe* hybrid combinations of viability of pollen grains are shown 88,7-96,5%, and the changeability amplitude are shown on the highest degree 80,0-100,0; 86,7-100,0%, coefficient of variation are shown 5,0-7,7%.

F_1 *G.australe* x *ssp. obtusifolium var. indicum* lowest degree of hybrid combinations of viability of pollen grains are shown (72,7%), and the changeability amplitude are shown between 66,7-81,8%, coefficient of variation are shown 6,4%. F_1 *G.nelsonii* x *ssp.perenne* hybrid combinations of the viability of pollen grains are shown 92,4, and the changeability amplitude are shown between 85,7-100,0%, the coefficient of variation are shown 5,7%. F_1 *ssp.perenne* x *G.nelsonii* hybrid combinations of viability of pollen grains are shown 0,0%. Here we can see that the pollen grains are in sterile condition. F_1 *ssp. neglectum f. sanguineum* x *G.australe*, *ssp. neglectum f. sanginium* x *var. nandewarense nelsonii* hybrid combinations of the viability of pollen grains are shown 72,7-77,1% (the changeability amplitude are shown between 62,5-83,3%; 62,5-88,9%), the coefficient of variation are shown 7,3-8,2%. F_1 *G.australe* x *ssp. neglectum f. sanguineum* hybrid combinations of the viability of pollen grains are shown 0,0%. Here we can see that the pollen grains are in sterile condition. F_1 *ssp. nanking* (with brown fiber) x *G.australe* hybrid combinations the viability of pollen grains are shown 98,5% the changeability amplitudes are shown between 90,9-100,0%, the coefficient of variation are shown 3,2% shown the highest degree. And this reseprock hybrid combinations F_1 *G.australe* x *ssp. nanking* (with brown fiber) of viability of pollen grains are (93,4% the changeability amplitudes are shown between 83,3-100,0%, the coefficient of variation are shown 7,1%. Besides this, F_1 *G.nelsonii* x *ssp. nanking* (with brown fiber), *ssp. nanking* (with brown fiber) x *G.nelsonii* combinations of viability of pollen grains are shown 93,8-97,7% (the changeability amplitude are shown between 87,5-100%), the coefficient of variation are shown 4,4-5,3%. F_1 *ssp. nanking* (with white fiber) x *G.australe* hybrid combinations of viability of pollen grains are shown 96,1%, the changeability amplitude are shown between 87,5-100,0%, the coefficient of variation are shown 5,1%. F_1 *G.australe* x *ssp. nanking* (with white fiber) the lowest degree of hybrid combinations of viability of pollen grains are shown (67,5%), the changeability amplitude are shown between 60,0-77,7%, the coefficient of variation are shown 6,6%. F_1 *ssp. nanking* (with white fiber) x *G.nelsonii*, *ssp. nanking* (with white fiber) x *G.bickii* hybrid combinations of viability of pollen grains are shown 93,5-94,7%, (the changeability amplitude are shown between 87,5-100%; 90,0-100,0%) the coefficient of variation are shown 4,2-5,0%.

According to the research analyzing gave the following results the viability degree of pollen grains *G.arboreum* L. and Australian wild cotton genus the F_1 hybrid combinations pollen grains of the flowers are shown 0,0-98,5% between the highest changeability degree. By the viability degree of the pollen grains such as the F_1 *ssp. nanking* (with brown fiber) x *G.australe* hybrid combinations it showed 98,5%, as the highest degree. And by the F_1 *ssp. obtusifolium* x *G.australe*, *ssp. obtusifolium* x *G.bickii*, *ssp. perenne* x *G.nelsonii*, *G.australe* x *ssp. neglectum f. sanginium* of viability degree of hybrid combinations pollen grains showed 0,0% and it means the pollen grains sterile condition, distantly of the phylogenetic feature.
Searching on species *G.arboreum* L. are various, wild, ruderal, tropic, subtropics forms of Australian wild cotton species with hybridization F_0 hybrid combination was the object of scientific research and by viability it learned by dividing in four groups. The results of search gave in following forms.

<u>Wild form x wild form.</u> In this group *G.arboreum* L. species of wild forms *ssp. obtusifolium var. indicum* subspecies Australian wild cotton (*var sturtianum, var. nandewarense, G.australe, G.nelsonii, G.bickii*) hybrid combinations, unripe boll growing 0,0-5,7% and middle degree 1,6%. Fully growing of seeds in boll was 0,0-90,0%, this shows that in middle degree 27,9%.

Table 2: F_0 plants boll setting and complete seed setting of the *G.arboreum* L. and Australian cotton species

F_1 species in hybrid combinations	*Num-bers of hybrid flowers, piece*	*Numbers of hybria boll, piece*	*Hybrid bolls setting, %*	*Number of complete seed setting, piece*		*Complete seed setting in F_0 hybrid boll, %*			
				complete	empty	$\bar{x} \pm S\bar{x}$	M ± m	S	V%
1				5	6	7	8	9	10
Wild form x wild form									
ssp. obtusifolium x *var. sturtianum*	41	0	0,0	-	-	-	-	-	-
var. sturtianum x *ssp. obtusifolium*	47	0	0,0	-	-	-	-	-	-
ssp. obtusifolium x *var. nandewarense*	35	2	5,7	4	17	19,1 ± 0,4	18,2-20,0	1,3	6,7
var. nandewarense x *ssp. obtusifolium*	38	0	0,0	-	-	-	-	-	-
ssp. obtusifolium x *G.australe*	236	2	0,8	19	2	90,0 ± 4,5	80,0-100,0	14,1	15,7
G.australe x *ssp. obtusifolium*	72	2	2,8	20	12	61,9 ± 3,9	53,3-70,6	12,2	19,7
ssp. obtusifolium x *G.nelsonii*	46	0	0,0	-	-	-	-	-	-
G.nelsonii x *ssp. obtusifolium*	56	2	3,6	3	9	24,3 ± 1,9	20,0-28,6	6,1	24,9
ssp. obtusifolium x *G.bickii*	70	2	2,9	12	2	83,3 ± 7,5	66,7-100,0	23,6	28,3
G.bickii x *ssp. obtusifolium*	18	0	0,0	-	-	-	-	-	-
ssp. obtusifolium var. indicum x *var. sturtianum*	86	7	8,1	12	84	12,6 ± 2,2	5,9-25,0	7,1	56,1
var. sturtianum x *ssp. obtusifolium var. indicum*	63	2	3,2	2	22	8,4 ± 0,3	7,7-9,1	1,0	11,7
ssp. obtusifolium var. indicum x *var. nandewarense*	59	3	5,1	2	49	3,6 ± 1,0	0,0-5,6	3,12	86,7
var. nandewarense x *ssp. obtusifolium var. indicum*	38	0	0,0	-	-	-	-	-	-

ssp. obtusifolium var. indicum x *G.australe*	71	10	14,1	74	37	67,3 ± 2,5	27,3-100,0	7,9	11,7
G.australe x *ssp. obtusifolium var. indicum*	74	2	2,7	11	14	43,9 ± 1,0	41,6-46,1	3,2	7,2
ssp. obtusifolium var. indicum x *G.nelsonii*	13	4	30,8	22	33	43,9 ± 3,3	31,2-55,6	10,3	23,3
G.nelsonii x *ssp. obtusifolium var. indicum*	50	0	0,0	-	-	-	-	-	-
ssp. obtusifolium var. indicum x *G.bickii*	20	2	10,0	7	2	77,5 ± 1,1	75,0-80,0	3,5	4,5
G.bickii x *ssp. obtusifolium var. indicum*	42	2	4,8	3	7	30,0 ± 4,5	20,0-40,0	14,1	47,1
Ruderal form x wild form									
ssp. perenne x *var. sturtianum*	35	0	0,0	-	-	-	-	-	-
var. sturtianum x *ssp. perenne*	37	0	0,0	-	-	-	-	-	-
ssp. perenne x *var. nandewarense*	42	0	0,0	-	-	-	-	-	-
var. nandewarense x *ssp. perenne*	38	0	0,0	-	-	-	-	-	-
ssp. perenne x *G.australe*	102	0	0,0	-	-	-	-	-	-
G.australe x *ssp. perenne*	70	0	0,0	-	-	-	-	-	-
G.nelsonii x *ssp. perenne*	20	5	20,0	49	14	78,4 ± 5,7	53,3-100,0	18,0	23,0
ssp. perenne x *G.nelsonii*	14	2	14,3	17	6	74,6 ± 1,4	71,4-77,8	4,5	6,1
ssp. perenne x *G.bickii*	60	2	3,3	11	8	57,2 ± 5,7	44,4-70,0	18,1	41,2
G.bickii x *ssp. perenne*	28	2	7,1	13	7	65,1 ± 0,7	63,6-66,7	2,1	3,3
Tropic form x wild form									
ssp. neglectum f. sanginium x *var. sturtianum*	54	3	5,6	0	31	-	-	-	-
var. sturtianum x *ssp. neglectum f. sanginium*	68	2	2,9	8	13	38,0 ± 0,2	37,5-38,5	0,7	1,8
ssp. neglectum f. sanginium x *var. nandewarense*	64	2	3,1	4	6	38,1 ± 2,1	33,3-42,9	6,7	17,7
var. nandewarense x *ssp. neglectum f. sanginium*	39	0	0,0	-	-	-	-	-	-
ssp. neglectum f. sanguineum x *G.australe*	8	2	25,0	16	2	83,9 ± 4,6	75,0-92,14	12,6	15,0
G.australe x *ssp. neglectum f. sanginium*	80	2	2,5	8	6	86,6 ± 0,4	85,7-87,6	1,3	1,5
ssp. neglectum f. sanginium x *G.nelsonii*	35	2	5,7	17	19	47,2 ± 8,7	27,8-66,7	27,5	58,3
G.nelsonii x *ssp. neglectum f. sanginium*	43	0	0,0	-	-	-	-	-	-
ssp. neglectum f. sanginium x *G.bickii*	42	2	4,8	8	7	52,7 ± 4,4	42,6-62,5	13,9	26,4
G.bickii x *ssp. neglectum f. sanginium*	20	0	0,0	-	-	-	-	-	-
Subtropic form x wild form									
ssp. nanking (with brown fiber) x *var. sturtianum*	36	4	11,1	15	74	17,0 ± 3,1	4,3-26,3	9,8	57,9
var. sturtianum x *ssp. nanking (*with brown fiber)	52	0	0,0	-	-	-	-	-	-
ssp. nanking (with brown fiber) x *var. nandewarense*	48	0	0,0	-	-	-	-	-	-
var. nandewarense x *ssp. nanking* (with brown fiber)	52	2	3,8	13	18	41,5±1,3	38,5-44,4	4,2	10,2
ssp. nanking (with brown fiber) x *G.australe*	87	18	20,7	135	103	58,3 ± 10,4	5,55-100,0	32,8	56,3
G.australe x *ssp. nanking* (with brown fiber)	29	2	6,9	13	4	74,3 ± 3,4	66,7-81,8	10,7	14,4
ssp. nanking (with brown fiber) x *G.nelsonii*	16	6	37,5	22	68	25,1 ± 2,3	12,5-31,2	7,3	29,3
G.nelsonii x *ssp. nanking* (with brown fiber)	36	3	8,3	11	15	48,6 ± 10,2	12,5-75,0	32,4	66,6
ssp. nanking (with brown fiber) x *G.bickii*	19	7	36,8	56	19	80,1 ± 6,4	44,4-100,0	20,2	25,2
G.bickii x *ssp. nanking* (with brown fiber)	42	2	4,8	2	23	8,0 ± 0,1	7,7-8,3	0,4	5,6
ssp. nanking (with white fiber) x *var. sturtianum*	47	2	4,3	0	10	-	-	-	-
var. sturtianum x *ssp. nanking* (with white fiber)	39	0	0,0	-	-	-	-	-	-
ssp. nanking (with white fiber) x *var. nandewarense*	41	2	4,9	0	11	-	-	-	-
var. nandewarense x *ssp. nanking* (with white fiber)	43	2	4,7	3	25	10,6±0,2	10,0-11,1	0,8	7,4
ssp. nanking (with white fiber) x *G.australe*	63	16	25,4	142	70	66,8 ± 9,0	8,3-100,0	28,5	42,7
G.australe x *ssp. nanking* (with white fiber)	61	3	4,9	11	11	54,34±5,0	36,4-66,7	15,9	29,3
ssp. nanking (with white fiber) x *G.nelsonii*	21	9	42,9	73	75	48,7 ± 8,0	22,2-94,4	25,4	52,1
G.nelsonii x *ssp. nanking* (with white fiber)	31	2	6,5	10	13	45,4 ± 6,6	30,7-60,0	20,7	45,7
ssp. nanking (with white fiber) x *G.bickii*	15	4	26,7	25	17	66,5 ± 9,6	33,4-100,0	36,2	52,7
G.bickii x *ssp. nanking* (with white fiber)	59	0	0,0	-	-	-	-	-	-

Analyzes showed that *ssp. obtusifolium* subspecies *var. nandewarense, G.australe, G.nelsonii, G.bickii* in hybrid combinations hybrid bolls growing process 0,8-5,7% change ability and middle degree showed 3,2%. Unripe boll setting was 19,1-90,0%, this shows that in middle degree 55,7% in this group. At the result of *ssp. obtusifolium* subspecies mother side *var sturtianum, G.nelsonii* with father side *var sturtianum, var. nandewarense, G.bickii* hybridization results there were no any bolls setting. *ssp. obtusifolium var. indicum* subspecies Australian wild cotton hybrid combinations, unripe boll setting 0,0-30,8% and middle degree 7,9%. Complete seeds setting in boll was 0,0-77,5%, this shows that in middle degree 28,7%. It should be stressed that *ssp. obtusifolium var. indicum* subspecies as father side hybridization between *var. nandewarense* and *G.nelsonii* there were not any setting unripe boll. Besides of *ssp. obtusifolium var. indicum* subspecies *var sturtianum, var. nandewarense, G.australe, G.nelsonii, G.bickii* in hybrid combinations hybrid bolls setting process 2,7-30,8% change ability and middle degree showed 9,8%. Complete seed setting in boll was 3,6-77,5%, this shows that in middle degree 35,9% (2-table).

Ruderal forms x wild form. *ssp.perenne*. hybrid with subspecies of Australian wild cotton hybrid combinations were taken in this group. *ssp.perenne* subspecies *G.nelsonii, G.bickii* in hybrid combinations hybrid bolls growing process 3,3-20,0% change ability and middle degree showed

11,1%. Complete seed setting of boll was 57,2,-78,4%, this shows that in middle degree 68,8%.

Tropic form x wild form. *ssp.neglectum f. sanginium* hybrid with subspecies of Australian wild cotton hybrid combinations were taken in this group. Hybrid bolls setting process 0,0-20,0% change ability and middle degree showed 4,9%. Complete seed setting of boll was 0,0-86,6%, this shows that in middle degree 34,6%. *ssp.neglectum f. sanginium* subspecies as mother side hybridization between *var. sturtianum* hybrid combinations bolls setting process 5,6%. By hybridization combination results there were no any riped bolls. It means that 100% were sterile seeds. *ssp.neglectum f. sanginium* subspecies as father side hybridization between *var. nandewarense*, *G.nelsonii*, *G.bickii* bolls were no any setting bolls. Besides of *ssp.neglectum f. sanginium* x *G.australe* in hybrid combinations hybrid bolls setting process 25,0% and Complete seed setting of boll was 83,9%.

Subtopic form x wild form. *ssp. nanking* brown fiber and white fiber of species *G.arboreum* L with subspecies of Australian wild cotton hybrid combinations showed that hybrid *ssp. nanking* brown with subspecies of Australian wild cotton hybridization combination process boll setting and complete seeds setting were high degree. *ssp. nanking* brown fiber subspecies with Australian wild cotton hybrid combinations hybrid boll growing 3,8-37,5% and middle degree showed 16,2%. Complete setting of boll was 8,0-80,1%, this shows that in middle degree 44,1%. By hybridization between subspecies *var. sturtianum* (as paternal form) and *var. nandewarense* (as maternal form) there were no any boll setting. *ssp. nanking* (with white fiber) subspecies as mother side *var. sturtianum, var. nandewarense* hybridization boll setting was 4,3-4,9%. But there were not any setting of unripe boll. *ssp. nanking* (with white fiber) subspecies *G.australe, G.nelsonii, G.bickii* (as paternal form) in hybrid combinations hybrid bolls setting process 4,7-42% and middle degree showed 18,5%. Complete seed setting in boll was 10,6-66,8%, this shows that in middle degree 48,7%. It should be stressed that F_0 hybrid bolls highest setting degree in following combinations ssp. *nanking* (with white fiber) x *G.nelsonii* (42,9%), *ssp. nanking* (with brown fiber) x *G.nelsonii* (37,5%), *ssp. nanking* (with brown fiber) x *G.bickii* (36,8%). *ssp.nanking* (with white fiber) subspecies as father side hybridization with *var. sturtianum*, *G.bickii* there were no any boll setting.

It means that by analyzing species *G.arboreum* L with subspecies of Australian wild cotton hybrid combinations showed that F_0 hybridization *ssp. obtusifolium* x *var sturtianum, var sturtianum* x *ssp. obtusifolium, var. nandewarense* x *ssp. obtusifolium*, *ssp. obtusifolium* x *G.nelsonii*, *G.bickii* x *ssp. obtusifolium*, *var. nandewarense*, x *ssp. obtusifolium var. indicum*, *G.nelsonii* x *ssp. obtusifolium var. indicum*, *ssp.perenne* x *var sturtianum*, *var sturtianum* x *ssp.perenne*, *ssp.perenne* x *var. nandewarense*, *var. nandewarense,* x *ssp.perenne*, *ssp.perenne* x *G.australe*, *G.australe* x *ssp.perenne*, *var. nandewarense* x *ssp. neglectum f. sanginium*, *G.nelsonii* x *ssp. neglectum f. sanginium*, *G.bickii* x *ssp.nanking* (with white fiber) in hybrid combinations there were not any setting unripe boll. It means that they far from the phylogenetic feature. However, it should be stressed that *ssp. nanking* (with white fiber) x *G.bickii* hybrid combinations are closer to the phylogenetic feature.

By analyzing species of *G.arboreum* L. with subspecies of Australian wild cotton hybrid combinations showed that F_1 hybrid the numbers of bolls in one cotton were different. F_1 *ssp. obtusifolium* x *var. nandewarense* hybrid combinations showed that the number of bolls per plant were 15 bolls, Complete seed setting in boll was 96,5%, (the changeability amplitude was 84,6-100%). F_1 *G.australe* x *ssp. obtusifolium* in hybrid combinations the number of bolls per plant were (37) bolls, complete seed setting in boll was 66,4% (the changeability amplitude was 35,7-88,9%) and highest coefficient of variation (23,1%). It should be stressed that in riciptoric combinations F_1 *ssp. obtusifolium* x *G.australe* and *ssp. obtusifolium* x *G.bickii* hybrid combinations were sterile; there were not any setting unripe boll. Analyzing the reason of sterile of boll needed to carry out the cytoembryologic search (3-table).

F_1 *ssp. obtusifolium* x *var. indicum* x *var sturtianum* hybrid combinations showed that the number of bolls per plant were 30 bolls, complete seed setting in boll was 94,0%, (the changeability amplitude was 87,0-100%). F_1 *ssp. obtusifolium* x *var. indicum* x *G.australe* hybrid combinations showed that the number of bolls per plant were 12 bolls, complete seed setting in boll was 97,7%. F_1 *G.australe* x *ssp. obtusifolium var. indicum* hybrid combinations showed that the number of bolls per plant were 2 bolls, complete seed setting in boll was 40,0% (highest changeability amplitude was 20,0-75,0) which showed low degree. And highest coefficient of variation (62,1%). It should be stressed that wild form of species *G.arboreum* L which *ssp. obtusifolium ssp. obtusifolium var. indicum* subspecies *G.australe* (mother side) hybrid combinations showed that F_1 hybridization complete seed setting in boll was in low degree (40,0%; 66,4%) and highest coefficient of variation (23,1; 62,1%). It means that *G.australe* species as the mother side *ssp. obtusifolium ssp. obtusifolium var. indicum* far from the subspecies and F_1 *G.nelsonii* x *ssp.perenne* hybrid combinations showed that the number of bolls per plant were 35 bolls, complete seed setting in boll was 86,0% (the changeability amplitude was 73,3-100). Besides this, F_1 *ssp. perenne* x *G.nelsonii* hybrid combinations was empty, no any boll grown. F_1 *ssp. neglectum f. sanginium* x *var. nandewarense* hybrid combinations showed the number of bolls per plant were 11 bolls, complete seed setting in boll was 74,2% (the changeability amplitude was 68,8-82,4%). F_1 *ssp. neglectum f. sanginium* x *G.australe* hybrid combinations showed that the number of bolls per plant were 19 bolls, complete seed setting in boll was 94,9% (the changeability amplitude was 90,5-100%). By the reciprocal hybrids combinations F_1 *G.australe* x *ssp. neglectum f. sanginium* was sterile, no any boll grown. It means that it is far from the phylogenetic features. F_1 *ssp. nanking* (with brown fiber) x *G.australe* and *ssp. nanking* (with white fiber) x *G.bickii* hybrid combinations showed that the number of bolls per plant were 8-15 bolls, complete seed setting in plant in highest degree was (85,7-97,7%). F_1 *G.australe* x *ssp. nanking* (with white fiber) the numbers of bolls in one plant low degree was (3 bolls) and complete seed setting in boll was 64,6%, the changeability amplitude was 55,6-71,4%, coefficient of variation had in high degree (12,6%). F_1 *G.nelsonii* x *ssp. nanking* (with brown fiber) in hybrid combinations showed the number of bolls per plant were 14 bolls, complete seed setting in boll was 79,7 %. F_1 *G.nelsonii* x *ssp. nanking* (with brown fiber) in hybrid combinations showed the number of bolls per plant in high degree were 39 bolls, complete seed setting in boll was in low degree 67,9%, the changeability amplitude was 55,6-77,8%. As coming to this conclusion, species *G.arboreum* L with subspecies of Australian wild cotton hybrid combinations showed that F_1 hybrid the numbers of bolls per plant were high degree (79,7-97,7). *G.australe* species as mother side *ssp. obtusifolium ssp. obtusifolium var. indicum ssp. nanking* (with white fiber) subspecies far from the phylogenetic features and F_1 hybrid plants showed half empty seeds. *ssp. obtusifolium* x *G.australe, ssp. obtusifolium* x *G.bickii, ssp.perenne* x *G.nelsonii,G.australe* x *ssp.neglectum f.sanginium* F_1 in hybrid combinations was sterile there was no any boll setting. Most of time, sterile definite mutation period but all-genotypic unsuitable combination, it often brings to sterile. However, other case structural distinction of sterile marked by translocation or difficult inversion, unsuitable chromosomes [9]. According to the results of our research, hybrid sterile of changes in certain genes that demonstrated the effect of the genotype of a certain "infertility" mutations or genes or chromosome which not combined on the

Table 3: Degree of productivity Parent plants and species F_1 plants

F_1 species in hybrid combinations	Numbers of plants, piece	Numbers of bolls in one plant	Numbers of analyzed bolls	Total number of seeds for a boll, piece	Number of complete seeds setting for a boll, piece	Number of sterile seeds setting for a boll, piece	Percent of complete seed setting in boll, %			
							$\bar{x} \pm S\bar{x}$	M ± m	S	V%
Parent plant forms										
ssp. obtusifolium	5	33	10	10,3	9,9	0,4	96,5 ± 1,9	83,3-100	6,0	6,2
ssp. obtusifolium var. indicum	5	35	10	12,7	11,7	1,0	92,4 ± 1,9	83,3-100	6,2	6,7
ssp. perenne	5	20	10	18,1	12,4	5,7	68,5 ± 2,0	58,8-78,3	6,3	9,3
ssp. neglectum f. sanginium	5	25	10	16,2	15,2	1,0	93,6 ± 1,4	86,7-100	4,4	4,7
ssp. nanking (with brown fiber)	5	15	10	17,7	15,4	2,3	87,9 ± 2,5	75,0-94,4	8,0	9,1
ssp. nanking (with white fiber)	5	17	10	18,0	16,6	1,4	92,3 ± 1,9	84,2-100	6,2	6,7
G.sturtianum var. sturtianum	5	22	10	18,3	17,2	1,0	94,4 ± 1,4	87,5-100	4,5	4,8
G.sturtianum var. nandewarense	5	20	10	20,3	19,3	0,7	96,3 ± 1,6	84,2-100	5,0	5,2
G.australe	5	40	10	11,2	10,6	0,6	94,5 ± 1,5	90,0-100	4,8	5,1
G.nelsonii	5	44	10	12,8	12,2	0,6	95,3 ± 1,3	90,9-100	4,2	4,4
G.bickii	5	42	10	8,9	8,3	0,6	92,9 ± 1,9	85,7-100	6,1	6,6
Hybrids F_1										
ssp. obtusifolium x *var. nandewarense*	2	15	10	13,5	13,0	0,5	96,5 ± 1,6	84,6-100	5,2	5,4
ssp. obtusifolium x *G.australe*	2	-	-	-	-	-	-	-	-	-
G.australe x *ssp. obtusifolium*	3	37	10	12,1	7,9	4,2	66,4 ± 4,8	35,7-88,9	15,3	23,1
ssp. obtusifolium x *G.bickii*	4	-	-	-	-	-	-	-	-	-
ssp. obtusifolium var. indicum x *var. sturtianum*	4	30	10	17,4	16,3	1,1	94,0 ± 1,5	87,0-100	4,9	5,2
ssp. obtusifolium var. indicum x *G.australe*	7	12	10	13,0	12,7	0,3	97,7 ± 1,6	85,7-100	5,0	5,1
G.australe x *ssp. obtusifolium var. indicum*	2	2	10	9,0	3,5	5,5	40,0 ± 7,8	20,0-75,0	24,8	62,1
ssp. perenne x *G.nelsonii*	3	-	-	-	-	-	-	-	-	-
G.nelsonii x *ssp. perenne*	7	35	10	11,0	9,4	1,6	86,0 ± 2,9	73,3-100	9,2	10,7
ssp. neglectum f. sanginium x *var. nandewarense*	1	11	10	15,1	11,7	4,0	74,2 ± 2,3	68,8-82,4	7,2	9,7
G.australe x *ssp. neglectum f. sanginium*	2	-	-	-	-	-	-	-	-	-
ssp. neglectum f. sanginium x *G. australe*	4	19	10	23,1	21,9	1,2	94,9 ± 2,3	90,5-100	3,4	3,6
ssp. nanking (with brown fiber) x *var. sturtianum*	4	14	10	16,9	14,4	2,5	85,7 ± 3,4	70,0-100	10,7	12,5
ssp. nanking (with brown fiber) x *G.australe*	8	10	10	15,0	14,6	0,4	97,7 ± 1,7	84,2-100	5,3	5,4
G.australe x *ssp. nanking* (with brown fiber)	5	39	10	8,9	6,0	2,9	67,9 ± 2,5	55,6-77,8	7,8	11,5
ssp. nanking (with brown fiber) x *G.nelsonii*	2	9	10	16,2	15,0	1,2	93,2 ± 1,3	87,5-100	4,3	4,6
G.nelsonii x *ssp. nanking* (with brown fiber)	3	14	10	7,6	6,8	1,8	79,7 ± 2,3	63,6-87,5	7,2	9,0
ssp. nanking (with brown fiber) x *G.australe*	8	8	10	15,8	15,3	0,5	96,6 ± 1,2	91,7-100	3,7	3,8
G.australe x *ssp. nanking* (with brown fiber)	2	3	10	7,0	4,0	3,0	64,6 ± 2,6	55,6-71,4	8,1	12,6
ssp. nanking (with brown fiber) x *G.nelsonii*	7	9	10	15,9	15,4	0,5	96,8 ± 1,5	86,7-100	4,7	4,8
ssp. nanking (with brown fiber) x *G.bickii*	4	15	10	15,8	15,4	0,4	97,4 ± 1,1	92,3-100	3,4	3,5

basis (balance disorder). In addition, the accumulation of gene mutations and chromosome expressed by the decrease in the dispute between the chromosomes gemological change the order of the number of similarities. It is not one of the forms of reductionism disorders and hereditary of the inadequate separation will lead to a different type. Genes and chromosomes exchange of substances in violation of the balance of the body's process of development of the individual and their asymmetry phenomenon.

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In addition, the collecting of gene mutations and changing of chromosomes procedure will bring to increase of changing among gemological chromosomes. It brings to "die" or "sterile" of disproportionality combination. Disproportion of core or plasma is the evolution processes of different forms in biochemical differ, which is deep searched view. All these processes give them fully insulate [12].

During the scientific research *G.arboreum* L. with subspecies of Australian wild cotton hybridization F_1 plants` by morphologic characters took the intermediate case (Fig. 1).

In some cases, morphologic character hybrid plants are suitable to the parent plants, most of time mother plants character near to hybrid plant character. F_1 *G.nelsonii* x *ssp. obtusifolium*, *var. sturtianum* x *ssp. obtusifolium var. indicum*, *ssp. obtusifolium var. indicum* x *var. nandewarense*, *ssp. obtusifolium var. indicum* x *G.nelsonii*, *obtusifolium var. indicum* x *G.bickii*, *G.bickii* x *ssp. obtusifolium var. indicum*, *ssp. perenne* x *G.bickii*, *G.bickii* x *ssp. perenne*, *var. sturtianum* x *ssp. neglectum f. sanginium*, *ssp. neglectum f. sanginium* x *G.nelsonii*, *ssp. neglectum f. sanginium* x *G.bickii*, *var. nandewarense* x *ssp. nanking* (with brown fiber), *ssp. nanking* (with brown fiber) x *G.bickii*, *G.bickii* x *ssp. nanking* (with brown fiber), *var. nandewarense* x *ssp. nanking* (with white fiber), *G.nelsonii* x *ssp. nanking* (with white fiber) hybrid combinations died at the initial stage. During research period, they were not infection by agricultural illness or lesions in vegetation fields and greenhouse. It should be stressed that F_1 plants like parent plant character [1, 7] have resistant for discomfort in the external environment, agricultural pests or illness.

Figure 1: F_1 ssp.obtusifolium x G.australe

By using methods of species hybridization, we learn important characters and property by searching new source and new genotypes. We will create unique forms and enrich the general found of cotton plant gens improve the selection research process. By hybridization of the subspecies of *G.arboreum* L. and Australian cotton species improve the important agriculture characters, make useful resource. For the same, the determined the degree of phylogenetic relations between species analyzed. It will be unique resource and characters for the practical breeding, which united as the primary searched literature. By involvement in the process of hybridization, the subspecies of *G.arboreum* L. species differ wild, ruderal, tropic, subtropics forms with Australian wild cotton species. There were identified near and far degree of phylogenetic features. The main part of analyzed forms of cotton species and subspecies were in different hybridization condition and it showed that their phylogenetic features are far the relative. The morphologic character of F_1 plants which taken by subspecies hybridization showed the intermediate case. Sometimes morphologic character of hybrid plant is suitable to the parent's plants character, most of time mother plants character near to hybrid plant character. F_1 plants hybrid combinations boll setting was high figure. (79,7-97,7%). Species *G.australe* the quality of maternity *ssp. obtusifolium, ssp. obtusifolium var. indicum*, *ssp. nanking* (with white fiber) subspecies far from the phylogenetic features and half sterile of F_1 plants were analyzed. It should be stressed that several hybrid combinations died at the beginning stage. Besides this, F_1 *ssp. obtusifolium* x *G.australe*, *ssp. obtusifolium* x *G.bickii*, *ssp. perenne* x *G.nelsonii*, *G.australe* x *ssp. neglectum f. sanginium* F_1 hybridization combinations were sterile, there were no any boll setting. Pollen grains of this hybrid combinations viability was 0,0%. By coming to basic conclusion *G.arboreum* L. species various hybridization with Australian cotton comparative morphology, genetic morpho-biologic characters of F_1 plants, *G.arboreum ssp. nanking* subspecies white fiber forms of maternity which used in hybridization *G.nelsonii* wild species near to hybrid plants. Besides this there was analyzed the several evolutional process of species in geographic conditions and firstly importance for the cytoplasm in different conditions.

References

[1] Abdullayev A.A. Evolution and Systematics of polyploid species of cotton.- Tashkent: Fan, 1974.- P. 260-262.

[2] Ahmedov M.B. Karyology species of the genus *Gossypium* L. (systematic, phylogenetic and evolutionary aspects: Autoref. diss. ... Doc. Biol. Sci. - Tashkent: Botanical Institute of AS RUz.- 1993.- 30 p.

[3] Jumashev M.M. Caryosystematics intraspecific taxa old-cultivated cotton species.: Autoref. diss. ... Doc. Biol. Sci.- Tashkent: Botanical Institute of AS RUz.- 1996.- 24 p.

[4] Zaysev G.S. The classification of the genus *Gossypium* L. // Bulletin of applied botany, genetics and breeding, 1927-1928.- T. 18.- №.12.- P. 1-38.

[5] Kuryazov Z.B. Genetic relativeness Afro-Asian cotton species and phylogenetic relations with American cotton *G.raimondi* Ulbr.: Autoref. diss. ... Doc. Biol. Sci.- Tashkent, 2002.- P. 12-13.

[6] Mamatyusupov A.Sh. Comparative morphological and anatomical structure species of the genus *Gossypium* L.: Autoref. diss. ... Doc. Biol. Sci.- Tashkent: SPC «Botany» AS RUz, 2007.- 19 p.

[7] Mayer F.M. Origin and systematics of cotton.//Cotton.- Tashkent: AS Uz, 1954.- T. 1.- 384 p.

[8] Muminov H.A., Ernazarova Z.A., Rizayeva S.M. Combining ability of seeds at intraspecific hybridization varieties and forms and types of *G.herbaceum* L. and *G.arboreum* L.//Uzb. Bio. jour.- T., 2008.- Spec. Pub.- P. 21-23.

[9] Shmalgausen I.I. Factors of Evolution.- M.: Nauka, 1968.- P. 173-174.

[10] Ernazarova Z.A. Interspecies relationship with the cotton-genomic and phylogenetic relationships with D-

genomic species: Autoref. diss. ... Doc. Biol. Sci.- Tashkent: IGPEB AS RUz.- 1998.- 153 p.

[11] Ansingkar A.S., Bhale N.L. Screening of F_5 generation of *G.arboreum* L. for stability of yield and other economic characters.//Indian J. Agr. Sci.- 1984.- Vol. 54.- № 9.- P. 705-711.

[12] Astaurov B. L. The present state of Problem of artificial partenogenesis... Symp. Genet, et Biol. Italica, 1959.- Vol. 9.- P. 1-20.

[13] Brubaker C.L. A.H. Paterson, and J.F. Wendel. Comparative genetic mapping of allotetraploid cotton and its diploid progenitors.//Genome. – Ottava, 1999.- № 42.- P. 184-203.

[14] Edwards G.A. and Mirza M.A. Genomes of the Australian wild species of Cotton. II. The designation of a new G Genome for *G.bickii*.//Can. J. Genet. Cytol.- Ottava, 1979.- № 21.- P. 367-372.

[15] Endrizzi J.E., Turcotte E.L., Kohel R.J. Genetics, cytology, and evolution of *Gossypium*.//Adv. Genet.- Melbourne,1985.- № 23.- P. 272-375.

[16] Fryxell P.A. A revision of the Australian species of *Gossypium* with observations on the occurrence of Thespesia in Australia.//Austral. J. Bot.,-1965.-Vol. 13.- № 1.-P. 71-102.

[17] Fryxell P.A. Phenetic analysis and phylogeny of the diploid species of *Gossypium* L.//Evolution, 1971.- Vol. 25.- № 3.- P. 554-562.

[18] Fryxell P.A. A revised taxonomic interpretation of *Gossypium* L. (*Malvaceae*).//Rheeda.- Washington, 1992.- № 2.- P. 108-165.

[19] Poehlman J.M., Sleper D.A. Breeding field crops. Fourth Edition.//Iowa State University Press, USA, 1995.- № 5.- P. 494.

[20] Todaro A. Pelerione sulla cultura dei cotoni in Jtalia, Siguito da uno monographia del genera.//Roma, Palermo: Stamperia Reale.- 1877.- P. 287.