

Supplementary Table 1. Primer sequences and codes used

Primer codes		Sequence (5' to 3')
RAPD	B06	5'-GACAGACAGACAGACA-3'
	HB09	5'-GT GT GT GT GT GT GG-3'
	HB10	5'-GAG AGA GAG AGA CC-3'
	HB12	5'-CACCACCACGC-3'
	HB13	5'-GAG GAGGAG GC-3'
	HB14	5'-CTC CTC CTC GC-3'
	SRAP-1	ME1
EM1		5'-GACTGCGTACGAATTAAT-3'
SRAP-2	ME2	5'-TGAGTCCAAACCGGAC-3'
	EM3	5'-GACTGCGTACGAATTGAC-3'
SRAP-3	ME3	5'-TGAGTCCAAACCGGAT-3'
	EM4	5'-GACTGCGTACGAATTTGA-3'
SRAP-4	ME4	5'-TGAGTCCAAACCGGAC-3'
	EM1	5'-GACTGCGTACGAATTAAT-3'
SRAP-5	ME4	5'-TGAGTCCAAACCGGAC-3'
	EM2	5'-GACTGCGTACGAATTTGC-3'
SRAP-6	ME1	5'-TGAGTCCAAACCGGAA-3'
	EM2	5'-GACTGCGTACGAATTTGC-3'
SSR-1	F	5'- GCAAGTGTTCCTACGTTGC-3'
	R	5'-CTCCAACGGCCATAGTAGGA-3'
SSR-2	F	5'-GCGCTAAGGGAAAACAAAAA -3'
	R	5'-AACTCCCTTGTTGTCATATGGTG-3'
SSR-3	F	5'-ATCCCAGACTTCATAGGGAGATAG-3'
	R	5'-GTCTAGTCCCAGGTACAAAGAGGT-3'
SSR-4	F	5'-TCAGGGGTAAATGCGGTATC-3'
	R	5'-GAATTGCTTTTTGCTTCCTCA-3'
SSR-5	F	5'-GGGAAACAAAATATCCCCTAATC-3'
	R	5'-TAATCACACACATCACACCTAGCA-3'

Supplementary Table 3. Survey of the DNA fragments of the SRAP primers in sixteen faba bean genotypes

Markers	Genotypes																		
	No.	M.W	Misr-3	Nobaria-1	Nobaria-2	Assiut-215	Roomy-3	Misr-1	Assiut-143	Nobaria-3	Mariut-2	Giza-843	Giza-40	Giza-2	Sakha-1	Wadi-5	Sakha-4	Roomy-80	
SRAP-1	1	984	0	0	0	1	1	0	0	0	1	0	0	1	0	0	0	0	
	2	800	0	0	0	0	0	0	1	1	0	1	1	1	0	1	0	0	
	3	748	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
	4	698	0	0	1	1	1	1	1	1	1	1	0	1	0	1	0	1	
	5	645	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	
	6	622	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	7	581	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	8	523	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	9	497	1	1	0	0	1	0	0	0	0	0	1	1	1	0	0	0	0
	10	474	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	443	1	1	1	1	1	1	1	1	0	1	0	1	0	1	0	1	1
	12	420	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	13	406	0	1	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0
	14	387	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0
	15	342	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SRAP-2	1	1151	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
	2	702	0	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	
	3	631	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
	4	592	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0	
	5	549	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	
	6	488	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	
	7	407	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	
	8	358	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	
	9	335	0	1	1	1	1	1	0	1	1	1	1	1	0	1	0	1	
	10	310	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	
	11	289	0	1	1	1	1	0	0	1	1	1	0	1	1	1	1	1	0
	12	257	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	13	224	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1
SRAP-3	1	880	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	
	2	720	0	0	0	1	1	0	0	0	1	0	0	1	0	0	0	0	
	3	608	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	4	539	0	1	0	0	0	1	0	0	0	0	1	0	1	0	0	0	
	5	496	0	0	0	0	1	0	0	0	0	0	1	1	0	1	0	0	
	6	444	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	
	7	404	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	8	373	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	
	9	340	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	
	10	312	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	
	11	274	0	1	0	0	1	0	1	1	1	0	1	0	0	0	0	1	
	12	247	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	
	13	189	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
	14	172	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1

Supplementary Table 4. Survey of the DNA fragments of the ISSR primers in sixteen faba bean genotypes

Markers	No.	M.W	Misr-3	Nobarria-1	Nobarria-2	Assiut-215	Roomy-3	Misr-1	Assiut-143	Nobarria-3	Mariut-2	Giza-843	Giza-40	Giza-2	Sakha-1	Wadi-5	Sakha-4	Roomy-80	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
SSR-1	1	722	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	
	2	615	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	
	3	557	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	4	527	1	1	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1
	5	494	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	6	457	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	7	419	0	0	0	1	1	1	0	0	0	1	0	0	1	0	0	0	0
	8	335	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	9	308	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
	10	498	0	1	1	1	1	1	0	0	1	1	1	0	1	1	1	1	0
SSR-2	1	396	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	
	2	372	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
	3	350	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	
	4	333	0	1	1	1	1	0	0	1	0	1	0	1	0	1	0	0	
	5	313	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	
	6	290	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	
	7	248	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	
	8	704	1	1	1	1	1	1	1	0	1	0	1	1	1	0	0	1	
	9	466	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	10	577	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	
	11	493	1	1	0	1	1	1	1	1	1	0	0	1	1	0	1	0	
	12	466	1	1	0	1	1	1	1	1	1	0	0	1	1	0	1	1	
SSR-3	1	395	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
	2	374	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	
	3	341	1	0	0	1	1	1	1	0	1	1	1	1	1	1	1	1	
	4	317	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	5	250	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	
	6	230	0	0	0	1	1	0	0	0	1	0	0	1	0	0	0	0	
	7	954	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	
	8	809	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	
SSR-4	1	541	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	
	2	474	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	
	3	419	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
	4	373	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	
	5	446	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	6	409	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	7	379	0	0	0	1	0	0	0	0	1	1	1	1	0	0	0	0	
SSR-5	5	312	0	1	1	1	0	0	0	0	0	1	0	0	0	0	0	1	
	6	291	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	7	263	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	8	237	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	
	9	206	1	1	1	0	0	1	1	1	0	1	1	0	1	0	1	0	
	1	309	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	2	276	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	
	3	242	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	4	219	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	
	5	186	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	
	6	152	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	

Supplementary Table 5. Genetic similarity values calculated from DNA fragments generated with ISSR, SRAP primers and combined molecular markers in sixteen faba bean genotypes

Similarity based on ISSR primers	Misr-3	Nobaria-1	Nobaria-2	Assiut-215	Roomy-3	Misr-1	Assiut-143	Nobaria-3	Mariut-2	Giza-843	Giza-40	Giza-2	Sakha-1	Wadi-5	Sakha-4	Roomy-80
Misr-3	1															
Nobaria-1	0.818	1														
Nobaria-2	0.845	0.904	1													
Assiut-215	0.805	0.835	0.857	1												
Roomy-3	0.778	0.838	0.861	0.941	1											
Misr-1	0.852	0.762	0.794	0.757	0.754	1										
Assiut-143	0.853	0.829	0.88	0.864	0.816	0.862	1									
Nobaria-3	0.849	0.88	0.95	0.86	0.84	0.8	0.909	1								
Mariut-2	0.806	0.811	0.886	0.894	0.95	0.783	0.842	0.889	1							
Giza-843	0.836	0.812	0.865	0.8	0.827	0.844	0.817	0.868	0.827	1						
Giza-40	0.844	0.788	0.845	0.779	0.806	0.885	0.853	0.849	0.806	0.896	1					
Giza-2	0.827	0.831	0.878	0.909	0.892	0.778	0.835	0.857	0.916	0.795	0.8	1				
Sakha-1	0.87	0.845	0.921	0.854	0.857	0.818	0.904	0.923	0.883	0.889	0.841	0.85	1			
Wadi-5	0.806	0.875	0.87	0.773	0.829	0.847	0.818	0.845	0.829	0.892	0.871	0.795	0.896	1		
Sakha-4	0.853	0.857	0.933	0.84	0.868	0.769	0.861	0.935	0.895	0.873	0.824	0.835	0.959	0.879	1	
Roomy-80	0.866	0.841	0.892	0.85	0.853	0.844	0.93	0.868	0.853	0.829	0.866	0.846	0.917	0.831	0.873	1

Similarity based on SRAP primers	Misr-3	Nobaria-1	Nobaria-2	Assiut-215	Roomy-3	Misr-1	Assiut-143	Nobaria-3	Mariut-2	Giza-843	Giza-40	Giza-2	Sakha-1	Wadi-5	Sakha-4	Roomy-80
Misr-3	1															
Nobaria-1	0.709	1														
Nobaria-2	0.759	0.8	1													
Assiut-215	0.633	0.8	0.756	1												
Roomy-3	0.682	0.828	0.788	0.889	1											
Misr-1	0.75	0.819	0.723	0.747	0.717	1										
Assiut-143	0.72	0.744	0.698	0.674	0.737	0.861	1									
Nobaria-3	0.634	0.86	0.796	0.817	0.804	0.814	0.787	1								
Mariut-2	0.667	0.842	0.8	0.905	0.923	0.75	0.747	0.857	1							
Giza-843	0.659	0.86	0.774	0.774	0.784	0.767	0.719	0.854	0.796	1						
Giza-40	0.744	0.809	0.697	0.674	0.755	0.829	0.847	0.761	0.745	0.783	1					
Giza-2	0.651	0.83	0.745	0.851	0.893	0.713	0.689	0.804	0.889	0.887	0.774	1				
Sakha-1	0.684	0.805	0.759	0.736	0.729	0.7	0.675	0.778	0.761	0.8	0.744	0.725	1			
Wadi-5	0.658	0.867	0.778	0.778	0.788	0.795	0.767	0.86	0.8	0.903	0.831	0.894	0.759	1		
Sakha-4	0.63	0.81	0.786	0.714	0.731	0.727	0.7	0.759	0.742	0.759	0.699	0.705	0.765	0.786	1	
Roomy-80	0.732	0.78	0.756	0.683	0.747	0.853	0.846	0.776	0.782	0.729	0.815	0.698	0.658	0.756	0.789	1

Similarity based on SSR primers	Misr-3	Nobaria-1	Nobaria-2	Assiut-215	Roomy-3	Misr-1	Assiut-143	Nobaria-3	Mariut-2	Giza-843	Giza-40	Giza-2	Sakha-1	Wadi-5	Sakha-4	Roomy-80
Misr-3	1															
Nobaria-1	0.842	1														
Nobaria-2	0.8	0.931	1													
Assiut-215	0.742	0.831	0.794	1												
Roomy-3	0.78	0.839	0.8	0.866	1											
Misr-1	0.947	0.867	0.828	0.8	0.806	1										
Assiut-143	0.857	0.847	0.807	0.781	0.787	0.881	1									
Nobaria-3	0.828	0.918	0.915	0.818	0.825	0.885	0.833	1								
Mariut-2	0.814	0.839	0.8	0.866	0.875	0.839	0.852	0.825	1							
Giza-843	0.793	0.885	0.915	0.818	0.794	0.82	0.8	0.839	0.825	1						
Giza-40	0.83	0.786	0.815	0.721	0.724	0.821	0.836	0.772	0.793	0.877	1					
Giza-2	0.787	0.844	0.806	0.87	0.879	0.813	0.794	0.831	0.939	0.862	0.833	1				
Sakha-1	0.807	0.833	0.793	0.769	0.774	0.833	0.881	0.82	0.839	0.787	0.75	0.781	1			
Wadi-5	0.755	0.857	0.889	0.754	0.793	0.786	0.8	0.842	0.828	0.842	0.769	0.8	0.786	1		
Sakha-4	0.862	0.885	0.847	0.788	0.825	0.885	0.867	0.871	0.857	0.839	0.807	0.831	0.918	0.807	1	
Roomy-80	0.792	0.821	0.815	0.754	0.862	0.821	0.836	0.772	0.793	0.807	0.808	0.767	0.75	0.769	0.807	1

Similarity based on combined data of ISSR, SRAP and SSR primers	Misr-3	Nobaria-1	Nobaria-2	Assiut-215	Roomy-3	Misr-1	Assiut-143	Nobaria-3	Mariut-2	Giza-843	Giza-40	Giza-2	Sakha-1	Wadi-5	Sakha-4	Roomy-80
Misr (3)	1															
Nobaria (1)	0.782	1														
Nobaria (2)	0.8	0.869	1													
Assiut (215)	0.725	0.821	0.802	1												
Roomy (3)	0.74	0.834	0.815	0.9	1											
Misr (1)	0.842	0.816	0.775	0.766	0.753	1										
Assiut (143)	0.804	0.8	0.789	0.771	0.776	0.867	1									
Nobaria (3)	0.761	0.882	0.879	0.833	0.821	0.829	0.841	1								
Mariut (2)	0.753	0.831	0.829	0.891	0.919	0.785	0.807	0.86	1							
Giza (843)	0.754	0.852	0.841	0.795	0.8	0.806	0.773	0.855	0.814	1						
Giza (40)	0.8	0.796	0.776	0.722	0.763	0.844	0.846	0.793	0.777	0.843	1					
Giza (2)	0.749	0.834	0.807	0.876	0.889	0.762	0.767	0.829	0.911	0.85	0.798	1				
Sakha (1)	0.782	0.826	0.824	0.786	0.783	0.777	0.809	0.838	0.823	0.825	0.777	0.783	1			
Wadi (5)	0.732	0.867	0.836	0.77	0.802	0.808	0.792	0.851	0.816	0.884	0.828	0.837	0.81	1		
Sakha (4)	0.774	0.847	0.853	0.779	0.802	0.788	0.802	0.85	0.825	0.818	0.769	0.784	0.874	0.821	1	
Roomy (80)	0.796	0.812	0.819	0.762	0.813	0.841	0.873	0.807	0.809	0.783	0.83	0.768	0.773	0.784	0.824	1

Supplementary Table 7. Genetic similarity values calculated from protein patterns in sixteen faba bean genotypes

	Misr-3	Nobaria-1	Nobaria-2	Assiut-215	Roomy-3	Misr-1	Assiut-143	Nobaria-3	Mariut-2	Giza-843	Giza-40	Giza-2	Sakha-1	Wadi-5	Sakha-4	Roomy-80
Misr-3	1															
Nobaria-1	0.944	1														
Nobaria-2	0.941	0.944	1													
Assiut-215	0.872	0.927	0.872	1												
Roomy-3	0.872	0.927	0.872	1	1											
Misr-1	0.971	0.973	0.914	0.9	0.9	1										
Assiut-143	0.971	0.973	0.914	0.9	0.9	1	1									
Nobaria-3	0.914	0.973	0.914	0.9	0.9	0.944	0.944	1								
Mariut-2	0.895	0.95	0.895	0.977	0.977	0.923	0.923	0.923	1							
Giza-843	0.944	1	0.944	0.927	0.927	0.973	0.973	0.973	0.95	1						
Giza-40	0.97	0.914	0.97	0.842	0.842	0.941	0.941	0.882	0.865	0.914	1					
Giza-2	0.895	0.95	0.895	0.977	0.977	0.923	0.923	0.923	1	0.95	0.865	1				
Sakha-1	0.944	1	0.944	0.927	0.927	0.973	0.973	0.973	0.95	1	0.914	0.95	1			
Wadi-5	0.944	1	0.944	0.927	0.927	0.973	0.973	0.973	0.95	1	0.914	0.95	1	1		
Sakha-4	0.944	1	0.944	0.927	0.927	0.973	0.973	0.973	0.95	1	0.914	0.95	1	1	1	
Roomy-80	1	0.944	0.941	0.872	0.872	0.971	0.971	0.914	0.895	0.944	0.97	0.895	0.944	0.944	0.944	1

Supplementary Table 8. Genetic similarity values calculated from combined data of molecular and biochemical markers in sixteen faba bean genotypes

	Misr-3	Nobaria-1	Nobaria-2	Assiut-215	Roomy-3	Misr-1	Assiut-143	Nobaria-3	Mariut-2	Giza-843	Giza-40	Giza-2	Sakha-1	Wadi-5	Sakha-4	Roomy-80
Misr(3)	1															
Nobaria(1)	0.807	1														
Nobaria(2)	0.82	0.879	1													
Assiut(215)	0.747	0.836	0.812	1												
Roomy(3)	0.76	0.848	0.823	0.915	1											
Misr(1)	0.862	0.84	0.795	0.786	0.776	1										
Assiut(143)	0.829	0.825	0.806	0.79	0.794	0.887	1									
Nobaria(3)	0.782	0.895	0.884	0.842	0.832	0.846	0.855	1								
Mariut(2)	0.775	0.849	0.838	0.903	0.928	0.806	0.824	0.868	1							
Giza(843)	0.782	0.874	0.855	0.814	0.819	0.831	0.802	0.871	0.833	1						
Giza(40)	0.825	0.813	0.802	0.74	0.774	0.858	0.86	0.805	0.789	0.853	1					
Giza(2)	0.77	0.851	0.819	0.891	0.902	0.786	0.79	0.842	0.924	0.864	0.808	1				
Sakha(1)	0.807	0.852	0.84	0.807	0.804	0.807	0.833	0.857	0.841	0.851	0.797	0.807	1			
Wadi(5)	0.765	0.887	0.851	0.794	0.821	0.834	0.82	0.868	0.837	0.901	0.84	0.854	0.839	1		
Sakha(4)	0.8	0.87	0.866	0.801	0.821	0.817	0.827	0.867	0.843	0.845	0.79	0.809	0.893	0.849	1	
Roomy(80)	0.827	0.831	0.836	0.779	0.821	0.861	0.887	0.822	0.822	0.806	0.85	0.786	0.798	0.809	0.842	1