Fig S1: Appearance of the geometric-patterned posters used in the lab (experiment 1). Each poster (dimension A0) was positioned on a different wall of the flight room, providing 2D visual landmarks to bees (see precise locations in Fig. 1A).

(A) Schematic view of the experimental field

(B) Panoramic photo of the field

Fig S2: Experimental field. Observations were conducted on a flat ploughed land at the INRA Domaine Langlade (France, 43°30'10.5"N 1°32'20.1"E). (A). The 300 x 150 m experimental field (delimited in red) was surrounded by bushes, treelines, paths and roads, creating a visual panorama that could be used by bees for navigation. The location of the hive is indicated by the white square. The pre-training flower (F0) and the experimental flowers (F1-F4) are showed for the large array of flower (experiment 3). The black arrow indicates north. (B) Panoramic view of the experimental field (photograph by AB).
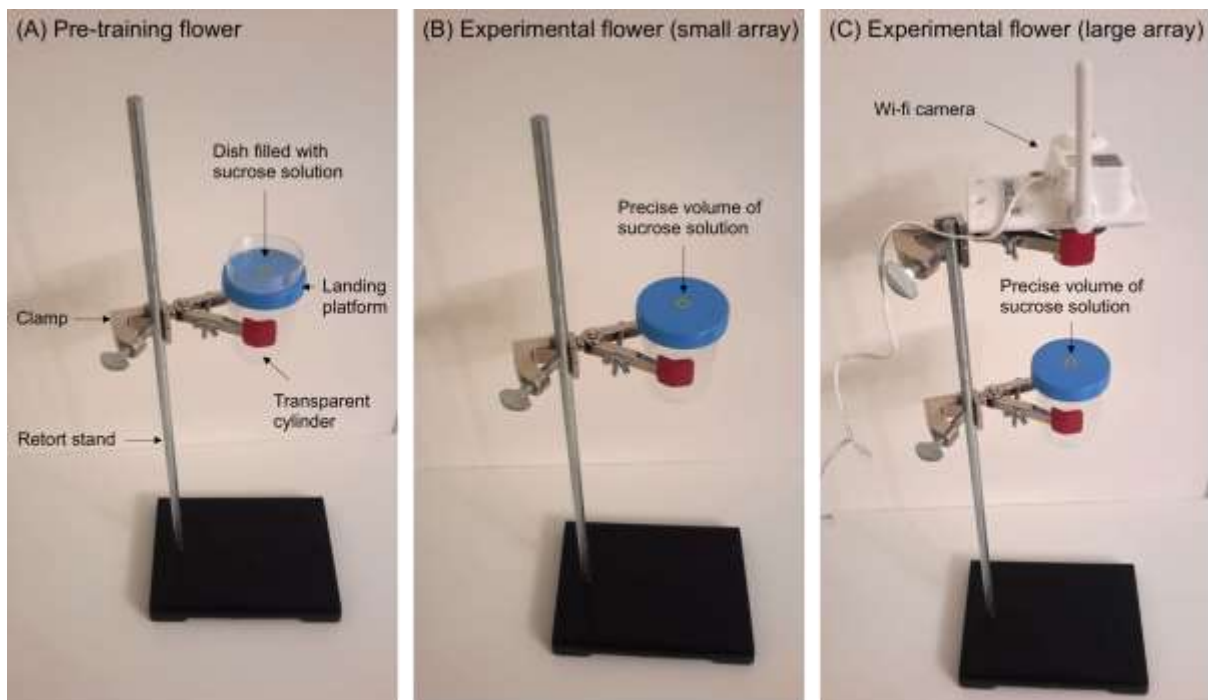
Fig S3: Design of the artificial flowers. Flowers consisted of a blue plastic landing platform (diameter = 6cm) sitting on a transparent plastic cylinder (diameter min = 5.5 cm). Each flower was hold 30 cm above ground by a clamp attached to a 50 cm retort stand. A yellow mark in the middle of the landing platform indicated the location of the sucrose reward. (A) For pre-training, a small petri dish (diameter = 6 cm, volume = 110 ml) filled with sucrose solution was placed on the landing platform to provide bees with *ad libitum* reward. (B) For testing bees in the small spatial scale array of flowers (experiments 1 and 2), a precise volume of sucrose reward (min = 5 µL, max= 15 µl) was added by the experimenter using an electronic dispenser (HandyStep electronic). (C) For testing bees in the larger spatial array, a wi-fi camera (D-Link DCS-2330L) was placed 20 cm above each flower (50 cm above ground) to visualise the landing platform on a computer screen. The cameras and the computer were powered with a portable generator (Mechafer).

(A) Experiment 1: small array in the lab

	Bee 1	Bee 2	Bee 3	Bee 4	Bee 5	Bee 6	Bee 7	Bee 8	Bee 9	Bee 10
Bout1	41	14	341	41	4312	14	41	143	41	41
Bout2	41	14	41	41	4123	14	41	14	41	4
Bout3	4132	4123	14	4123	4132	143	41	143	41	14
Bout4	143	1234	143	143	1432	123	41	434	41	4132
Bout5	123	1432	4321	432	4321	3214	41	23	1423	3214
Bout6	1432	1234	1432	1	1324	321	413	134	1	4321
Bout7	412	123	4321	4321	1234	1234	4132	413	1423	4321
Bout8	1234	12	4123	3214	3421	321	4132	1234	1432	4321
Bout9	1234	12	4321	4321	1423	1234	1243	1324	4123	4321
Bout10	4123	123	4132	342	3421	123	4321	1432	1234	4321
Bout11	123	234	4132	324	3421	3124	1432	1432	1324	4321
Bout12	123	231	3142	4321	1234	123	4321	1234	123	2134
Bout13	1234	2341	4132	321	4231	1234	4321	1234	1	3214
Bout14	4123	123	1432	2314	1234	1234	4321	1234	1234	3214
Bout15	4123	2314	1234	3214	1432	3214	4321	1234	1234	3214
Bout16	4123	231	4123	4321	3124	231	4321	1234	231	2314
Bout17	2314	23	4123	4321	1234	123	4321	1234	1234	3214
Bout18	123	1423	2314	3124	3214	231	1234	1234	2341	2143
Bout19	1234	2314	2314	431	1234	1234	4321	1234	1234	3241
Bout20	4123	432	4132	3124	4321	123	4321	1234	2341	3214
Bout21	4123	123	4123	312	3241	1234	4321	1234	4123	3214
Bout22	1234	4123	3214	3142	23	1234	4321	1324	132	2314
Bout23	4123	1423	2314	3124	1234	1234	4321	1234	2341	3214
Bout24	2314	123	1234	3124	23	1234	4321	1234	23	3241
Bout25	4123	1234	4123	4321	1324	1234	4321	1342	2341	4321
Bout26	4123	4132	4123	1234	1342	1234	3214	1234	1234	4321
Bout27	14	2314	1234	2134	1342	123	4321	1234	1234	2314
Bout28	4123	1234	1234	4321	231	1234	4321	1234	1234	2314
Bout29	1234	1234	1234	2143	2	123	4321	1234	1342	3214
Bout30	1234	1234	1234	3421	3421	1234	4321	1234	23	3214

(B) Experiment 2: small array in the field

	Bee 11	Bee 12	Bee 13	Bee 14	Bee 15	Bee 16	Bee 17	Bee 18
Bout1	131	1324	4132	134	4132	3241	1	1432
Bout2	1324	3214	2314	134	1324	23	4321	412
Bout3	413	432	4132	132	1432	324	1432	3214
Bout4	1324	1342	132	142	1324	321	2143	1423
Bout5	123	1324	4132	12	1342	231	1234	4213
Bout6	321	3241	4123	241	4321	2314	4321	2314
Bout7	123	4132	1234	123	3214	3124	4312	4132
Bout8	132	4123	132	4	1324	2314	4321	123
Bout9	321	1324	1234	13	1423	3421	4123	1423
Bout10	132	41	1432	4	1324	2314	4321	1423
Bout11	1234	4321	4123	4132	1234	234	4321	1423
Bout12	132	132	4231	132	4321	4312	1324	1234
Bout13	3214	4132	132	4	4123	3124	4321	1234
Bout14	321	321	4123	1234	4132	2341	4321	1324
Bout15	234	3241	4132	341	1324	3142	1234	4123
Bout16	314	4132	4321	124	1324	2314	123	412
Bout17	134	1324	413	1324	4132	2314	1234	1324
Bout18	324	1324	4123	324	4321	3412	1234	1234
Bout19	1324	324	4123	341	1234	1432	4321	1234
Bout20	3214	234	4321	1342	4123	3142	1324	1234
Bout21	1234	1324	4123	1324	4123	2314	4321	1234
Bout22	1234	1324	4123	1342	4123	1342	4321	241
Bout23	3241	321	4132	34	4132	4321	3	1324
Bout24	1234	4123	4321	134	4123	2341	4321	1234
Bout25	1324	3214	132	134	4123	143	1243	3214
Bout26	1324	14	4123	1324	1342	134	4321	1234
Bout27	1324	1324	4321	1342	1234	4132	4321	1324
Bout28	1234	324	1234	1342	4123	4321	32	1234
Bout29	1432	1342	1234	1234	4123	1432	4132	1234
Bout30	1234	1324	4123	4123	4132	3412	4321	1234

(C) Experiment 3: large array in the field

	Bee 19	Bee 20	Bee 21	Bee 22
Bout1	123	324	12	1
Bout2	143	321	124	1
Bout3	123	234	1423	12
Bout4	21	34	134	21
Bout5	132	314	142	123
Bout6	123	413	321	123
Bout7	132	13	123	1323
Bout8	123	34	1234	12
Bout9	123	1243	1234	123
Bout10	1234	4321	1324	13
Bout11	132	234	1234	134
Bout12	124	4321	132	123
Bout13	13	4321	123	1234
Bout14	1234	321	12	13
Bout15	1234	2134	1234	1234
Bout16	1234	3214	123	123
Bout17	1234	4321	1234	132
Bout18	1234	1432	1234	1324
Bout19	1234	4321	1234	1234
Bout20	1234	4321	123	1234
Bout21	1234	4321	1234	1234
Bout22	1234	432	1234	1234
Bout23	1234	4321	1234	123
Bout24	1234	4321	1234	1234
Bout25	1234	4321	1234	1234
Bout26	1234	4321	1234	1234
Bout27	1234	4321	1234	1234
Bout28	1234	4321	2134	1234
Bout29	1234	4321	1234	1234
Bout30	1234	4321	1234	1432

Fig. S4: Four-flower visitation sequences (excluding revisits) for each bee in experiments 1-3. Numbers (1-4) in tables refer to unique flowers (see details in Fig. 1), and colour codes refer to a unique flower sequence. Incomplete sequences (not included in the analyses of sequence repeatability) are in white. Sequences in columns are sorted in chronological order (from foraging bout 1 to foraging bout 30).