

**ANNUAL REPORT
(2015-16)**

**ALL INDIA COORDINATED RESEARCH PROJECT
ON FLORICULTURE – PANTNAGAR CENTRE**

SUBMITTED TO

DIRECTOR

**ICAR - DIRECTORATE OF FLORICULTURAL RESEARCH
COLLEGE OF AGRICULTURE CAMPUS,
SHIVAJI NAGAR, PUNE – 411 005**

SUBMITTED BY



**DEPARTMENT OF HORTICULTURE
G.B. PANT UNIVERSITY OF AGRICULTURE & TECHNOLOGY,
PANTNAGAR-263 145 (U.K.)**

ANNUAL REPORT 2015-16

- All India Coordinated Research Project (AICRP) on Floriculture was started at G.B.P.U.A.&T. Pantnagar in the year 2001-02 and crops being handled are rose, gladiolus, chrysanthemum, tuberose, marigold and turf grasses. There are five scientists from Department of Horticulture associated with AICRP on Floriculture at Pantnagar Centre.
- There is only one post of JRO/Asstt. Floriculturist which has been filled since November, 2003. Details of the scientist appointed under AICRP on Floriculture at Pantnagar Centre are as follows:

Name : Dr. Ajit Kumar

Address : JRO/Asstt. Floriculturist, Department of Horticulture
College of Agriculture, G.B.P.U.A.&T, Pantnagar – 263 145
U.S. Nagar (Uttarakhand)
E-mail: ajitflori@gmail.com; ajit_kapoor@rediffmail.com

Phone : 09412451262 (Mobile); 05944-235535 (O)

Approved scale : ` 15,600-39,100

Basic : ` 34,590.00

AGP : ` 8,000.00

Budget details till 31.03.2016

Statement of Expenditure showing the head-wise expenditure for the year 2015-16 in respect of AICRP on Floriculture - Pantnagar Centre

S.No.	Major Head of Expenditure	Total expenditure (₹)	ICAR Share (₹)	Remarks
1.	Pay & Allowances	9,00,366.00	6,75,275.00	
2.	Travelling Allowance	7,749.00	5,812.00	
3.	Recurring Contingencies	1,01,054.00	75,790.00	
4.	Non-Recurring Contingencies	---	---	
5.	Total	10,09,169.00	7,56,877.00	
6.	ICAR Share (75%)	7,56,877.00	---	
7.	Opening balance as on 01-04-2015	2,54,073.00	---	
8.	Grant received during the year 2015-16	8,00,000.00	---	
9.	Closing balance as on 31-03-2016	2,97,196.00	---	

**GERMPLASM CONSERVATION
AND
EVALUATION**

CHRYSANTHEMUM

Project No. 1.4.1: Collection, evaluation and maintenance of germplasm of chrysanthemum

In mother block of chrysanthemum, 118 varieties are being maintained at Model Floriculture Centre, Pantnagar. An experiment was laid out in RBD with three replications in chrysanthemum fifty cultivars collected from BCKV, Kalyani, NBRI Lucknow, PAU Ludhiana and IARI New Delhi. The plants were planted in a plot size of 2m x 2m and the spacing was kept as 40 cm x 30 cm.

Salient findings (2015-16)

The average plant height was found maximum (62.49 cm) in Suneel, whereas, plant height was minimum in Golden Yellow (18.0 cm). Among the different genotypes, maximum number of primary branches per plant (11.66) were recorded in Pusa Anmol whereas, minimum in Nanako (2.15). Maximum days taken to first bud initiation was observed in Geetanjali (80.73 days), whereas, it was minimum in Sardhar (36.51 days). The genotype Sadbhavana (152.20) possessed maximum number of flowers per plant. Genotype Thai Chin Queen (21.77) produced the minimum number of flowers per plant. Maximum flower diameter was recorded in Hybrid-5 (8.72 cm), whereas, minimum flower diameter was observed in Golden Yellow (2.72 cm). Weight of single flower among different genotypes was maximum in Jubilee (4.46 g), whereas, it was minimum in NBRI Kaul (0.41 g). Maximum average weight of flower bunch (5 flowers) was also recorded in Jubilee (22.28 g) and minimum noticed in NBRI Kaul (2.05 g). The duration of flowering among all the genotypes of chrysanthemum screened, flowering for longest duration was observed in Sova (50.40 days) whereas, minimum was recorded in Shyamal (23.90 days). A wide range of flower colour was observed among various genotypes screened. Flowers with white, purple and yellow colours were most common. Maximum vase-life (19.96 days) was found in the genotype Suneel. The minimum vase-life (8.89 days) was recorded in Himanshu among the different genotypes. All genotypes were found tolerance to incidence of disease and pest.

At Pantnagar centre, cultivars that are recommended for commercial cultivation for cut flower purpose include for cut flower: Suneel, Pusa Centenary, Thai Chin Queen, UHFS Chry 81 and Sova. Whereas for loose flower: Prof. Harris, Ajay, Purnima, Baggi and Gauri and for pot mum: Sadbhavana, Mother Teresa and Suhag Singar were found to be suitable.

Table 1: Collection, evaluation and maintenance of germplasm of chrysanthemum at Pantnagar Centre (2015-16)

S. No.	Genotypes	Plant height (cm)	Number of primary branches per plant	Days taken to first bud initiation	Number of flowers per plant	Flower diameter (cm)	Weight of single flower (g)	Average weight of flower bunch (5 flowers) (g)	Flowering duration (days)	Vase-life of flower (days)	Colour group	Code	Incidence to disease & pest
1.	Hybrid-1	39.53	4.40	37.85	32.39	4.96	2.44	12.22	35.9	11.88	Purple	78b	Tolerance
2.	Hybrid-2	49.65	4.10	36.93	46.36	6.20	2.47	12.33	39.7	11.36	Yellow	3a	Tolerance
3.	Hybrid-3	46.31	4.55	37.89	30.74	6.08	1.61	8.03	36.9	9.62	Greyed Purple	187c	Tolerance
4.	Hybrid-4	40.65	3.80	50.86	57.02	6.53	1.47	7.37	39.3	11.47	Purple	74b	Tolerance
5.	Hybrid-5	57.43	4.13	48.11	31.84	8.72	1.36	6.82	34.9	11.25	Red purple	64a	Tolerance
6.	Hybrid-6	52.87	4.52	43.74	32.78	5.75	1.45	7.26	31.5	11.51	Greyed Purple	181a	Tolerance
7.	E-85	49.54	6.63	43.40	50.51	5.46	2.19	10.95	32.1	12.66	Yellow	14a	Tolerance
8.	E-82	58.41	6.49	41.84	73.43	5.19	2.81	14.07	29.8	14.81	Purple	N78d	Tolerance
9.	E-87	46.48	6.35	44.04	74.47	4.58	2.96	14.78	30.5	14.40	Orange red	N34b	Tolerance
10.	Lilith	32.71	6.32	69.80	68.31	4.56	2.17	10.83	42.6	13.78	White	151d	Tolerance
11.	Maghi	57.04	10.18	41.86	34.66	4.40	2.73	13.67	35.7	15.34	Yellow	11d	Tolerance
12.	Jayanti	36.84	7.28	54.63	63.26	4.23	3.59	17.96	30.7	17.13	Yellow	6b	Tolerance
13.	Neelima	49.53	8.92	73.98	145.92	5.31	2.60	13.02	46.2	16.60	Purple	71d	Tolerance
14.	A-62	31.67	5.74	52.08	112.82	4.27	1.44	7.22	37.8	17.60	Purple	N78c	Tolerance
15.	Pooja	55.21	6.89	54.84	84.14	5.98	2.22	11.10	34.8	17.86	Purple violet	N66c	Tolerance
16.	Lal Pari	49.78	5.35	54.27	72.32	5.84	1.28	6.42	29.6	17.95	Orange red	N34d	Tolerance
17.	Shyamal	53.76	6.45	53.57	141.20	5.99	2.46	12.30	23.9	18.93	Yellow	17a	Tolerance
18.	Ajay	24.04	7.04	56.70	127.43	4.12	1.52	7.58	33.7	17.59	Yellow	14a	Tolerance
19.	Himanshu	28.56	5.47	43.99	139.42	7.92	2.12	10.58	31.9	8.89	White	155a	Tolerance
20.	Jubilee	44.12	3.92	49.54	47.59	3.30	4.46	22.28	36.8	17.84	White	157d	Tolerance
21.	Sardhar	33.48	5.50	36.51	60.67	5.08	3.00	14.98	29.1	16.50	Purple	76d	Tolerance
22.	Basanti	44.87	5.65	69.17	113.02	3.94	2.92	14.58	33.9	19.92	Yellow	6b	Tolerance
23.	Chitraksha	47.56	5.58	45.29	75.33	5.89	1.54	7.69	29.9	19.24	Red purple	61a	Tolerance
24.	Sadbhavana	27.63	5.24	64.99	152.20	4.19	0.98	4.91	33.6	19.20	Red orange	60a	Tolerance
25.	Punjab Anuradha	30.58	6.03	59.22	93.24	4.89	1.48	7.40	29.8	18.98	Yellow	18c	Tolerance

26.	No Pinch	35.03	7.05	45.32	34.92	5.14	1.80	8.98	26.6	16.35	White	154a	Tolerance
27.	Aliva	29.42	4.39	40.69	27.81	4.99	1.34	6.69	30.7	17.25	Greyed red	181a	Tolerance
28.	Sova	57.63	4.67	37.14	54.91	6.98	1.29	6.44	50.4	14.89	White	155a	Tolerance
29.	Sabita	53.89	6.79	42.49	67.92	4.98	3.15	15.73	49.0	9.16	Golden Yellow	N21a	Tolerance
30.	Baggi	50.43	7.17	70.87	103.62	5.01	0.48	2.42	25.6	17.06	White	155d	Tolerance
31.	Geetanjali	28.35	7.66	80.73	94.74	4.13	3.15	15.73	49.8	16.86	Yellow	N14b	Tolerance
32.	Dolly Orange	41.95	6.64	62.13	89.24	3.00	1.02	5.08	39.6	19.11	Orange red	N34a	Tolerance
33.	Bravo	47.01	4.43	52.76	150.39	4.95	2.13	10.67	29.6	16.32	Purple Red	183a	Tolerance
34.	Jaya	40.48	3.34	52.69	80.53	5.96	2.92	14.58	34.1	19.66	Maroon Red	60a	Tolerance
35.	Flirt	41.28	5.12	45.55	81.55	6.94	3.28	16.39	40.2	13.33	Maroon Red	71c	Tolerance
36.	Gauri	40.47	9.32	43.84	137.79	3.94	3.00	14.98	38.8	19.72	White	155d	Tolerance
37.	Sadvin Yellow	29.00	9.99	48.82	79.34	6.93	1.14	5.68	34.6	13.89	Yellow	N13d	Tolerance
38.	Suneel	62.49	5.24	39.74	48.45	5.02	4.17	20.83	42.9	19.96	Purple	N78a	Tolerance
39.	Golden Yellow	18.00	5.62	37.72	37.55	2.72	0.87	4.37	35.8	18.05	Yellow	16a	Tolerance
40.	Nanako	34.89	2.15	64.12	45.14	3.21	3.77	18.83	33.0	16.02	Yellow	14b	Tolerance
41.	Ratlam Selection	52.91	6.78	59.81	120.21	4.96	1.62	8.10	29.1	18.06	Creamish White	157d	Tolerance
42.	Arka Ravi	41.01	5.73	60.69	43.17	4.26	2.51	12.57	41.3	14.88	Maroon Red	67d	Tolerance
43.	Pusa Anmol	32.81	11.66	38.79	48.69	5.05	1.13	5.66	28.6	13.12	Yellow	6b	Tolerance
44.	NBRI Kaul	31.76	5.26	41.48	45.88	6.04	0.41	2.05	29.5	9.68	Whitish Purple	76c	Tolerance
45.	Yellow Gold	43.22	5.18	57.95	69.66	4.42	1.63	8.16	41.0	13.48	Yellow	14d	Tolerance
46.	Red Gold	43.03	5.89	54.32	115.87	4.79	1.97	9.87	40.6	17.78	Purple Red	185c	Tolerance
47.	A-1	34.63	4.78	45.54	40.94	4.65	2.02	10.09	31.1	13.34	Yellow	5b	Tolerance
48.	A-2	33.00	6.65	50.36	22.33	5.19	2.14	10.70	32.4	13.77	Purple	N78c	Tolerance
49.	Prof. Harris	54.20	8.86	73.55	61.93	3.97	1.13	5.67	45.4	11.11	Yellow	158c	Tolerance
50.	Thai Chin Queen	44.43	7.06	50.77	21.77	6.98	3.56	17.81	34.5	18.23	Orange	4c	Tolerance
S.Em±		0.67	0.39	0.63	2.19	0.14	0.62	0.31	0.53	0.47			
C.D. at 5%		1.89	1.11	1.78	6.15	0.38	0.17	0.87	1.47	1.33			



Fig. 1: Chrysanthemum Germplasm at GBPUA&T, Pantnagar

TUBEROSE

Project No. 1.7.1: Collection, evaluation and maintenance of tuberose germplasm.

Under collection and maintenance of germplasm, the centre has a collection of 20 varieties of tuberose planted in the month of March, 2016. The varieties are:

Single: Shringar, Prajwal, Single, Hyderabad Single, Kalyani Single, Sikkim Selection, STR-505, GKTC-4, Arka Nirantara, Phule Rajani, Mexican Single, Bidhan Rajani H-1 and Bidhan Rajani H-2.

Double: Swarna Rekha, Suvasini, Double, Hyderabad Double, Vaibhav, Calcutta Double, Pearl.

The previous year's data indicate that the varieties Shringar, Prajwal, Arka Nirantara (Single), Suvasini and Vaibhav are promising for flower production on tarai region of Uttarakhand.



Fig. 2: Collection and evaluation of tuberose germplasm

CROP IMPROVEMENT

Project No. 2.2.1: Testing of new genotypes of chrysanthemum

An experiment was laid out in RBD with three replications in chrysanthemum cvs. HCC-1, HCC-2 supplied by Andhra Pradesh Horticultural University, Rajendranagar, Hyderabad: The plants were planted at a spacing of 40 cm x 30 cm. Cultivar Suneel was used as a check variety. **After one season evaluation, Variety HCC-1 was found better than HCC-2 in yield and quality parameters.**

Salient findings (2015-16)

I. Plant height at 1st flower bud appearance (cm): Average plant height of 31.55 cm in HCC-1 and 30.22 cm in HCC-2 was recorded.

II. Days taken to first bud initiation: Genotype HCC-1 initiated first bud appearance in just 52.88 days as compare to HCC-2 which took 63.77 days for first bud appearance.

III. Number of days taken for flower bud opening: Genotype HCC-1 initiated first bud opening in just 74.77 days as compared to HCC-2 which took 85.88 days for first bud opening.

IV. Flower diameter (cm): Maximum average flower diameter of 4.16 cm was found in HCC-2 and smaller flowers of average size 2.11cm were seen in HCC-1.

V. Number of flowers per plant: Appreciable number of flowers per plant of 45.44 in HCC-1 and 43.66 in HCC-2 were found in both the genotypes under testing.

VI. Weight of single flower (g): Flowers of lesser weight i.e. 2.01 g in HCC-2 and 0.50 g in HCC-1 were produced in both the genotypes.

VII. Duration of flowering (days): Flowering duration was almost similar for both the genotypes and it was found to be 75.55 days in HCC-1 and 75.99 days in HCC-2.

VIII. Shelf life (days): Flowers of genotype HCC-1 exhibited remarkable shelf life of almost two weeks (12.33 days). However shelf life of HCC-2 flowers was only of 8.66 days.

IX. Incidence/ tolerance to insects & diseases: No serious insect-pests and diseases attack was observed in the genotypes and there was a general tolerance of the varieties towards pests and diseases.

X. Flower colour: Flowers of genotype HCC-1 were yellow in colour whereas HCC-2 had dark pink flowers.

Table 1: Testing of newly evolved genotypes of chrysanthemum at GBPUA&T, Pantnagar (2015-16)

	Plant height (cm)	Flower diameter (cm)	Number of flowers/plant	Weight of single flower (g)	Flower bud appearance (days)	Flower bud opening (days)	Duration of Flowering (days)	Shelf life (day)	Reaction to insect and disease	Flower colour
HCC-1	31.55	2.11	45.44	0.50	52.88	74.77	75.55	12.33	Moderate tolerance	Yellow
HCC-2	30.22	4.16	43.66	2.01	63.77	85.88	75.99	8.66	-do-	Dark pink
Mean	30.88	3.13	44.55	1.26	58.33	80.32	75.77	10.5	---	---
SEm ±	2.59	0.27	4.26	0.57	0.2	1.71	1.38	0.84	---	---
CD at 5%	15.34	1.62	2.23	0.34	1.24	6.92	8.21	5.02	---	---
cv	14.54	15.16	16.58	7.94	0.62	2.52	3.17	14.01	---	---

Project No. 2.3.1: Testing of genotypes in tuberose

Under testing trial, tuberose varieties Bidhan Rajani H-1 and Bidhan Rajani H-2 were procured from BCKV Kalyani and have been planted with check varieties on March 04, 2016.



Fig. 3: Testing of new genotypes of tuberose

CROP MANAGEMENT

Project No. 3.2.1: Drip irrigation and fertigation studies in tuberose

Under crop management studies in tuberose, drip irrigation and fertigation studies on variety Prajwal with seven different treatments as per the technical programme have been laid out in March 10, 2016.



Fig. 4: Drip irrigation and fertigation installed in tuberose

RESEARCH PUBLICATIONS

Research Papers published

1. Kapoor, M., **Ajit Kumar** and Lal, S. 2015. Induction of genetic variability through gamma irradiation in mini marguerite (*Chrysanthemum paludosum* Poir.) and their RAPD-based genetic relationship. *Indian J. Horticulture*, **72** (1): 77-83.
2. Trivedi, H. and **Ajit Kumar**, 2015. Response of bio-enhancers on growth and flowering in rose (*Rosa hybrida*) cv. Grand Gala. *International Journal of Basic and Applied Agricultural Research*, **13**(1): 31-37.
3. Pal, S., **Ajit Kumar**, Singh, N. and Ram, H. 2015. Probit analysis of lethal dose (LD₅₀) of gamma rays in different cultivars of dahlia (*Dahlia variabilis* DESF.). *Progressive Research – An International Journal*, Vol 10 (Special -IV): 2314-2316.
4. Bhatt, Baijanti, Satish Chand and **Srivastava, R.** 2015. *In vitro* multiplication of tuberose (*Polianthes tuberosa* L.) cv. Shringar. *Int J. Basic and Applied Agric Res.*, **13**(1): 22-26.
5. Ghosh, S. and **Rao, V.K.**, 2015. Effect of growth retardants on quality production of pot mums. *J. Hill Agriculture*, 6(1): 16-23.
6. Bajeli, J., Tripathi, S., **Ajit Kumar**, Tripathi, A. and Upadhyay, R.K. 2016. Organic manures a convincing source for quality production of Japanese mint (*Mentha arvensis* L.). *Industrial Crops and Products*. 83:603-606.
7. Bhatt, B., Satish C. and **Srivastava, R.** 2015. *In vitro* multiplication of tuberose (*Polianthes tuberosa* L.) cv. Shringar. *Int J. Basic and Applied Agric Res.*13(1): 22-26
8. Sharma, G. and **Srivastava, R.** 2015. Postharvest life of cut chrysanthemum cultivars in relation to chemicals, wrapping material and storage conditions. *Tropical Agricultural Research*, 26(1): 195-200.
9. Bhatt, B., Chand, S., **Srivastava, R.** 2015. *In vitro* multiplication of tuberose (*Polianthes tuberosa* L.) cv. Shringar. *Int J. Basic and Applied Agric Res.* 13 (1), 22-26.
10. Kainthura, P. and **Srivastava, R.** 2015. Induction of genetic variability and isolation of mutants in tuberose (*Polianthes tuberosa* L.). *Tropical Agricultural Research*, 26 (4): 25-29.
11. Bhandari, N. S., **Srivastava, R.**, Kantiya, S.P. and Guru, S.K. 2016. Assessment of substrates for programmed liliium (*Lilium longiflorum* L.) production in container system. *Research on Crops*, 17(03).

Papers presented in Seminar/Symposium/Workshop/Congress

1. **Ajit Kumar**, Tewari, S. and Pal, S. 2015. Crop diversification through medicinal and aromatic plants under agroforestry system. *National Seminar on Holistic Development of Agroforestry: Potential and Policy Issues*, February, 13-14, 2015 organized by Agroforestry Research Centre, G.B. Pant University of Agriculture & Technology, Pantnagar, pp. 117-118.

2. Tripti, **Ajit Kumar** and Chaturvedi, P. 2015. Effect of different dosage of gamma radiation on germination percentage and morphological attributes in different varieties of *Tagetes patula*. Fifth International Conference on Plants and Environmental Pollution: ICPEP-5, 24-27 February, 2015 NBRI Lucknow. p. 157.
3. **Srivastava, R. K.** 2015. Role of precision farming in quality production of gerbera and carnation. In: National Workshop cum Seminar on Precision Farming: A Boon for Flower Industry held on March 2-3, 2015 at GBPUA&T, Pantnagar.
4. **Srivastava, R.**, Nautiyal, A., Chand, S., Ajit Kumar and Bhuj, B.D.. 2016. Effect of stages of harvesting and packaging materials on post harvest life of gladiolus variety White Prosperity. Proc Natl Conf on Hill Agriculture in Perspective held on Feb 26-28, 2016 at GBPUA&T, Pantnagar.
5. **Srivastava, R.** 2016. Prospects and potentials of Floriculture in hills. Invited presentation in Natl Conf on Hill Agriculture in Perspective held on Feb 26-28, 2016 at GBPUA&T, Pantnagar.
6. **Srivastava, R.**, Negi, N. Chand, S., Bhardwaj, S.B. and Bhuj, B.D. 2016. Validation of NPK application and variety on growth and flowering of offshoot generated Gerbera (*Gerbera jamesonii* Bolus ex. Hooker F.) under shadenet conditions. Proc Global Conference on Perspectives of Future Challenges of Agriculture held on May 28-31, 2016 at Jain Irrigations Systems Ltd. Jalgaon.
7. **Srivastava, R.**, Messar, Y., Chand, S., and Sharma, R. 2016. Molecular Markers Assisted Substantiation of Hybrids of Different Intervarietal Crosses of Gladiolus {*Gladiolus grandiflorus* L.}. Proc Global Conference on Perspectives of Future Challenges of Agriculture held on May 28-31, 2016 at Jain Irrigations Systems Ltd. Jalgaon.

Appendix I

Standard meteorological week's average weather data of 2015-16 at G.B. Pant University of Agriculture & Technology,

Pantnagar 263 145 (Uttarakhand)

Month	Date	Year	Temperature (°C)		Relative Humidity (%)		Sun Shine Hrs.	Wind Velocity (km/hr.)	Rainfall (mm)	Evap. (mm)
			Max.	Min.	Max.	Min.				
Jan	01-07	2015	19.1	11.5	93	77	2.8	6	21.8	1.4
Jan	08-14	2015	15.7	8.4	95	75	3	3.5	0	0.8
Jan	15-21	2015	15.8	8.1	95	71	2.5	3.4	0	1.2
Jan	22-28	2015	18.4	8.6	95	75	3.6	4.8	11	1.2
Jan-Feb.	29-04	2015	18.4	8.1	88	62	4.7	5.3	0	1.5
Feb	05-11	2015	22.4	7.4	94	54	3.9	7	0	2.1
Feb	12-18	2015	23.2	9.7	88	51	3.9	5.7	0	2
Feb	19-25	2015	27.1	13.4	90	55	3.3	5.5	0.2	2.1
Feb-Mar	26-04	2015	23.3	13	92	61	4.9	5.9	67.9	2.8
Mar	05-11	2015	25.2	10.2	89	45	8.8	5.8	0	2.9
Mar	12-18	2015	26.9	12.7	90	51	6.6	5	1.2	2.9
Mar	19-25	2015	29.3	13.7	88	45	9.5	4.6	0	3.5
Mar-Apr	26-01	2015	31.3	17.7	86	44	7.7	5.1	26.2	4.2
Apr	02-08	2015	29.2	15.8	86	45	6.4	5	18.9	4.3
Apr	09-15	2015	31.9	16.6	82	36	8.3	5.2	0	4.9
Apr	16-22	2015	34.5	18.5	74	35	8.2	5.4	0	6.1
Apr	23-29	2015	34.1	19.2	65	34	9.5	8.6	1.2	7.3
Apr-May	30-06	2015	35.4	18.3	70	29	10.4	5.7	18.4	7.4

May	07-13	2015	37.9	24.5	69	39	8.7	6.7	9	7.5
May	14-20	2015	36.8	22.5	70	37	10.7	6.5	1.8	7.6
May	21-27	2015	41.1	22.5	67	31	9.4	6.7	0.9	9.8
May-Jun	28-03	2015	39.6	22.2	63	31	8.3	6.3	0	9.3
Jun	04-10	2015	40.9	24.5	62	30	9.7	7.8	0	10.6
Jun	11-17	2015	38	25.5	62	38	7.4	8.8	0.8	10.7
Jun	18-24	2015	35.1	26.5	73	53	6.2	7.2	72.2	6.4
Jun-Jul	25-01	2015	32	23.8	90	76	5	8.5	324.8	5.5
Jul	02-08	2015	32.4	25.7	87	72	3.1	6.7	100	3.6
Jul	09-15	2015	31.7	25.4	88	72	4.9	7	114.8	5.5
Jul	16-22	2015	32.7	26.1	84	72	4.2	5.8	89.8	4
Jul	23-29	2015	33.6	25.9	83	63	8.5	7.5	6.4	5.7
Jul-Aug	30-05	2015	31.5	25.7	87	74	5	5.3	79.8	4.3
Aug	06-12	2015	30.2	25.4	91	76	2.3	5.5	158.9	3.8
Aug	13-19	2015	32.7	26.1	90	67	4.8	3.7	37.8	3.9
Aug	20-26	2015	32.4	24.9	89	69	5.2	6.5	39	3.8
Aug-Sep	27-02	2015	33.4	25.4	92	65	6.7	5.6	24.4	4.7
Sep	03-09	2015	33.6	23.8	91	60	7.5	4.9	0	7
Sep	10-16	2015	34.1	25	87	61	8.4	3.1	0	4.7
Sep	17-23	2015	34	24.9	84	62	6.6	3.8	112	4.2
Sep	24-30	2015	31.7	21.4	90	61	8.1	5	0	4
Oct	01-07	2015	32.9	20.2	83	51	9.5	2.1	0	4.7
Oct	08-14	2015	32.5	20.3	83	52	7.5	2.4	0	4.6
Oct	15-21	2015	31.5	19.3	86	51	5.1	3.1	0	3.5

Oct	22-28	2015	31.2	13.9	88	48	8.7	3	0	4
Oct-Nov	29-04	2015	29	13.7	90	43	6.2	2.9	5	3
Nov	05-11	2015	28	12.1	91	43	6.6	3	2	2.5
Nov	12-18	2015	29	11.9	91	38	7.8	2.8	0	2.7
Nov	19-25	2015	27.7	11.3	92	41	7.2	1.6	0	2.3
Nov-Dec	26-02	2015	26.7	12.6	91	46	3.7	2.7	0	2.1
Dec	03-09	2015	24.6	10.2	96	49	1.8	2.3	0	1.6
Dec	10-16	2015	21.1	10.3	94	64	2.1	4.3	0	1.3
Dec	17-23	2015	20.5	4.6	96	50	5.3	2.5	0	1.5
Dec	24-31	2015	21	5	95	46	6.1	3	0	1.5