Analysis on Effect of Beacon Anti-freezing Agent on Garden Nursery Stock

Abstract: To further verify Beacon anti-freezing agent effect on garden nursery stock,osmanthus and photinia glabra were chose as trial objects.The trial results showed that it could effectively relieve the effect from low temperature and frozen inquiry and reduced freezing leaves area and quantity through spraying Beacon anti-freezing agent on osmanthus and photinia glabra.Compared with the water spraying control,the new leaves became flat,broad,shiny,and had vigorous growth after spraying Beacon anti-freezing agent under low temperature.

【**Keywords**】Beacon；anti-freezing agent；garden nursery stock；anti-freezing effect.

Beacon anti-freezing agent,adopting excellent anti-freezing elements and adding special factors,can activate bio-enzyme,kill ice nucleating bacteria and prevent ice nucleating bacteria reproduction.Spraying it can form a protective layer,enhance water retention and anti-freezing capacities,inhibit and break freezing protein from active ice,increase heat,decrease freezing capacity to significantly advance the resistance to low temperature.The aim of this trial is to further verify Beacon anti-freezing agent effect on garden nursery stock.

1 Trial Materials and Methods

1.1 Trial Materials

（1）Trial product:Beacon anti-freezing agent

（2）Trial object:osmanthus,photinia glabra

1.2 Trial Design

This trial designed two treatments,as follows:

（1）treatment 1:Beacon anti-freezing agent diluted by 1:800 (18.75ml/15kg)and 1:500 （30ml/15kg）

（2）treament 2:water spraying control

1.3 Trial Method

This trial,in the Li jiansong nursery base of Xu village,Liuji town,Zhongmou county in Henan,selected uniform growing evergreen nursery of photinia glabra（50-60cm）and osmanthus.The trial was after Mid-October（subject to local temperature,average temperature 5-10℃ to spray),and was carried out through three evenly spraying on plants by sprayer with the first two times spraying by 800 times,the third time spraying by 500 times respectively in Oct.26th,2011,Nov.21th,2011,Dec.9th,2011,and was observed respectively in Jan. 12th,2015,and Feb.9th,2015.

1.4 Investigating Items and Methods

The investigation was undertaken mainly in terms of whole plant growth,leaves frozen inquiry,leaves flatness,leaves thickness,etc.In this case,select 3 osmanthus plants respectively and count up the freezing leaves;investigate photinia glabra plants in 2 plots,10 plants per plot and count up the freezing plants.

2 Results and Analysis

2.1 Difference in effect of frozen inquiry of osmanthus leaves after spraying Beacon anti-freezing agent

The observation was carried out after the first and second spraying respectively on osmanthus and showed that there were no obvious difference compared with the water control,but after the third spraying,difference of frozen inquiry on osmanthus appeared gradually(see table 1).

Table 1 Effect of Beacon anti-freezing agent on osmanthus

Item / Treatment	Freezing leaves number			
	Ⅰ	Ⅱ	Ⅲ	Mean
Beacon anti-freezing agent spraying	21	15	20	19
Control	40	33	32	35

As it can be seen from Table 1 that the mean of freezing leaves number under the water control was 35,and over 16 compared with the one 19 under the anti-freezing agent;as

it can be seen from Pic 1 and Pic 2 that the osmanthus new leaves after spraying Beacon anti-freezing agent were dark green,shiny,flat,broad,vigorously growing,and less freezing area(Pic 1);the water control ones were wrinkled,red or yellow,clustering new branches,weakly growing,and more freezing area(Pic 2).

As it can be known from above analysis that the number of freezing leaves sprayed by Beacon anti-freezing agent was significantly less than the control,which indicated that the performance of Beacon anti-freezing agent on osmanthus was good.

Picture 1　Jan.12th,2015 difference in frozen inquiry of osmanthus leaves

Picture 2　Feb.9th,2015 difference in frozen inquiry of osmanthus leaves

2.2 Difference in effect of frozen inquiry of photinia glabra plants after spraying Beacon anti-freezing agent

The observation was carried out after the first and second spraying respectively on photinia glabra and showed that there were no obvious difference compared with the water control,but as the temperature decreased,the frozen inquiry appeared gradually on photinia glabra and was different on different treatments. As it can be seen from

Table 2 that the mean of freezing plants number under the anti-freezing agent was 1.5,while the one was 3 under the water control,which indicated that the frozen inquiry was more heavier under the treatment of water spraying.

Table 2 Effect of Beacon anti-freezing agent on photinia glabra

Item / Treatment	Freezing plants number		
	Ⅰ	Ⅱ	Mean
Beacon anti-freezing agent spraying	1	2	1.5
Control	2	4	3

As it can be seen from Pic 3,Pic 4,Pic 5 that the photinia glabra new leaves after spraying Beacon anti-freezing agent were flat,broad,shiny,vigorously growing,and less freezing area;the control ones were yellow,withered,weakly growing,and more freezing area.

As it can be known from above analysis that the number of freezing plants sprayed by Beacon anti-freezing agent was significantly less than the control,which revealed that Beacon anti-freezing agent had an effect on enhancing cold resistance of photinia glabra.

Picture 3 Jan.12th,2015 difference in frozen inquiry of photinia glabra plants

Piture 4　Feb.9th,2015 difference in frozen inquiry of photinia glabra plants

Picture 5　Feb.9th,2015 difference in frozen inquiry of photinia glabra single plant

3 Conclusion and Discussion

（1）Under this trial,it could effectively relieve the effect from low temperature and frozen inquiry through spraying Beacon anti-freezing agent on osmanthus and photinia glabra.The anti-freezing performance was significant,mainly as follows:new leaves flat,broad,shiny,vigorously growing and reduced freezing area and quantity.

（2）This trial base is in central region of China, accumulated temperature（≥10℃）range is 3400～4500,and is in area of warm temperate zone.Due to different accumulated temperature in different regions, the growth characteristics and resilience of crops will be different,therefore,the difference of spraying anti-freezing agent in different environments and different crops still needs further research.