COMPARISON OF IBA QUICK-DIPS WITH TALC FOR ROOTING CUTTINGS

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Hundreds of thousands of man-hours have been spent by nurserymen and university researchers trying to formulate the ideal rooting medium, the ultimate mist system, the best structure, and the perfect rooting compound. In fact, such a creature, or combination thereof, probably doesn't exist since there are no two nurseries that are exactly alike in all aspects. Unlike the manufacturing industries, which can produce identical products at two or more distant locations, given the same set of specifications, we deal with a rather diverse group of living systems — dynamic living systems. As proof that our plant materials are continuously undergoing subtle change, consider the new clones, sports and hybrids which "appear" in our nursery industry annually. In comparison to the manufacturing industries, our actual production sites are subjected to a multitude of environmental and other influences — heat, cold, drought, flood, air pollution, weed pressure, air and water drainage and, of course, water quality; not to mention differences in media composition or soil types, fertility programs, pest control, or management systems. It's no small wonder that each nursery is different from all others. Each of us is a person with certain peculiar characteristics, which identify us as an individual. Nurseries enjoy the same distinction. This unique agricultural industry presents some interesting challenges in that a production system that works well at your neighbor's nursery may not work at all at yours. Any successful production system in our industry has taken years of trial and error to develop — it didn't just happen. And we must be receptive to change, gradual change to continuously upgrade and improve our techniques. Do not completely revamp any part of your production system without first trying the innovations on a small scale to be certain that they will work. Let me preface the remainder of this presentation by emphasizing that this holds true for plant propagation. In our experience, we have had superior results with IBA (indole-3-butyric acid) quick dips as compared to talc formulations in rooting cuttings. If you choose to try this technique, do so on a small scale first.

In vegetative plant propagation, the specific auxin, as well as its concentration and method of application, can affect rooting of stem cuttings. Also, cultivars within a given species may

vary in their requirement for an optimum auxin concentration or method of application. And just as important as any of the above factors is the physiological condition of the cuttings at the time they are harvested, i.e., softwood, semi-hardwood, or hardwood. In essence there is a combination of factors, each of which must be exactly right if maximum rooting is to be achieved. The following studies were concerned only with the comparative efficiency of commercially-available talc or liquid rooting compounds.

Semi-hardwood terminal cuttings of southern wax myrtle were collected on 15 August. Each cutting was trimmed to 10 cm (4 in.), and leaves were removed from the basal 4 cm (1½ in.). Thirty cuttings were then subjected to each of the treatments listed in Table 1. Cuttings treated with liquid quick dip had the basal 2 cm (0.8 in.) dipped into the appropriate IBA solution, followed by 5 minutes of air drying prior to being inserted into the rooting medium. Cuttings treated with talc formulations were moistened, dipped into the appropriate talc formulation to a depth of 2.5 cm (1 in.), and gently tapped to remove excess powder. Talc-treated cuttings were dibbled in to prevent removal of powder. (Some growers have tried making a slurry of the powder. However, this adds to the cost and seems not to improve results.) Cuttings were stuck in individual 7 cm (2¾-in.) plastic rose pots containing a medium of 1 peat: 1 perlite (v/v). Pots were placed in an outdoor shaded frame (47% shade) under intermittent mist. The mist system operated for 6 sec. every 5 min. from 6 a.m. to 9 p.m.; 77 days after being stuck cuttings were harvested and data were recorded (Table 1). Cuttings treated with IBA liquid quick dip, regardless of concentration, rooted in higher percentages than those treated with talc formulations. Untreated cuttings failed to root at all. Note that both Hormodin 3 and HormoRoot 2 contain higher percentages of IBA than the 0.5% IBA quick dip, yet neither of the talc formulations was as effective in terms of percent rooting. Note also that in terms of the mean number of roots per cutting, the 1.0% and 1.5% IBA liquid quick dips were superior to the talc formulations.

Semi-hardwood cuttings 20 cm long (8 in.) of Leyland cypress were taken on 15 August and treated similarly to those of southern wax myrtle. Data from them was also recorded 77 days later (Table 2). In the case of Leyland cypress, it was felt that cuttings were not left in the propagation bed for a sufficient length of time. However, several trends are evident. With the 0.5%, 1.0% and 1.5% IBA liquid quick dips, there was a rooting response of 76.5, 86.5 and 86.5%, respectively. Compare this to the response of 40.0% for cuttings treated with

Hormodin 3 or the 56.5% rooting for cuttings treated wth HormoRoot 2. Compared to Hormodin 3, the 0.5% IBA liquid quick dip was superior for the rooting of this species even though it contained a lower percentage of active ingredient.

Table 1. Response of semi-hardwood southern wax myrtle stem cuttings to selected rooting compounds.[z]

Treatment	Percent Rooting[y]	Mean number of roots/cutting	Mean root length (mm)
Untreated	0.0 d	0.0 c	0.0 c
0.5% IBA liquid quick-dip	90.0 a	8.7 b	47.6 a
1.0% IBA liquid quick-dip	86.5 a	15.7 a	50.3 a
1.5% IBA liquid quick-dip	90.0 a	16.7 a	41.1 a
Hormodin 3 (0.8% IBA in talc)	56.5 b	2.6 bc	37.4 a
HormoRoot 2 (2.0% IBA in talc)	30.0 c	0.9 c	16.4 b

[z]Means within a column followed by the same letter are not significantly different at the 5% level - Duncans New Multiple Range Test.
[y]Each value based on 30 cuttings.

Table 2. Response of semi-hardwood stem cuttings of Leyland cypress to selected rooting compounds.[z]

Treatment	Percent rooting[y]	Mean number of roots/cutting
Untreated	53.5 bc	2.4 ab
0.5% IBA liquid quick-dip	76.5 ab	2.8 ab
1.0% IBA liquid quick-dip	86.5 a	2.9 ab
1.5% IBA liquid quick-dip	86.5 a	3.5 a
Hormodin 3 (0.8% IBA in talc)	40.0 c	1.4 b
HormoRoot 2 (2.0% IBA in talc)	56.5 abc	1.6 ab

[z]Means within a column followed by the same letter are not significantly different at the 5% level — Duncans New Multiple Range Test.
[y]Each value based on 30 cuttings.

The preceding examples apply to plants that are normally considered difficult to root. Let us now look at an example from a study done with a plant considered relatively easy to root. Semi-hardwood terminal cuttings of convex leaf Japanese holly were also taken on 15 August, trimmed to 15 cm (6 in.), and treated as listed in Table 3. Cuttings were then subjected to the same conditions as southern wax myrtle and Leyland cypress. Data were also recorded 77 days later. Cuttings treated with 0.5% or 0.75% IBA liquid quick dip and Hormodin 3 rooted 80.0, 93.5, and 90.0%, respectively, compared to untreated cuttings, which rooted 40.0%. This is an example of where both the talc and liquid formulations of IBA were

equally effective in terms of percent rooting. However, if we look at the number of roots per cutting, the 0.75% IBA liquid quick-dip produced 30.4 roots/cutting compared to 16.2 for Hormodin 3. Recall that Hormodin 3 contains 0.8% IBA in talc form.

Table 3. Response of *Ilex crenata* 'Convexa' to selected rooting compounds.[z]

Treatment	Percent Rooting[y]	Mean number of roots/cutting	Mean root length (mm)
Untreated	40.0 b	2.7 c	18.1 a
0.5% IBA liquid quick-dip	80.0 a	16.9 b	18.0 a
0.75% IBA liquid quick-dip	93.5 a	30.4 a	20.2 a
Hormodin 3 (0.8% IBA in talc)	90.0 a	16.2 b	14.6 a

[z]Means within a column folowed by the same letter are not significantly different at the 5% level — Duncans New Multiple Range Test.
[y]Each value based on 30 cuttings.

The foregoing provides some examples which substantiate the fact that auxin concentration as well as method of application can dramatically affect rooting of some species. This should be of concern to commercial propagators and nurserymen who wish to maximize both production and production efficiency. In our experience, liquid formulations of IBA are easier to apply than talc formulations since cuttings can be treated in bundles at one time rather than individually.

The mention of trade names does not imply endorsement by the North Carolina Agricultural Research Service of products named or criticism of similar products not mentioned.

PROPAGATION: FOG NOT MIST

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