

EFFECT OF NAA AND IBA TREATMENTS ON ROOTING MURTILLA (*Ugni molinae* Turcz) STEM CUTTINGS

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ABSTRACT

The effectiveness of four NAA and four IBA concentrations, along with their combinations were tested for their ability to enhance rooting in murtilla cv. Red Pearl-INIA. Concentrations were assayed at four soaking times (10 min, 5 min, 1 min, 10 s) in stem cuttings collected from top of spring-growing shoots. Irrespective of soaking times, rooting percentage increased as hormone concentration was reduced from 1500 to 375 ppm for NAA and from 3000 to 750 for IBA. Rooting efficiency followed the same trend in NAA-treated stem cuttings whereas it was not affected in IBA-treated explants. Combinations of NAA and IBA improved rooting efficiency but only in those treatments on which both hormones were at the lowest concentration.

INTRODUCTION

The murtilla is a fruit-bearing shrub native to the southern Chile that has a great potential for expansion as commercial crop. This species is at present being planted by farmers who propagate their plantlets but at low rooting efficiency. Studies on rooting murtilla stem cuttings shows rooting percentage varying from 45 to 90% by using IBA (indole butyric acid) at rates between 2500 and 4000 ppm (Avenidaño, 1998; Cárdenas 2007). Since it is not IBA but NAA (naphthalene acetic acid) the auxin being currently used by farmers as rooting hormone, we asked whether IBA would be more effective at improving rooting percentage and rooting efficiency in this species. This work summarizes preliminary studies on which the effectiveness of NAA and IBA, as well as their combinations was assessed in rooting stem cuttings from the recently released murtilla cv. Red Pearl-INIA.

MATERIAL AND METHODS

Hormones were prepared in ethanol and diluted to 1500, 750, 375 and 187 ppm for NAA, and to 3000, 1500, 750 and 375 ppm for IBA. Control treatments comprised the five-ethanol dilutions, along with pure water. Concentrations were assayed at four soaking times (10 min, 5 min, 1 min, 10 s) 10 plants each, so as to know whether exposure to auxins affects rooting. Cuttings were collected from top of spring-growing shoot of murtilla cv. Red Pearl-INIA. They were then dipped into hormone solution and immediately stuck into vermiculite. Stem cuttings were picked up from the substrate after 7 weeks and evaluated for percent rooting and rooting efficiency. Rooting efficiency was calculated as adventitious root weight divided by the rooting zone along the stem.

RESULT AND DISCUSSION

The effect of NAA and IBA in percent rooting and rooting efficiency was not dependent on the time the stems were exposed to either auxin. Averaged over soaking times, rooting percentage increased as hormone concentration was reduced from 1500 to 375 ppm for NAA and from 3000 to 750 for IBA. This increase in percent rooting correlated with rooting efficiency for the NAA-treated stems whereas rooting efficiency was not affected by IBA concentrations (Fig 1). The fact that soaking times was not significant in rooting would extend the span for a safe application from 10 s to 10 min. This may be a relevant issue in commercial propagations of murtilla cv. Red Pearl. Treatments on which the NAA x IBA interaction was tested showed improved rooting efficiency but only in those combinations on which both hormones were at the lowest concentration. These results indicate that rooting murtilla cv. Red Pearl can be achieved successfully by either hormone, and that combining both NAA and IBA at low concentrations may provide further improve whenever juvenile top-growing stems are used as source of cuttings.

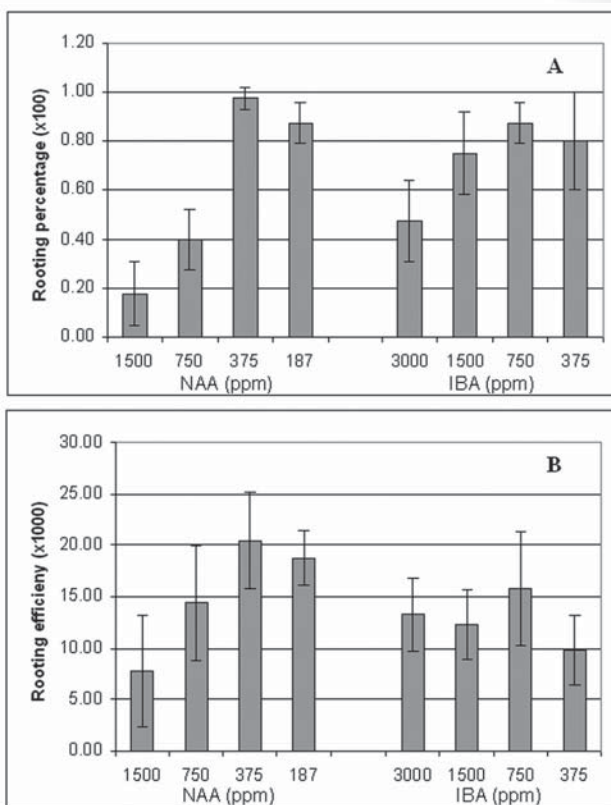


Figure 1. Effect of NAA and IBA on rooting percentage (A) and rooting efficiency (B) of murtila cv. Red Pearl-INIA. For each hormone concentration, the means \pm SD averaged over soaking times are shown.

BIBLIOGRAPHIC REFERENCES

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