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Project Report Summary For:

HNS 95

Investigation into the controlled release fertiliser requirements of climbers

Final Report 2000

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HNS 95

Investigation into the controlled release fertiliser requirements of climbers

Practical section for growers

Background and objectives

The majority of UK production of climbers is based on the use of controlled release fertilisers (CRFs). A number of factors influence the nutrient release from CRFs and hence the performance of the plants grown; particularly, temperature and irrigation. However, the consequence of these interactions is that different rates of fertiliser incorporation are needed to get the most cost-efficient production for different plants in different growing conditions.

Climbers form a specialist group of plants for which there is only limited information available as to their nutrient requirements. Similarly, detailed work on which to base recommendations on CRF formulations, longevity or rate of incorporation needed to achieve the degree and quality of growth required is also sparse and needs addressing. Anecdotal information as to rates versus requirements of CRFs for climbers varies widely within the industry. Discussion with the CRF manufacturers has confirmed that their recommendations are based on limited trial information in the UK.

Some climbers are produced outside, and as such CRF rates need to take account of periods of heavy rain (which will leach nutrients out of the pots), as well as potentially cold temperatures in the spring (slowing nutrient release). Other climbers are grown under protection for some or all of the production cycle, including many of the high value species. There is also a number of climbers that are autumn potted, and grown under protection for marketing the following spring. Growing environment has a large influence on the release of nutrients from CRFs and optimal rates for outdoor grown plants can differ from those grown in the warmer, more regularly irrigated environment, under protection.

This project was undertaken to provide the information necessary for effective management decisions regarding crop nutrition of Climbers.

Objectives of the trial, using indicator climber species/cultivars, were to establish the optimal:

- longevity of CRF
- rates of incorporation of CRF
- type of CRF

Summary of results

These experiments were undertaken for one year only. Consequently, any findings are for the conditions *under which the experiment was carried out*. To a certain extent, extrapolation to other years is possible, but must be made with a full understanding of the limitations of this work. Additionally, account must be made of irrigation system, incorporation of base fertiliser and geographical location if they differ from those in this study.

As the growing year 1998-99 was not unusually hot and wet, lower rates of CRF would have been able to sustain quality plant growth than would be necessary in a year that was unusually hot and wet. This must be borne in mind when viewing the findings presented here.

- **Vigorous species (twice flowering) eg *Clematis monatana* f. grandiflora**

(Outdoor production)
Growth increased with rate of CRF application. Equivalent growth was achieved with 1 kg m^{-3} less CRF of the 8-9 month Osmocote compared to the 12-14 month product. Greatest growth was produced with the highest rate of Osmocote Plus 8-9 (High N).

- **Less vigorous hardy hybrid (flowers on new wood) eg *Clematis* 'Nelly Moser'**

(Outdoor, then overwintered under protection)
Little difference was apparent in plant growth between the two longevities of CRF. Top growth increased with rate of incorporation of Osmocote Plus 12-14 (Spring) but similar growth was produced with all rates of Osmocote Plus 8-9 (High N).

Overall

The more vigorous cultivar, *Clematis monatana* f. grandiflora, responded to higher rates of CRF, but these appeared to have little benefit to the less vigorous cultivar, *Clematis* 'Nelly Moser'. Overall, the Osmocote Plus 8-9 (High N) at 1 kg m^{-3} less than Osmocote Plus 12-14 (Spring) appeared to give equally good results. However, it must be remembered that it was a cool wet growing season and results need confirming over additional seasons

- **Vigorous Honeysuckle eg *Lonicera periclymenum* 'Serotina'**

(Outdoor production)
Plant size/bushiness was similar at all rates of application, and all plants were of a good quality. However, there were differences in the weight of trimmings removed, with a greater weight of trimmings produced by Osmocote Plus 12-14 (Spring) than Plantacote pluss 12M at each rate.

- **Vigorous Jasmine species eg *Jasminum officinale***

(Outdoor, then overwintered under protection)
Taller growth and greater trimming weight was produced with Plantacote pluss 12M compared to Osmocote Plus 12-14 (Spring) over all rates. The weight of top growth displayed a different trend, with Osmocote Plus 12-14 (Spring) producing similar biomass to Plantacote pluss 12M, although there were indications that this increased with rate of CRF.

Overall

Quality was maintained at moderate rates of both products but less growth was trimmed from the top of the cane compared to high rates. The relative weight of trimmings contrasted between the two climbers. *Lonicera* produced the greatest trimmings with Osmocote Plus 12-14 (Spring), whereas Plantacote pluss 12M produced the greatest trimming weight with *Jasminum.*

- **Moderately vigorous hardy hybrid (late potting) eg *Clematis* 'Ernest Markham'**

(Under protection)
Similar quality growth was produced at all three rates of both Osmocote Plus 8-9 (High N) and Plantacote pluss 8M. Biomass increased significantly when rate was increased from 1.5 to 2.5 kg m^{-3}, but no benefit was observed with an additional 1 kg m^{-3}.

Action Points

1. With spring potted moderate to vigorous *Clematis* cultivars, plants of similar quality can be produced with 2.5 kg m^{-3} Osmocote Plus 8-9 (High N) or 3.5 kg m^{-3} Osmocote Plus 12-14 (Spring). However, the shorter longevity CRF may 'run out' in some circumstances.

2. With spring potted, vigorous *Jasminum* and *Lonicera* cultivars, Osmocote Plus 12-14 (Spring) and Plantacote pluss 12M can produce plants of similar quality at 4.5 – 5.5 kg m^{-3}.

3. If nutrient supply can be 'fine tuned' it may be possible to reduce the amount of growth that needs trimming without reducing plant quality.

4. With the short term climbers grown under protection, Osmocote Plus 8-9 (High N) and Plantacote plus 8M can both produce similar quality plants at 2.5 kg m^{-3}.

Practical and financial benefits

This study is the first work on nutrient requirements of climbers and has given useful guidelines on which rate, longevity and product to use under differing growing conditions for a range of climbers. The results showed that in certain circumstances a lower rate of shorter longevity (8-9 month) CRF can be used, with a potential cost saving. Additionally, when compared, similar results were obtained with the Plantacote and Osmocote formulations, leaving product choice to other factors including price.

NB: Only officially approved pesticides may be used in the UK. Approvals are normally granted only in relation to individual products and for specified uses. It is an offence to use non-approved products or to use approved products in a manner that does not comply with the statutory conditions of use except where the crop or situation is the subject of an off-label extension of use. (The UK Pesticide Guide 1999)

Before using all pesticides & herbicides check the approval status and conditions of use.

Read the label before use: use pesticides safely.