



# National Research Development Corporation

## Technology offer

### Reduced (Stable) Azadirachtin

Azadirachtin, the active ingredient of Neem is presently considered a good pest control substance. Its antifeedant and antireproductive tendency helps keep pest population under control without causing any harmful toxicity in plants or humans.

The use of Azadirachtin is widespread, but has not yet come in a competition with synthetic pesticides due to:

- Azadirachtin being highly unstable on exposure to humidity, light and UV rays.
- Emulsions with stabilisers as presently used, are effective but in a limited way due to improper transportation, handling, storage or use
- Many local brands with undefined and unauthenticated quality floating in the market have reduced the credibility with farmers.
- Cost of spray is generally double the cost of spray with synthetic pesticides, disinteresting the farmer for its use.
- For effective control, a spray after every 3-4 days is required, which is impractical for most marginal farmers.

An improved process has been developed at Indian Agricultural Research Institute, New Delhi for the preparation of storage stable reduced azadirachtin under ambient conditions. Reduced derivatives of Azadirachtin are natural origin neem biopesticide, which are considered as environmentally safe alternative to synthetic pesticides. Reduced Azadirachtin was far more stable than Azadirachtin. Like Azadirachtin, reduced derivatives retain the antifeedant and insect growth regulatory properties. These have been found equally effective to combat fungal and nematode infestation in horticultural and agricultural crops and for mosquito control. The liquid pesticidal compositions are in the form of solution, which on dilution with water may yield a clear solution or emulsion.

#### Salient Features

- The product is standard, stable, safe and cost effective.
- Raw materials required for the preparation include azadirachtin powder concentrates isolated from neem seed kernel extract, which is readily and abundantly available
- The solvents, catalysts and formulants needed for the manufacture of azadirachtin are readily available and can also be prepared.
- No waiting period before harvest of the crop – an aspect of significance for commodities consumed raw.
- The reduced Azadirachtin based EC formulations display higher degree of insect growth regulatory activity against *Spodoptera litura*, *Helicoverpa armigera*, and other pests.

- The compounds have been additionally found effective against phytophagous fungi, *Rhizoctonia solani* and *Sclerotium rolfsii*.
- Reduced Aza-A based formulations are also equally effective against the reniform nematode *Rotylenchulus reniformis* exhibiting nematocidal activity (EC50) in the range of 119.1 to 193.9 ppm.
- Under recommended dose of application, the product has been found to be safe to beneficial organisms.
- Reduced Azadirachtin along with other agents can be extremely good package towards organic food.

| PLANT PARAMETERS  |              |
|---|--------------|
| Capacity (KgPA)   | 900          |
| No. of shifts/day   | 3            |
| Working days/Year   | 300          |
| Land Required, m <sup>2</sup>   | 800          |
| Covered Area, m <sup>2</sup>  | 300          |
| MANPOWER  |              |
| Managerial  | 03           |
| Skilled   | 06           |
| Unskilled   | 10           |
| Technicians   | 04           |
| Others  | 13           |
| RAW MATERIAL  |              |
| <i>Requirement</i>  | <i>Kg/Kg</i> |
| Azadirachtin  | 4-6          |
| Solvent X   | 25-30        |
| Solvent Y   | 5-9          |
| Solvent Z   | 1-2          |
| PLANT & MACHINERY   |              |
| Solvent storage tank, Precipitation tank, Formulation tank, Condenser, Distillation system, Nutsche Filter with accessories, incinerator, Pumps |              |

#### NRDC

National Research Development Corporation, a Government of India Enterprise, is a premier technology Transfer Corporation with four decades of experience. It has helped establish over one thousand projects in the small and medium scale sector. The supply of technologies and services to entrepreneurs extend both in the developing and developed countries like USA, Germany, Malaysia, Myanmar, Brazil, Nepal, Senegal, Madagascar, Indonesia, Philippines, Vietnam, Sri Lanka, Kenya, Bangladesh and Egypt.

#### Advantages of Indian technologies

- Low capital investment
- High employment potential
- Maximum use of local raw materials and manpower resources
- Adaptable levels of sophistication

#### Services offered by NRDC

- Process know-how
- Pre-investment studies
- Feasibility / project reports
- Detailed engineering
- Turn key projects
- Equity capital participation
- Training in operation of plants
- Raw materials and products testing



#### NATIONAL RESEARCH DEVELOPMENT CORPORATION (A Government of India Enterprise)

'Anusandhan Vikas', 20-22, Zamroodpur Community Centre, Kailash Colony Extension, New Delhi-110 048, India.  
Fax : +91 11 29240409-10  
Tel : +.91 11 29240401-08  
E Mail: [write2@nrdc.in](mailto:write2@nrdc.in) Web Site : [www.nrdcindia.com](http://www.nrdcindia.com)