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A SCIENCE AND TECHNOLOGY NEWSLETTER

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PROMISING TECHNOLOGIES

CAZRI gum inducer for gum production from *Acacia senegal*

Under natural conditions, about 10-15 g gum-arabic (acacia gum) is generally harvested from each tree of *Acacia senegal*. Gum-arabic is considered as best edible gum and is used in preparation of variety of sweets, confectionery items, ice-cream, herbal medicines etc. and commands a high market price (₹1,000 to 1,200/kg).

CAZRI has developed a technique by which gum production from each tree can be enhanced by more than ten times. The technique is widely accepted by farmers of the region. Our assessments have shown that in the last decade, farmers in more than 45 target villages have earned additional income of more than ₹4.32 crore through the sale of gum-arabic produced by using CAZRI technology. During the period (2016-17), 20, 180 trees of *A. senegal* were treated by CAZRI gum inducer, resulting in production of approximately 8.72t of gum-arabic.



Induced gum exudation from *Anogeissus rotundifolia* trees for enhanced income generation

Indian Council of Agricultural Research

Krishi Bhavan, New Delhi 110 001, India

www.icar.org.in

PROMISING TECHNOLOGIES

The technique is now being further improved to enhance gum exudation from *Anogeissus rotundifolia*, *A. pendula*, *Acacia nilotica*, *A. tortilis* to further enhance production of edible gum in the region.

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Design development of photovoltaic-thermal (PVT) hybrid solar dryer

A photovoltaic-thermal (PVT) hybrid solar dryer was designed and fabricated in such a way that it enabled the combined production of electric energy and thermal energy from the photovoltaic panel and flat plate collector. The dryer consists of a collector unit, drying chamber, DC fan, PV panel and PCM chamber for thermal storage. The PV module was provided at left side of solar collector to operate a DC fan for forced mode of operation. The dryer having a size 1,250mm × 850mm has been made by galvanised steel sheet (22 gauge), which consisted of four drying trays. The clear window glass (4mm thick) is provided at the top of box. The area of collector designed for the dryer is 1.06 m² with a DC fan of 10 watt, which will be used for exhausting moisture with the help of a solar panel of 20 Wp.

The dimension of two drying trays made of stainless steel angle frame and stainless steel wire mesh was 0.84 × 0.60m and that of two half trays was 0.40 × 0.60m. The drying material can be kept on four trays and placed on angle iron frame in the dryer through an open able door provided on the rear side of the dryer. Six plastic pipes are fixed in the back wall of the dryer just below the trays to introduce fresh air at the base. The maximum stagnation temperature recorded was



PVT hybrid solar dryer installed at CAZRI solar yard

70°C when the outside ambient temperature was 27°C. The PCMs used were paraffin wax (melting temperature 44°C), lauric acid and capric acid which can extend drying hours till late night.

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Characterization of *Aeromonas veronii* isolated from rohu, *Labeo rohita*

A study was conducted to identify and characterize bacterial isolates from rohu, *Labeo rohita*, particularly from gill on the basis of biochemical and molecular (16S rRNA) tools. Among few isolates, one isolate was found to be, gram-negative short rods, and showed positive reaction towards oxidase, catalase and utilize citrate for growth.

Further, 16s ribosomal regions were amplified by using universal primer in PCR. The extracted PCR product showed band at 1500 bp and subjected to

Sanger di-deoxy sequencing. The sequence information was found to be of *Aeromonas veronii*, and phylogenetic analysis revealed cluster within same species reported from elsewhere. Furthermore, *in-vitro* antibiotic sensitivity test was performed by disc diffusion assay and found that isolated *A. veronii* RoG is sensitive against selected antibiotics viz., ceftazidina (30 mcg), nitrofurantoin (300 mcg) and resistance against ciprofloxacin (5 mcg), amikacin (30 mcg), netillin (30 mcg) and nalidixic acid (30 mcg) in varied level.