Range Reseeding Goes With the Flow

How rain pulls the trigger to revegetate degraded desert range: The action begins in a dry rill in the New Mexico desert.

A short piece of 3-inch-diameter plastic PVC pipe lies lengthwise, staked and fitted snugly in the rill, which may be as small as 4 inches deep and 4 inches wide. Three smaller seed-filled pipes inside the bigger pipe are glued to its bottom, top, and side. When the rare rain comes, the rill becomes a streamlet. The seeders can also be used in large gullies.

The flowing water shortly breaks through a crepe paper cap on one end of the outer pipe. Water then begins shoving seeds from the lowest inner pipe through a mesh screen and into the channel. Heavier rains push the seeds out faster and lift the water higher in the pipe, so it goes to work on the middle and top tubes. The seeds—sideoats grama, a native prairie grass—flow down the rill. Downstream, they're deposited in their seedbed: a moist channel bottom covered by a mulch of leaves and small branches also dropped by the slowing waterflow.

This seed delivery package is being evaluated by Jeff Herrick, a rangeland scientist with the Agricultural Research Service's Jornada Experimental Range in Las Cruces, New Mexico, and graduate student Ramon Gutierrez of Mexico's Instituto Nacional de Investigaciones Forestales, Agricolas y Pecuarias.

The package was developed by Gutierrez and ARS scientists and costs about 75 cents. It exemplifies the new remediation strategy at the Jornada of mimicking nature's ways—relying heavily on trigger sites like the rill.

"Trigger sites have some natural advantage, usually access to water," says rangeland scientist Kris M. Havstad, who leads the ARS Jornada research team.

"This allows a little time and money to go a long way toward encouraging protective grasses and other ground cover on barren land. And the improvements can spread into the surrounding areas, slowing down wind erosion and desertification," says Herrick.

Another trigger site is a shallow basin where rainwater collects.

"We plan to study the trigger areas to see if the plants spread outward," says Herrick.—By **Don Comis,** ARS.

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Venom Chemical Lures Bee Researchers

A honey-making insect known as the Asian hive bee, *Apis cerana,* has surprised and puzzled scientists. They've learned that it hides a large amount of an oily compound in an unexpected place—its venom sac.

The compound may be an active ingredient in what some scientists think is an alarm pheromone—a substance that signals other bees to attack intruders. But until now, pheromones had never been found in bee venom, according to Justin O. Schmidt. He is with the Agricultural Research Service in Tucson, Arizona.

"Other bees," says Schmidt, "apparently store pheromones in spongelike tissue at the base of the stinger."

Schmidt collaborated with researchers from England and Brazil in analyzing more than 300 Asian hive bees from Hong Kong, Malaysia, the Philippines, India, and Japan. They found that *A. cerana* has "50 to 100 times more of the pheromone component than other bees," Schmidt says.

The compound is (Z)-11-eicosen-1-ol, or eicosenol, for short. Scientists have known since 1982 that bees make eicosenol. But why does *A. cerana* make so much of it—and store it in the venom sac?

"It may be a tagging chemical to mark a potential intruder to the hive and alert hivemates," says Schmidt. "Or this bee may use eicosenol to mark patches of flowers rich in nectar so other bees from the hive can locate them quickly and easily. These are our best guesses."

Schmidt wants to not only pinpoint eicosenol's value to this bee, but also find out if the chemical may have other uses. "We're hoping further research will reveal ways to use it to help European honey bees fend off harmful mites, for instance," he says.

In the United States, the European honey bee, *Apis mellifera,* is a key pollinator of crops and a source of honey and beeswax.—By **Marcia Wood**, ARS.

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