

Penn State Wood Fiber-Cement Research May Yield Better Shingles

UNIVERSITY PARK (Centre Co.) — Here in the East, where most shingles are made of asphalt and people give little thought to the advantages of shingles made of cement, the significance of Penn State College of Agricultural Sciences researcher Paul Blankenhorn's work may not be obvious.

But in places like the West — where the specter of wildfire passing from burning trees to the roofs of houses is all too common

— the benefits of fireproof coverings is obvious. But until relatively recently, cement was thought to be too weak and brittle to be used for products such as shingles and siding that must be durable and at least slightly flexible.

That is changing, however, as scientists discover ways to supplement cement with additives to make composite materials that retain cement's best properties — fire resistance, water resistance and stability — while

contributing elasticity and crack resistance. Blankenhorn says wood seems to hold the most promise as a cement additive, and it is the medium on which he has focused.

Over eight years, the professor of wood technology has studied the effects of adding wood fiber from recycled newspaper and kraft paper (brown paper bags) to Portland cement. He has experimented with coating the wood fibers with various water

soluble polymers such as acrylics, silicates and silane before they are added to the cement. Blankenhorn's work shows how cement-wood fiber composites can make lighter, stronger, flexible, more durable shingles, siding and other products.

"In our research, we did not use wood particles, but wood fibers — the individual cells," Blankenhorn said. "That's completely different than what has been done before — using wood particles, such as sawdust, as an inert filler material. We tried to create a composite material that retained the best properties of both the cement and the wood."

According to Blankenhorn, some of the advantages wood fi-

bers bring to cement-fiber composites include availability, high tensile strength, relatively high elasticity and the well-developed technology to easily extract the fibers for use in the composites.

"Europeans have been using cement products for shingles for years, as have the Japanese," said Blankenhorn. "The shortcoming of such cement products, obviously, is that they are brittle and break easily. We are trying to develop ways to make cement products stronger and more flexible. I think our research shows that cement products can be made stronger and more flexible if wood fiber is treated before being added to cement to make composites."

Wet Months Wipe Out Drought In Pa.

UNIVERSITY PARK (Centre Co.) — When Yogi Berra said "it ain't over 'til it's over," obviously he wasn't talking about the most recent drought in Pennsylvania, but Bryan Swistock believes he could have been.

The water resources extension specialist in Penn State's College of Agricultural Sciences is reluctant to declare that the state's water worries are over after a four-year dry spell, but he is optimistic. An unusual weather pattern that has driven a series of rainstorms up the East Coast during October and early November is "just what the doctor ordered," he said.

Although three southeastern counties — Cumberland, Delaware, and Chester — remain under a state-declared drought emergency and eight more still are listed under a drought warning, Swistock likes the rainfall trend he sees. Counties in the eastern part of the state have enjoyed rainfall two to nine inches above normal levels this fall.

"Interestingly, almost all our counties now are back to normal levels of precipitation for the year," he said. "Some counties still are under drought emergency or warning because their groundwater levels had fallen so far after four years of exceptionally dry weather. But most of the groundwater deficits have been erased."

Paradoxically, the western half of Pennsylvania has been relatively dry during the last couple months while the eastern half has been soggy. "That is just a reflection of how we have been getting coastal storms that dump rain mostly on the eastern sections," Swistock said. "You almost can draw a line at the front of the Appalachian mountains and west of that line precipitation levels have been slightly below normal for October and early November."

According to Swistock, an interesting precipitation phenomenon has developed this year and he likens it to — for lack of a better example, although it sounds a bit silly for Pennsylvania — monsoons. "Think about it. Most of

our rainfall this year came during two periods — in May-June and October-November. In between, it was so dry that crops withered and wells went dry," he said.

"It's a strange pattern for us here in Pennsylvania. Normally, precipitation levels are more consistent throughout the year, with the amounts not varying too much from month to month. But 2002 has been different."

Still, as Swistock is careful to point out, there is nothing to say that Pennsylvania won't slip back into a dry weather pattern this winter and see drought return next year. Perhaps Berra put it best when he said, "The future just ain't what it used to be."

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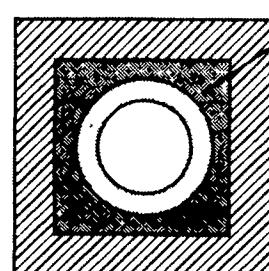
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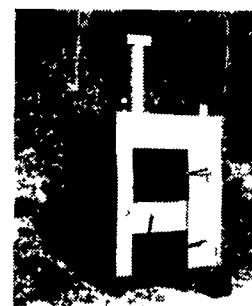
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