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Transcription of A complete harvest: the future of rice as bioenergy, 2013

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Title: A complete harvest: the future of rice as bioenergy
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[00:05 - 00:33] Voiceover: [Music] Over 150 million hectares of rice are being grown worldwide. That would cover roughly half of India. This precious grain feeds over half the world's population, but the grain is only half or less of the plant. The rest is inedible and either burned or left behind. Why add to our waste and pollution when we have the opportunity to convert the inedible part of rice to energy? [optimistic music]

[00:40 - 01:03] Dr. Jan Leach: The long term goal of this project is to improve rice, not only for food purposes that is the grain of the crop, but also to use the waste products or the residues that are produced after crop production for value added traits. So using the stems and the leaves and the hulls, the covers of the grains, for bioenergy purposes.

[01:03 - 01:23] Paul Tanger: The essential question that we're trying to ask is: how genes regulate the inedible parts of the rice plant? The leaves and the stems, we call this the biomass. We need a faster way to measure how these traits are expressed in the field. That's the phenotype. And understanding the link between the gene and the phenotype will help us connect biomass and bioenergy. [♬]

[01:27 - 02:28] Steve Klassen: CSU is helping us to develop this machine. It's really a pilot project at this point, and we're trying to develop the sensors. And so they're looking at mainly the biomass differences in their population of rice that they're growing, and they have a very good understanding of the genetic makeup of all the rice. And so they're trying to associate these genes with biomass. [music] For me, his is a lot of fun. This is really cool. Basically, it's an automated remote sensing platform, and so it has a lot of sensors equipped on a spray boom of a tractor. And these sensors

then can automatically take many different types of measurements. They're measuring things like the height of the canopy, the temperature of the canopy. These are of interest to the physiologist here. And then they're also measuring things like the reflection of colors from the canopy, which tell us a lot about the health, basic things like biomass and other types of physiological measurements. [music]

[02:32 - 02:47] Dr. Hei Leung: [unintelligible] Colorado State.... our colleagues on IRRI, gene bank is one thing that I emphasize a lot. Having that gene bank is like a treasure box, right? The other thing is the way we do big scale experiment.

[02:47 - 02:55] Dr. Jan Leach: I mean, being able to do it at the field level, which we, you know, here we can look at 100 plants, 500 plants. We can't look at thousands.

[02:55 - 03:10] Steve Klassen: Right now, I'm estimating it can analyze at least 50 plots in about a minute. I can analyze massive fields with thousands of plots within a couple hours, in work that would normally take an entire season.

[03:10 - 03:28] Dr. Julius Mojica: IRRI makes interesting crosses, makes interesting populations. And Colorado State University brings quantitative and evolutionary genetic analysis. It allows us to identify genes that are responsible for these agronomically important traits. [♫]

[03:30 - 03:33] Music: Oh... Future.

[03:39 - 04:00] Dr. Jan Leach: What we long for in tomorrow's rice is not only to have increased grain, increased bioenergy traits, but also increased nutrition in the grain itself. And I think that we'll be able to adapt these high phenotyping properties, approaches to that, and making healthy people in the same process. [music outro]

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