

Transcript of C-SPAN Coverage - *Agribusiness in the 21st Century – Putting Earth Science to Work for America*, U.S. Chamber of Commerce, May 20, 2005

(LIAM WESTON)

GOOD AFTERNOON AND WELCOME TO THE CHAMBER OF COMMERCE.

I'VE BEEN REQUESTED TO ASK THAT EVERYBODY PLEASE TURN OFF YOUR CELL PHONES, IF YOU CAN, FOR THE FORUM.

MY NAME IS LIAM WESTON, I'M THE CHAIRMAN OF THE SPACE ENTERPRISE COUNCIL, AND I WORK FOR BALL AEROSPACE AND TECHNOLOGIES CORPORATION.

THE SPACE ENTERPRISE COUNCIL IS COMPRISED OF 20 COMPANIES IN ALL ASPECTS OF SPACE BUSINESS, FROM LAUNCH, EARTH SCIENCES, COMMERCIAL REMOTE SENSING, NATIONAL DEFENSE AND SPACE EXPLORATION.

TODAY THE U.S. CHAMBER OF COMMERCE SPACE ENTERPRISE COUNCIL IS HOSTING AN EXCITING FORUM CALLED AGRIBUSINESS IN THE 21st CENTURY. PUTTING EARTH SCIENCE TO WORK IN AMERICA.

TODAY'S DIALOGUE WILL FOCUS ON HOW AGRIBUSINESS CAN BETTER MEET THE NEEDS FOR FOOD AND FIBER, COPE MORE EFFICIENTLY WITH RAPID CHANGES IN INTERNATIONAL MARKETS, AND REDUCE VULNERABILITIES TO EXTREMES OF WEATHER, CLIMATE AND PESTS.

WE'RE VERY FORTUNATE TO HAVE WITH US HERE TODAY DISTINGUISHED LEADERS FROM ACROSS THE EARTH SCIENCE SPECTRUM.

YOU'LL BE HEARING FROM TOP ADMINISTRATION OFFICIALS REPRESENTING BOTH SCIENCE AND AGRICULTURE COMMUNITIES, AGRIBUSINESS PROFESSIONALS AND THE PRESIDENT AND CEO OF A COMMERCIAL REMOTE SENSING COMPANY.

TO INTRODUCE OUR FIRST SPEAKER, WE'RE HONORED TO HAVE WITH US HERE TODAY THE CHAIRMAN OF THE UNITED STATES SENATE SELECT COMMITTEE ON INTELLIGENCE, WHO IS ALSO A MEMBER OF THE ARMED SERVICES COMMITTEE, THE ETHICS COMMITTEE, AND MORE IMPORTANTLY, THE AGRICULTURE, NUTRITION, AND FORESTRY COMMITTEE OF THE UNITED STATES SENATE.

PLEASE GIVE A WARM WELCOME TO THE DISTINGUISHED SENATOR FROM THE GREAT STATE OF KANSAS, SENATOR PAT ROBERTS.

[APPLAUSE]

(PAT ROBERTS)

WELL, THANK YOU VERY MUCH.

I, UH, I WAS RIDING POINT A WHILE BACK UP IN THE SENATE THAT WE GOT INTO A BOX CANYON, AND SO I THOUGHT MAYBE I'D JUST, YOU KNOW, RIDE DOWN HERE FOR MY BUDDY FROM NEBRASKA.

I LOOKED HERE AT MY SPEECH, AND IT'S NOT THE SAME SPEECH. IT STARTS OFF AND SAID, "WE OUGHT TO AVOID THIS CONSTITUTIONAL CRISIS."

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SO I DON'T KNOW WHAT I'M GOING TO SAY.

WHAT AM I GOING TO DO, MIKE?
I DON'T KNOW WHAT I'M GOING TO DO.

LET ME JUST SAY THAT THE HIGH ROAD OF HUMILITY IS NOT OFTEN BOTHERED BY HEAVY TRAFFIC IN WASHINGTON, ESPECIALLY ON A RAINY AFTERNOON.

BUT IT IS A HUMBLING EXPERIENCE AND A PRIVILEGE AND HONOR TO INTRODUCE YOUR NEXT SPEAKER.

AND THANK YOU, LIAM, FOR THAT VERY KIND INTRODUCTION.

AND I DO REALLY APPRECIATE THE U.S. CHAMBER TO ASK A U.S. SENATOR TO PARTICIPATE IN THIS SUMMIT ON AGRIBUSINESS.

I'M THE WARM-UP ACT.
SORT OF LIKE THE JUGGLER BEFORE GARTH BROOKS, OR SOMETHING LIKE THAT.

AND THE GOOD NEWS IS THAT I LEAVE, SO YOU'RE SPARED A SPEECH BY A SENATOR, WHICH COULD GO ON INTERMINABLY-- ESPECIALLY, YOU KNOW, DURING THESE DAYS-- AND YOU GET TO THE PERSON THAT YOU WANT TO HEAR.

AND I'M VERY HAPPY TO BE HERE WITH THE VICE ADMIRAL, AS WELL, IN SUPPORT OF THE GROWING AND VITAL PARTNERSHIP BETWEEN AGRICULTURE AND SCIENCE.
AND WE ARE AT A CROSSROADS.

WE'RE AT THE CUSP OF CHANGE.

WE'RE ALWAYS AT THE CUSP OF CHANGE, AND I GUESS WE'RE ALWAYS AT A CROSSROADS, BUT IN REGARDS TO AGRICULTURE AND SCIENCE, CERTAINLY THAT'S WHERE THE ACTION IS.

SO I HAVE THE REAL PLEASURE OF INTRODUCING A GOOD FRIEND AND THE SECRETARY-- OR AS WE CALL IT IN DODGE CITY, KANSAS, WHERE I'M FROM, THE STAGECOACH DRIVER.

AND I'VE BEEN RIDING SHOTGUN WITH HIM FOR A WHILE SINCE HE'S COME TO WASHINGTON.

AND HE'S BEEN RIDING POINT DOWN AT THE USDA.

AND I JUST TOLD MIKE, I SAID, "MIKE, IT'S A GOOD THING IF YOU'RE RIDING AT THE HEAD OF THE HERD, YOU WANT TO CHECK BACK EVERY ONCE IN A WHILE, TO WANT TO MAKE SURE THAT THEY'RE THERE."

AND I CAN TELL YOU, JUDGING FROM ALL THE COMMENTS THAT I'VE HEARD FROM THE USDA-- WE HAVE OUR 007 PEOPLE THERE THAT WE CHECK ALL THE TIME FROM THE INTELLIGENCE COMMITTEE-- BOY, ARE THEY PROUD OF YOU. IN YOUR SHORT TENURE, YOU HAVE REALLY PROVED TO BE AN OUTSTANDING SECRETARY.

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SINCE TAKING OFFICE JUST A FEW MONTHS AGO, WHY, THE SECRETARY HAS PROVED THAT HE'S NOT ONLY ENTHUSIASTIC, BUT OBVIOUSLY WELL QUALIFIED FOR THE TASK OF SERVING AS A LEADER FOR AMERICAN AGRICULTURE. AND WE NEED A STRONG LEADER.

HE HAS UNMATCHED PASSION FOR HIS JOB.
HE CAME IN TO VISIT WITH ME WITH A COURTESY CALL.
HE HAD HIS BASICALLY HIS PASSPORT TO COME FROM NEBRASKA DOWN TO KANSAS.

AND HE WAS WEARING A BIG RED TIE, SO I KNEW THAT-- IS THAT PURPLE THAT YOU'VE GOT ON?

HOW ABOUT THAT?

(MIKE)
THIS IS DIFFERENT.

(PAT ROBERTS)
OH, THIS IS DIFFERENT, OKAY.
PURPLE IS KANSAS STATE'S COLOR, SO WE HAVE TO SORT OF EXPLAIN THESE THINGS TO YOU.

BUT AT ANY RATE, I SAID, "WHY DO YOU WANT TO DO THIS?"

AND HE SAID, "I THINK THIS WOULD BE THE HIGHEST CALLING THAT I COULD IMAGINE, THAT IF I COULD DO THE JOB THE WAY I WANT TO DO IT, AND WORK WITH OUR FARMERS AND RANCHERS AND EVERYBODY ELSE CONNECTED WITH AGRICULTURE, I CAN'T THINK OF A FINER JOB TO DO."

AND I SAID, "BOY, THIS GUY--" I CHECKED HIS PULSE, HE WAS OKAY.
AND I SAID, "BOY, HAVE WE GOT A GOOD NOMINEE."

SO, IF WE WANT TO INSURE THAT AMERICA CONTINUES TO LEAD THE WORLD IN AGRICULTURE QUALITY, AND SAFETY AND INNOVATION, THEN WE'VE GOT THE RIGHT MAN FOR THE JOB.

NOW MIKE AND I WENT OUT TO KANSAS, AND WE TALKED TO ABOUT 50, 60-- THAT WAS A POLITICIAN'S COUNT, THERE WAS ACTUALLY ABOUT 45.

BUT AT ANY RATE OF OUR FARMERS AND RANCHERS AND OUR FARM ORGANIZATIONS AND OUR COMMODITY GROUPS.

AND WE DISCUSSED EVERYTHING FROM FOOD SECURITY TO INTERNATIONAL TRADE AND THE FUTURE COMPETITIVENESS OF AMERICAN AGRICULTURE, AND WHAT WAS ON THEIR MINDS.

THIS MEETING AND HIS PLANS TO HOLD SIMILAR MEETINGS ALL THROUGHOUT FARM COUNTRY, IT SEEMS TO ME, SIGNIFIES HE'S NOT ONLY EAGER BUT WILLING TO GIVE AND TAKE ADVICE WHEN IT COMES TO FARM POLICY.

BASICALLY, WHEN HE CAME IN HE SAID, "WHAT WOULD YOU DO IF YOU WERE SECRETARY OF AGRICULTURE?"

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AND I SAID, "I'D PROBABLY RESIGN."

BUT AT ANY RATE, AFTER THAT I SAID, "YOU KNOW, I WOULD GO TO EVERY COMMODITY REGION, AND I WOULD SIT ON A WAGON TUG AND I WOULD LISTEN TO OUR FARMERS AND RANCHERS."

AND IT'S BEEN A WHILE SINCE WE'VE HAD THAT IN THE DEPARTMENT OF AGRICULTURE.

AND SO HE SAID, "THAT'S EXACTLY WHAT I WANT TO DO."

AND THAT'S WHAT HE DID IN KANSAS.

AND OUR KANSAS FARMERS AND RANCHERS-- AND THAT'S A TOUGH ACT TO IMPRESS-- WERE ESPECIALLY IMPRESSED WHEN THEIR SENATOR COULD NOT ASK TWO OR THREE QUESTIONS AND HAD TO ASK FOR STAFF. BUT HE HAD BONED UP ON EVERY ONE OF THEM AND KNEW THE ANSWER, OR AT LEAST KNEW WHAT THE TOPIC WAS, AND AT LEAST KNEW WHAT THE PROS AND CONS WERE. SO HE DID QUITE A JOB OUT THERE.

NOW, THIS ISN'T JUST ME TALKING. JIM WEISEYER, WHO PUTS OUT AGWEB.COM-- AND I'M NOT GETTING PAID FOR THAT-- HE IS THE PERSON WHO SHINES THE LIGHT OF TRUTH INTO DARKNESS INREGARDS TO AGRICULTURE PROGRAM POLICY FROM TIME TO TIME. AND WHAT I SAY WHEN I'M A SENATOR, I ALWAYS SAY TO MY CONSTITUENTS, "BE CAREFUL WHAT YOU ASK FOR."

WITH THIS GENTLEMAN NOW IS NOW FAMOUS FOR IS, "WHAT DO I MEAN BY THAT?" WHEN HE TALKS TO AG GROUPS OR WHEN HE TALKS TO PEOPLE LIKE YOURSELF OR ANY SYMPOSIUM OR ANYBODY INTERESTED IN AGRICULTURE.

AND THAT'S WHAT I'M QUOTING HERE, IS A PHRASE THAT THE USDA SECRETARY MIKE JOHANS USED SEVERAL TIMES ON TUESDAY WHEN EXPLAINING THE IMPACTS OF THE CONTINUED PARTIAL CLOSURE OF THE U.S./CANADA BORDER.

A COMPLETE CLOSURE WHEN IT COMES TO THE CANADIAN CATTLE SHIPMENTS TO THE UNITED STATES.

JOHAN SHOWED HE'S AN EFFECTIVE COMMUNICATOR. WHEN MAKING CLEAR, HE GETS HIS MESSAGE UNDERSTOOD. IT DOESN'T TAKE MANY SPEECHES IN FARM COUNTRY TO KNOW WHAT THE AG SECTOR WANTS ABOUT A SPEAKER IN REGARDS TO WASHINGTON ISSUES, ESPECIALLY FARM AND TRADE POLICY.

I.E. TO DISSECT IT INTO PLAIN ENGLISH.

JOHANNAS HAS THUS FAR SHOWN THE KNACK OF DOING JUST THAT, AS HIS PERFORMANCE IN UTAH PROVED.

NOW, I TELL YOU WHAT.

WHEN YOU'RE SITTING DOWN WITH FARMERS AND RANCHERS, OR A PARTICULAR GROUP IN AGRICULTURE, OR A PARTICULAR GROUP ANYWHERE IN THIS TOWN THAT WANTS SOMETHING, AND YOU HAVE THE COURAGE AND THE COMMITMENT,

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BASICALLY, TO TELL THEM MAYBE NOT WHAT THEY WANT TO HEAR, BUT WHAT THEY SHOULD HEAR, THAT'S CALLED LEADERSHIP. AND THAT'S WHAT THAT MAN, THIS MAN OVER HERE, MY GOOD FRIEND, HAS BROUGHT TO THE DEPARTMENT OF AGRICULTURE.

SO, BASICALLY, WITH THE INCREASING CHALLENGES, INCLUDING THE THREAT OF BIOTERRORISM, THE DEVELOPMENT OF ALTERNATE ENERGY SOURCES FROM AGRICULTURE PRODUCTS, THE PROTECTION FROM EVOLVING PLANT AND ANIMAL DISEASES, OUR COMPETITION IN FOREIGN MARKETS, AND PROVIDING AN AMPLE, SAFE AND NUTRITIOUS FOOD SUPPLY ON A DECREASING AMOUNT OF LAND EACH YEAR, NOW MORE THAN EVER, WE MUST CAPITALIZE ON THE RELATIONSHIP BETWEEN FARMERS AND RANCHERS AND RESEARCH AND SCIENCE. AND WE MUST HAVE SOMEBODY TO LEAD THAT CHARGE.

I AM CONFIDENT THAT WE HAVE FOUND THE RIGHT MAN AT THE RIGHT TIME EXACTLY FOR THAT POSITION.

PLEASE JOIN ME IN WELCOMING OUR AGRICULTURE SECRETARY, MIKE JOHANNIS.

[APPLAUSE]

(MIKE JOHANNIS)

WELL, I SAID TO THE SENATOR, FIRST AND FOREMOST, THANKS. THAT WAS VERY, VERY GENEROUS, AND I APPRECIATE IT.

WE HAVE, WE HAVE A MUTUAL ADMIRATION SOCIETY.

I MET THE SENATOR, SENATOR ROBERTS HERE WHEN I FIRST CAME TO WASHINGTON I'D JUST BEEN NOMINATED. AND I KNEW AFTER I SPENT FIVE MINUTES WITH HIM THAT WERE GOING TO HIT IT OFF VERY WELL.

THE SENATOR HAS THE RIGHT BLEND OF COMMON SENSE AND EXPERIENCE AND BACKGROUND TO DO A GREAT JOB.

I'LL TELL YOU, ONE OF THE MOST EXCITING THINGS THOUGH THAT I'VE DONE SINCE I TOOK THIS JOB WAS TO GO TO YOUR STATE, KANSAS.

WE HAD A GREAT DAY TOGETHER.

WE HAD A TOWN HALL MEETING, THEN WE WENT AND TALKED TO SOME MEDIA.

THE SENATOR ASKED TO GO ALONG, AND I TOLD SOMEBODY IN MY OFFICE THAT THE SENATOR KNOWS THAT WE HAD DONE THAT.

AND HE SAID, "YOU KNOW, IT'S NOT FAIR THAT THE TWO OF YOU PICK ON THE MEDIA AT THE SAME TIME."

SO, IT IS GREAT TO BE HERE.

AND I WANT TO SAY THANKS FOR THE KIND INTRODUCTION.

IF I MIGHT ALSO RECOGNIZE ADMIRAL LAUTENBACHER.

WE ALSO HAVE SOME EXPERIENCE TOGETHER.

WE WORKED ON SOME ISSUES RELATIVE TO DROUGHT POLICY WHEN I WAS A GOVERNOR, AND I WAS ONE OF THE CO-LEADS FOR THE WESTERN GOVERNORS' ASSOCIATION.

THE ADMIRAL WAS KIND OF A KNIGHT IN SHINING ARMOR. KIND OF SHOWED UP AT A TIME WHEN WE NEEDED SOME HELP HERE, AND WE WORKED TOGETHER AND COLLABORATED, AND PUT OUT A DOCUMENT TOGETHER THAT WE RELEASED ABOUT A YEAR AGO. AND I ALWAYS APPRECIATED THAT. AND ADMIRAL, IT'S GOOD TO BE HERE. SO THANK YOU FOR THE OPPORTUNITY TO VISIT WITH THESE FOLKS.

I'M GOING TO TALK A LITTLE BIT ABOUT WHAT YOU'RE DOING TODAY, OFFER SOME THOUGHTS. AND THEN I'M GOING TO SLIP OUT TO GET TO SOME MEETINGS AT THE WHITE HOUSE.

I PROBABLY DON'T HAVE TO TELL THE PEOPLE IN THIS ROOM HOW A SUCCESSFUL GLOBAL EARTH OBSERVATION SYSTEM CAN CHANGE LIVES.

PROBABLY, I DON'T NEED TO DO THAT.

AND I PROBABLY DON'T NEED TO TELL YOU THAT THAT SYSTEM CAN HAVE AN IMPACT ON A WORLDWIDE BASIS.

BUT THE POWER OF THIS IDEA IS VERY DEFINITELY WORTH TAKING SOME TIME AND BEING REMINDED OF.

TODAY I LEFT MY HOUSE KNOWING THAT I WAS GOING TO NEED MY UMBRELLA.

I KNEW THAT BECAUSE THE LOCAL METEOROLOGIST SAID, "YOU'RE GOING TO NEED THE UMBRELLA."

I DIDN'T EVEN THINK ABOUT IT.

HE SAID RAIN.
RAIN'S GOING TO COME.

SO I TOOK THE UMBRELLA OUT, AND HAVE USED IT A COUPLE OF TIMES TODAY.

FOR ME, IT WAS SIMPLE.

EXCEPT IN REALITY, IT REALLY ISN'T THAT SIMPLE, IS IT?

ACCURATE WEATHER FORECASTING IS A VERY, VERY COMPLEX SCIENCE.

BUT LIKE SO MANY SCIENTIFIC AND TECHNOLOGICAL ADVANCES, WE'VE GROWN USED TO IT. WE ASSUME ITS ACCURACY.

IT HAS ALWAYS BEEN A FREE CONVENIENCE, A NORMAL PART OF OUR LIVES, SO WE DON'T EVEN THINK ABOUT THE ADVENT OF THAT TECHNOLOGY AND WHAT A DIFFERENCE IT HAS MADE.

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WE DON'T THINK ABOUT HOW OUR LIVES ARE MADE EASIER BY THE SEEMINGLY SIMPLE FACT OF KNOWING AHEAD WHAT THE WEATHER IS GOING TO BE LIKE, RAIN OR SHINE.

WE DON'T THINK ABOUT HOW FARMERS AND RANCHERS, WHO PROVIDE US WITH OUR FOOD, EVERY SINGLE DAY PLAN THEIR DAYS AND THEIR MONTHS BASED UPON THIS RELATIVELY NEW SCIENCE AND TECHNOLOGY.

AND MOST OF US CERTAINLY DON'T THINK ABOUT WHERE THE TECHNOLOGY WILL TAKE US NEXT.

BUT THERE IS A NEXT STEP, AND I WOULD SUGGEST IT'S A VERY BIG ONE.

THE NEXT STEP IS GLOBAL EARTH OBSERVATION.

AND IT WILL REVOLUTIONIZE NOT ONLY CLIMATE PREDICTION, BUT IT WILL REVOLUTIONIZE OUR UNDERSTANDING OF THIS ENTIRE PLANET.

COMPARED TO ONLY A FEW SHORT DECADES AGO, WHEN I WAS GROWING UP ON THAT DAIRY FARM IN IOWA, OUR KNOWLEDGE ABOUT THE CLIMATE, ABOUT POLLUTION, ABOUT THE CAUSES OF DROUGHT, ABOUT FLOOD, IT WASN'T VERY REMARKABLE.

TODAY, WE CAN SAY THAT WE'VE MADE GREAT ADVANCES, BUT I WOULD SUGGEST TO YOU THAT WE'VE ONLY SCRATCHED THE SURFACE.

THE EARTH IS AN UNBELIEVABLY COMPLEX PLACE.

I'M TOLD FACTORS AFFECT OUR ENVIRONMENT IN OUR ECOSYSTEM EVERY DAY.

WE MEASURE MANY OF THESE FACTORS.

WE DO IT THROUGH THE 100,000 GROUND-BASED INSTRUMENTS ACROSS THE GLOBE...100,000.

AND THE 50 ENVIRONMENTAL SATELLITES THAT ARE ORBITING OUR PLANET.

BUT ALTHOUGH THOSE MEASURING STATIONS GATHER A WEALTH OF DATA ON ANY PARTICULAR AREA, THEY DON'T REALLY TALK TO EACH OTHER. AND NEITHER DO MANY OF THE ORGANIZATIONS AND GOVERNMENTS THAT ARE RESPONSIBLE FOR COLLECTING THAT DATA.

THE STRAIGHTFORWARD TRUTH IS THIS, WE CANNOT BEGIN TO UNDERSTAND THE COMPLEXITY OF THE WORLDWIDE SYSTEMS IF WE DO NOT HAVE ACCESS TO THE DATA THAT IS COLLECTED WORLDWIDE.

IN OTHER WORDS, WE CAN'T PREDICT THE NEXT DROUGHT IN EUROPE FROM A WEATHER REPORT IN CINCINNATI.

IF WE ARE COLLECTING DATA WORLDWIDE, AND IF WE WANT TO UNDERSTAND WORLDWIDE IMPLICATIONS AND SYSTEMS, WE NEED A WORLDWIDE REPOSITORY OF THAT DATA.

AND THAT IS EXACTLY WHAT WE'RE GOING TO BUILD TOGETHER.

TOGETHER.

THOSE WHO KNEW ME WHEN I WAS GOVERNOR OF NEBRASKA AND WHO KNOW ME NOW AS SECRETARY OF AGRICULTURE, KNOW THAT I TALK FREQUENTLY ABOUT THE POWER OF PARTNERSHIP.

PARTNERSHIPS ARE EXTREMELY VITAL TO OUR SUCCESS AT THE USDA BECAUSE THEY ALLOW US TO DO MORE, ESPECIALLY IN THESE TIMES OF LESS.

THEY'RE FORCE MULTIPLIERS.

BUT PARTNERSHIPS ARE EVEN MORE IMPORTANT TO A SUCCESSFUL GLOBAL EARTH OBSERVATION SYSTEM BECAUSE BY DEFINITION, THIS SYSTEM MUST INCLUDE THE RESOURCES OF MANY NATIONS, AND MANY INDEPENDENT PARTNERS WITHIN EACH NATION. IN OTHER WORDS, BY DEFINITION, IT'S NOT POSSIBLE TO DO THIS ALONE. WE CANNOT DO IT ALONE.

THAT'S WHY LAST FEBRUARY'S AGREEMENT BETWEEN NO LESS THAN 61 NATIONS AND 40 INTERNATIONAL ORGANIZATIONS WAS SO HUGE.

IT MEANS THAT THERE'S A REAL UNDERSTANDING ACROSS THE GLOBE OF THE VALUE OF GLOBAL EARTH OBSERVATIONS, AND A COMMITMENT TO MAKE THIS SYSTEM A REALITY.

THE BENEFITS OF A GLOBAL EARTH OBSERVATION SYSTEM WOULD REACH EVERY PART OF OUR LIVES.

AS REMARKABLE AS OUR ABILITY TO PREDICT LOCAL WEATHER WOULD SEEM TO SOMEONE LIVING 100 YEARS AGO, OR EVEN 50, THAT IS HOW AMAZING THE FUTURE OF GLOBAL EARTH OBSERVATION WILL SEEM TO US WHEN WE TAKE ADVANTAGE OF IT.

EVEN NOW, AS WE ARE JUST BEGINNING TO IMPLEMENT THE SYSTEM, WE CAN PREDICT TREMENDOUS BENEFIT.

A GREATER UNDERSTANDING OF THE EARTH WILL ALLOW US TO IMPROVE WEATHER FORECASTING, REDUCE LOSS OF LIFE AND PROPERTY FROM DISASTERS, PROTECT AND MONITOR OUR OCEAN RESOURCES, UNDERSTAND CLIMATE CHANGE AND ITS IMPLICATIONS, MONITOR WATER AND ENERGY RESOURCES, MAKE ECOLOGICAL FORECASTS AND BETTER UNDERSTAND HOW ENVIRONMENTAL FACTORS AFFECT OUR HEALTH AND OUR WELL-BEING. AND SUPPORT STRONG, SUSTAINABLE AGRICULTURE WHILE REDUCING LAND DEGRADATION.

THAT LAST POINT, OF COURSE, IS OF SPECIAL INTEREST TO ME.

SUSTAINABLE LAND USE AND THE PREVENTION OF LAND DEGRADATION, THEY'RE ABSOLUTELY VITAL TO THE HEALTH OF AGRICULTURE NOT JUST HERE IN AMERICA, BUT AROUND THIS WORLD.

AND A HEALTHY AG SECTOR MEANS A HEALTHY ECONOMY, NOT TO MENTION HEALTHY PEOPLE.

THINK ABOUT WHAT A GLOBAL EARTH OBSERVATION SYSTEM WOULD MEAN TO FARMERS AND RANCHERS. AND FOR THAT MATTER, THE ENTIRE AG SECTOR.

FOR EXAMPLE, GOING BACK TO MY EARLIER EXAMPLE OF LOCAL WEATHER PREDICTION.

WHAT IF WE COULD PREDICT NOT JUST NEXT DAY'S OR NEXT WEEK'S WEATHER, BUT THE NEXT SEASON, OR THE YEAR AFTER THAT?

IMAGINE THE BENEFITS AS FARMERS COULD PLAN AHEAD MORE PRECISELY, MAXIMIZING THEIR RESOURCES, AND THEREFORE THEIR OUTPUT.

WHAT IF WE COULD BETTER UNDERSTAND AND PREDICT DROUGHT AND FLOOD SEASONS YEARS IN ADVANCE, AND ADJUST OUR PLANS AND OUR RESPONSES ACCORDINGLY?

TODAY, EARTH OBSERVATIONS ARE USED WIDELY TO ACCESS PRODUCTION AND RESOURCES CONDITIONS AT A POINT IN TIME, BUT THERE'S A NEED TO MOVE BEYOND THAT SNAPSHOT.

WE USE THOSE MEASUREMENTS IN A VARIETY OF WAYS.

FOR EXAMPLE, ONE OF THE USDA'S MOST PRODUCTIVE INTERAGENCY COLLABORATIONS IS ITS JOINT WORK WITH NASA ON A SERIES OF EARTH SCIENCE ISSUES RANGING FROM INVASIVE SPECIES AND AIR QUALITY TO WATER AND TO CARBON MANAGEMENT.

THAT PROJECT DEPENDS ON LOCALIZED EARTH OBSERVATIONS.

BUT BY COMBINING THOSE KINDS OF MEASUREMENTS FROM AROUND THE WORLD, AND THEN INCORPORATING THEM INTO MODELS THAT CAN BE USED TO PREDICT YIELD OR STATUS OF RESOURCES AS A CONSEQUENCE OF FUTURE CLIMATE, MANAGEMENT AND OTHER FACTORS, WE CAN MAKE AN ENORMOUS, AN ENORMOUS STEP FORWARD IN OUR EFFORTS TO ENSURE FOOD SECURITY, MARKETPLACE COMPETITIVES, PRODUCTION EFFICIENCY, AND IMPROVED RISK MANAGEMENT.

IN FACT, LET ME MAKE A PREDICTION.

RIGHT NOW, THESE NEW OBSERVATIONAL AND PREDICTIVE ABILITIES WON'T JUST CHANGE HOW WE PRODUCE FOOD AND FIBER, THEY WILL REVOLUTIONIZE IT.

THE HISTORY OF AGRICULTURE TEACHES US ALL WE NEED TO KNOW ABOUT THE BENEFITS OF NEW SCIENCE AND TECHNOLOGY, AND WE NEED A BETTER UNDERSTANDING OF THE WORLD AROUND US.

THERE WAS A TIME FARMERS AND RANCHERS PROVIDED THEIR PRODUCT ONLY TO THE NEAREST TOWN OR VILLAGE.

KIND OF DESCRIBES MY EARLY YEARS ON THE FARM.

THEN CAME THE METHODS BY WHICH WE MOVED PRODUCTS WORLDWIDE, ACROSS THIS NATION, TOO.

AND ALL OF A SUDDEN AGRICULTURE CHANGED.

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OCEAN LINERS, AIRPLANE TRAVEL, OVERNIGHT TRAVEL, INSTANTANEOUS COMMUNICATION.

IT MIGHT BE A CLICHE, BUT THE TRUTH IS THAT ADVANCES WE COULD ONLY HAVE DREAMED ABOUT JUST A FEW DECADES AGO ARE NOW CHANGING OUR WORLD. CHANGING THE WAY WE PRODUCE, PROCESS AND SELL OUR AG PRODUCTS.

THE CHANGES ARE OCCURRING SO LIGHTNING FAST THAT IT'S EASY TO FORGET HOW REVOLUTIONARY THOSE CHANGES ARE.

COMPUTERS TO PLOT LAND USAGE, THAT'S OLD NEWS.

GPS UNITS IN FARM EQUIPMENT?

THAT WAS YESTERDAY'S HEADLINES.

BUYING AND SELLING PRODUCTS ON THE INTERNET?

WE'VE BEEN THERE, WE'VE DONE THAT.

THE FACT THAT THESE ONCE MIRACULOUS TECHNOLOGIES ARE BECOMING SO COMMONPLACE IS A SIGN OF HOW COMPLETELY THEY HAVE CHANGED OUR LIVES.

BUT IT IS USEFUL TO REMEMBER HOW FAR THEY HAVE ALLOWED US TO COME TODAY.

RIGHT NOW, HERE IN THE UNITED STATES, OUR FARMERS AND OUR RANCHERS ARE UTILIZING NEW SCIENCE AND NEW TECHNOLOGY TO BECOME MORE PRODUCTIVE THAN THEY HAVE EVER BEEN BEFORE.

THIS YEAR, AMERICAN FARMERS PRODUCED NEARLY 12 BILLION BUSHEL OF CORN, OVER THREE MILLION BUSHEL OF SOYBEANS, MORE THAN TWO MILLION BUSHEL OF WHEAT, 23 MILLION BALES OF COTTON.

THEY DID ALL OF THIS ON 230 MILLION ACRES OF CROPLAND.

NOW, IF YOU WANTED TO MATCH THAT OUTPUT WITH THE SAME CROP YIELDS OF EARLY 1970s--MY COLLEGE YEARS--WE WOULD HAVE HAD TO PLANT OVER 50 MILLION ACRES OF CORN, 40 MILLION ACRES OF SOYBEANS, 20 MILLION MORE ACRES OF WHEAT AND 9 MILLION MORE ACRES OF COTTON.

THAT'S 122 MILLION ADDITIONAL ACRES OF FARMLAND, JUST TO MATCH THIS YEAR'S PRODUCTION.

WHAT HAS-- WHY HAS PRODUCTIVITY SHOT UP LIKE THIS IN THE LAST 30 YEARS?

WELL, WE KNOW SOME THINGS FOR CERTAIN.

THE WEATHER, IT REALLY HASN'T CHANGED. WE GO THROUGH CYCLES.

THE SOIL, IT'S STILL SOIL.

IT IS WE WHO HAVE CHANGED THE EQUATION.

WE WHO HAVE CHANGED THE EQUATION WITH NEW EQUIPMENT, NEW STRAINS OF CROPS AND LIVESTOCK, AND A GREATER UNDERSTANDING OF THE SCIENCE OF AGRICULTURE AND A GREATER UNDERSTANDING OF OUR EARTH.

NOW, LADIES AND GENTLEMEN, WE HAVE THE OPPORTUNITY TO EXPAND THAT UNDERSTANDING EVEN FURTHER, AND WE CANNOT LET THIS OPPORTUNITY PASS US BY.

AND LET'S NOT LIMIT THE BENEFITS OF GLOBAL EARTH OBSERVATIONS TO PRODUCTION INCREASES.

ONE OF THE REMARKABLE CHANGES OCCURRING IN AGRICULTURE IN AMERICA TODAY IS THAT THE FEDERAL GOVERNMENT IS WORKING WITH FARMERS AND RANCHERS TO HELP THEM CONSERVE NATURAL RESOURCES ON THEIR OWN LAND. AND THAT'S A FAIRLY NEW APPROACH TO CONSERVATION.

IT WAS NOT SO LONG AGO, IT SEEMED THAT THOSE WHO MADE A LIVING OFF THE LAND WERE LOCKED IN A STRUGGLE WITH THOSE WHO WANTED TO PRESERVE NATURAL RESOURCES.

BUT WE BELIEVE THAT THOSE WHO DEPEND ON THE LAND TO MAKE A LIVING ARE THE BEST STEWARDS OF THE LAND.

AND TODAY, THERE'S CONSENSUS THAT CONSERVATION AND ECONOMIC SUCCESS DON'T HAVE TO BE MUTUALLY EXCLUSIVE.

IT IS A VISION OF COOPERATIVE CONSERVATION WORKING TOGETHER, AND NOT AGAINST PRODUCERS.

THAT'S A CHANGE IN ATTITUDE, BUT IT'S ALSO A CHANGE BUOYED BY SCIENCE.

GLOBAL EARTH OBSERVATIONS WILL BRING TO US A GREATER UNDERSTANDING OF HOW AGRICULTURE AFFECTS THE LAND AND THE ENVIRONMENT.

COMBINED WITH OUR NEW COOPERATIVE APPROACH TO CONSERVATION, THAT NEW KNOWLEDGE MAY VERY WELL OFFER TREMENDOUS OPPORTUNITY.

AFTER ALL, WHAT IF FARMERS AND RANCHERS CAN PRODUCE MORE, PROFIT MORE, AND CONSERVE MORE ALL AT ONCE?

THINK ABOUT THE BENEFITS NOT JUST TODAY, BUT FOR OUR FUTURE GENERATIONS.

AND IT IS NOT IMPOSSIBLE.

AND IT'S NOT A CRAZY DREAM.

WE CAN MAKE IT HAPPEN.

YOU CAN MAKE IT HAPPEN BY CONTINUING YOUR EFFORTS IN THIS ARENA.

AND WE CAN TAKE IT EVEN A STEP FURTHER, I WOULD SUGGEST.

RIGHT NOW, USDA FOREST SERVICE EMPLOYEES SOMEWHERE ARE WORKING ON WAYS TO PREVENT CATASTROPHIC FOREST FIRES AND INFESTATIONS BY PESTS AND INVASIVE SPECIES.

IN 2004, THE FIRST YEAR UNDER AN IMPORTANT BILL CALLED THE HEALTHY FOREST RESTORATION ACT, USDA AND THE DEPARTMENT OF INTERIOR TOGETHER TREATED A RECORD 4.2 MILLION ACRES OF LAND-- AN INCREASE OF 1.6 MILLION ACRES OVER THE PREVIOUS YEAR'S TOTAL.

FROM 2001 TO 2004, FEDERAL LAND MANAGEMENT AGENCIES HAVE TREATED HAZARDOUS FUELS ON 11 MILLION ACRES OF PUBLIC LANDS, AND WE EXPECT THAT NUMBER TO BE 15 MILLION IN 2005.

THAT IS REMARKABLE PROGRESS, AND I'M PROUD OF OUR EMPLOYEES AND THANKFUL FOR PRESIDENT BUSH'S HEALTHY FOREST INITIATIVE. IT ALLOWS US TO MOVE FORWARD.

BUT THE PROMISE OF GLOBAL EARTH OBSERVATIONS CAN TAKE OUR EFFORTS FURTHER.

ONGOING MONITORING WILL DETECT THE PROGRESS OF RECOVERY FROM EPISODIC AND SEVERE WEATHER, OVERUSE, PEST INFESTATION.

NOW PREDICTIVE MODELS WILL HELP PINPOINT AREAS OF CONCERN, MOST IMPORTANTLY, BEFORE IT'S TOO LATE.

AND A GREATER UNDERSTANDING OF THE CAUSES OF FIRE AND INFESTATION WHICH ARE, AFTER ALL, ONE PART OF OUR COMPLEX GLOBAL SYSTEM WILL YIELD TO US NEW INNOVATIVE IDEAS FOR COMBATING THESE DISASTERS AT THERE VERY SOURCES.

THAT GREATER UNDERSTANDING OF NATURAL, NONNATURAL DISASTERS, OF AGRICULTURE, OF CLIMATE OF OUR PLANET IS REALLY WHAT THIS IS ALL ABOUT.

I TRULY BELIEVE THAT WE HAVE ONLY SCRATCHED THE SURFACE WHEN COMES TO UNDERSTANDING THE PLANET WE OCCUPY.

IT MIGHT NOT BE LITERALLY TRUE THAT A BUTTERFLY FLAPPING ITS WINGS IN NEW YORK CAN CAUSE THE TYPHOON ON THE OTHER SIDE OF THE WORLD, BUT THE IDEA IS THE ACCURATE IDEA.

THE EARTH'S OWN SYSTEMS ARE BOTH COMPLEX AND THEY ARE INTERCONNECTED.

THEY AFFECT EACH OTHER IN MILLIONS OF WAYS, THAT QUITE HONESTLY WE DON'T FULLY UNDERSTAND.

AND LET US BE HONEST, THE TIME WHEN WE COMPLETELY UNDERSTAND THESE UNTOLD CONSTANTLY CHANGING RELATIONSHIPS MAY BE OUT THERE A LONG WAY, BUT WE CAN TAKE A HUGE STEP IN THE RIGHT DIRECTION BY MOVING FORWARD ON THE GLOBAL EARTH OBSERVATION SYSTEM. AND WE WILL.

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THE UNPRECEDENTED COOPERATION AND ENTHUSIASM FOR THIS PROJECT ACROSS THE WORLD IS A POSITIVE SIGNAL.

IT IS A SIGNAL THAT PEOPLE EVERYWHERE UNDERSTAND.

WE VALUE THE KNOWLEDGE WE WILL GAIN.

IT IS A FACT OF HISTORY, THE MORE WE UNDERSTAND ABOUT THE WORLD AROUND US, THE MORE WE CAN IMPROVE THE WORLD, AND OUR OWN LIVES.

THE MORE PEOPLE WE CAN FEED.

THE MORE NATURAL RESOURCES WE CAN PROTECT.

THE MORE DISEASES WE CAN COMBAT.

THE MORE LIVES WE CAN SAVE FROM DISASTER.

THESE ARE NOT TRIVIAL GOALS.

THESE ARE WORLD-CHANGING GOALS.

PROGRESS JUST DOESN'T HAPPEN BY ITSELF.

IT'S THE RESULT OF BIG IDEAS, HARD WORK AND COOPERATION.

THIS SYSTEM IS A BIG IDEA, SO NOW IT'S TIME FOR THE HARD WORK, AND IT'S TIME FOR THE COOPERATION.

WE HAVE THE POWER TO CREATE THIS TREMENDOUS WORLD-CHANGING, LIFE-CHANGING TOOL, AND I BELIEVE, I BELIEVE FIRMLY WE WILL.

AND IN DOING SO, WE WILL CREATE A BETTER WORLD FOR OURSELVES, AND OUR CHILDREN, AND OUR GRANDCHILDREN.

THANK YOU, EVERYONE, FOR YOUR EFFORTS.

GOD BLESS YOU.

[APPLAUSE]

(LIAM WESTON)

OUR NEXT SPEAKER HAS BEEN THE UNDER SECRETARY OF COMMERCE FOR OCEANS AND ATMOSPHERES SINCE DECEMBER OF 2001.

HE IS THE ADMINISTRATOR OF NOAA, THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.

AND EARLY IN HIS TERM AFTER BEING APPOINTED TO THIS POSITION, HE REFERRED TO IT AS THE RODNEY DANGERFIELD-TYPE POSITION IN THE U.S. GOVERNMENT.

BECAUSE NOAA HAS RESPONSIBILITY FOR ALL OPERATIONAL SATELLITES OF THE U.S. GOVERNMENT THAT ARE CIVILIAN, BUT HADN'T ACQUIRED THE

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PUBLIC RESPECT OR RECOGNITION COMMENSURATE WITH THE HIGH LEVEL OF RESPONSIBILITY.

TODAY, ADMIRAL, I THINK THINGS ARE DIFFERENT.

EVEN IN AN ABBREVIATED REVIEW OF HIS RESUME ALSO DEMONSTRATES THAT HE HAS NOTHING IN COMMON WITH THE LATE COMEDIAN.

VICE ADMIRAL LAUTENBACHER'S COMMAND EXPERIENCE INCLUDES TOURS AS COMMANDING OFFICER OF THE U.S.S. HEWITT, COMMANDER OF THE NAVAL STATION NORFOLK, COMMANDER OF CRUISER DESTROYER GROUP FIVE WITH ADDITIONAL DUTIES AS COMMANDER OF THE U.S. NAVAL FORCES CENTRAL COMMAND IN RIYADH DURING OPERATIONS DESERT SHIELD AND DESERT STORM.

VICE ADMIRAL LAUTENBACHER HAS BOTH A MASTER'S AND DOCTORATE DEGREES FROM HARVARD IN APPLIED MATHEMATICS.

HE'S A TALENTED MUSICIAN, CARPENTER, AND WHILE TOO MODEST TO ADMIT IT, HE HAS SPEARHEADED THE GLOBAL EARTH OBSERVATION SYSTEM OF SYSTEMS, GEOSS, THAT IS DRAWING LEADING NATIONS OF THE WORLD TOGETHER, AND LEADERS IN POLICY AND BUSINESS AND AGRICULTURE FROM OVER 40 COUNTRIES.

SO PLEASE JOIN ME IN WELCOMING VICE ADMIRAL CONRAD LAUTENBACHER.

[APPLAUSE]

(LAUTENBACHER)

LIAM, THANK YOU VERY MUCH.

IT'S INDEED A GREAT HONOR AND A PLEASURE TO BE HERE WITH YOU TODAY, AND PARTICULARLY TO FOLLOW SENATOR ROBERTS AND SECRETARY JOHANNIS.

I WISH TO EXPRESS MY APPRECIATION, DEEPEST APPRECIATION, TO THEM FOR BEING HERE TODAY.

IT'S HARD TO FOLLOW THEM, QUITE FRANKLY.

YOU LISTEN TO THE SECRETARY TALK, AND I DON'T THINK I COULD ADD TO HIS DESCRIPTION OF VISION.

THE VISION IS, THAT'S WHERE IT IS.

AND HE IS A MAN OF VISION AND INTELLECT.

I HAVE TO TELL YOU THAT I REALLY ENJOYED WORKING WITH HIM WHEN HE WAS THE CHAIRMAN OF THE WESTERN GOVERNORS' ASSOCIATION.

AND I THINK TOGETHER WE EXEMPLIFIED WHAT GOVERNMENT OUGHT TO BE: A COOPERATIVE RELATIONSHIP BETWEEN THE FEDERAL, STATE AND LOCAL AUTHORITIES TO SERVE THE CONSTITUENTS AND TAXPAYERS OF THE UNITED STATES.

SO I'M DELIGHTED TO SEE HIM AS THE SECRETARY OF ENERGY, OR THE SECRETARY OF AGRICULTURE, AND I LOOK FORWARD TO CONTINUING TO WORK

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WITH HIM.

I'M DELIGHTED TO SEE THE SECRETARY OF ENERGY, TOO, WHO IS SAM BODMAN, A FORMER SECRETARY OF COMMERCE.

SO WE HAVE A GREAT TEAM IN WASHINGTON.

WE HAVE, I WANT TO POINT OUT THAT WE'VE COLLABORATED TOGETHER AS WELL HERE IN WASHINGTON.

NOAA, REMEMBER NOAA IS AN ARM OF THE DEPARTMENT OF COMMERCE.

IT'S WELL PLACED IN THAT POSITION.

WE'RE TALKING ABOUT ECONOMIC DEVELOPMENT, ECONOMIC PROSPERITY, AND SUSTAINABLE USE OF OUR RESOURCES TODAY.

NOAA IS PART OF COMMERCE, AND THAT'S A MAJOR MISSION OF COMMERCE, OBVIOUSLY.

BUT WE HAVE WORKED TOGETHER.

WE HAVE BUILT THIS, SOMETHING CALLED A DROUGHT MONITOR, WHICH I'M GOING TO SHOW YOU IN A FEW MINUTES.

WE HAVE WORKED ON A DAILY BASIS WITH THE DEPARTMENT OF AGRICULTURE IN THEIR JOINT AGRICULTURAL WEATHER FACILITY.

WE PARTNER IN A WIDE VARIETY OF PRODUCTS THAT HELP OUR FARMERS AND OUR AGRIBUSINESS PEOPLE MAKE, MAKE THEIR ENDS MEET EVERY DAY.

I'M ALSO VERY GRATEFUL TO DR. BILL HOOK, WHO WILL LEAD THE PANEL AS SOON AS I SIT DOWN.

AND TO ANDREW HOWELL AND DAVE LOGSTON FOR THEIR WORK HERE WITH THE CHAMBER. WE DO APPRECIATE BEING HERE WITH YOU THIS AFTERNOON.

AND I'M CERTAINLY DELIGHTED TO WELCOME C-SPAN'S VIEWERS WHO ARE WATCHING US LIVE TODAY.

AND THE NEXT-- LET'S SEE, AM I SUPPOSED TO PRESS THIS BUTTON HERE?

LET'S SEE WHAT HAPPENS.

AH, IT WORKS.

VERY GOOD.

I'M GOING TO TRY TO FILL IN THE BLANKS AND CONNECT THE DOTS FOR YOU.

THERE ARE THREE THINGS I WANT TO TALK ABOUT WHILE YOU'RE LOOKING AT PICTURES OF NATURAL CONDITIONS THERE.

WE WANT TO LOOK AT WHERE THE GLOBAL EARTH OBSERVING SYSTEM OF

SYSTEMS EFFORT STANDS.

WHAT IT MEANS INTERNATIONALLY.

I WANT TO LOOK AT QUICKLY HOW IT'S BEING ENACTED, GENERATED, EXECUTED HERE IN THE UNITED STATES.

AND THEN, HOW IT CONNECTS DIRECTLY TO BENEFITS TODAY.

THE SECRETARY SPENT A GOOD DEAL OF TIME TALKING ABOUT WHAT IT MEANS TO THE FUTURE.

IT WILL MEAN A GREAT DEAL TO THE FUTURE, BUT IT IS ALSO SERVING US TODAY.

AND IT'S GOING TO GIVE US CONTINUED BENEFITS RIGHT NOW AS WE BEGIN TO PUT THESE THINGS TOGETHER IN A WAY THAT MAKES SENSE.

WE TODAY USE, AS WE SAY, JUST SNAPSHOT ASSESSMENTS.

BUT WE CAN DO A MUCH BETTER JOB OF SNAPSHOT ASSESSMENTS OF WHAT'S GOING ON BECAUSE OF THE FACT THAT WE DON'T HAVE INSTRUMENTS THAT TALK TO EACH OTHER.

WE DON'T-- WE HAVE MANY GAPS IN OUR COVERAGE.

AND WE DON'T HAVE A FULL SET OF PARTNERSHIPS BETWEEN LOCAL, STATE, FEDERAL AND INTERNATIONAL OVERSEERS OF GLOBAL EARTH OBSERVING.

THERE'S A GREAT DEAL TO BE GAINED FROM THAT.

YOU SEE THE PICTURES THERE SHOWING SOME NATURAL-- A HEALTHY FIELD AND THEN SOME CONDITIONS THAT ARE NOT SO HEALTHY.

AND I DON'T WANT TO MISLEAD YOU BY SAYING THAT WE ARE GOING TO SOLVE ALL OF THOSE PROBLEMS.

WE ARE STILL GOING TO HAVE DROUGHTS.

WE ARE STILL GOING TO HAVE FOREST FIRES.

WE ARE STILL GOING TO HAVE NATURAL CONDITIONS.

I'M NOT SO PESSIMISTIC THAT I DON'T THINK MAYBE AT SOME TIME IN THE FUTURE WE'RE GOING TO BE ABLE TO DO THINGS THAT TAKE AWAY AT LEAST A SEVERITY OF SOME OF THESE PICTURES YOU SEE IN FRONT OF YOU.

BUT WE'RE TALKING ABOUT UNDERSTANDING THE FUTURE.

ASSESSING DROUGHT INTENSITY FASTER AND MORE PRECISELY.

IF YOU WERE, YOU KNOW, OF THE,-- THERE'S A COUPLE OF ANALOGIES I LIKE TO USE. ONE OF WHICH IS THE STOCK MARKET.

IF YOU WERE, YOU KNOW, IF YOU HAD JUST DISCOVERED A WAY TO FIGURE

OUT WHAT THE STOCK MARKET IS GOING TO LOOK LIKE IN SIX MONTHS-- YOU PROBABLY WOULDN'T BE SITTING HERE.

YOU'D BE OUT THERE WORKING ON THAT, WOULDN'T YOU?

WELL WE HAVE WITHIN OUR GRASP TODAY TECHNOLOGY.

WE CAN TELL YOU, WE'RE GOING TO BE ABLE TO TELL YOU VERY SHORTLY, WHAT IS, WHAT'S THE PRECISE ENVIRONMENTAL CONDITIONS IN SIX MONTHS.

THAT'S, THAT'S WORTH A LOT OF MONEY.

AND IF IT'S USED CORRECTLY AND USED PROPERLY ACROSS ALL OF THE CONNECTING LINKS IN AGRICULTURE AS WE'RE TALKING ABOUT TODAY, IT'S, IT AFFECTS THE BOTTOM LINE.

SO IT'S THAT ABILITY TO NOT ONLY TAKE A SNAPSHOT TODAY-- WHICH WE CAN DO, AND IT'S GOING TO BE BETTER-- IT'S THE ABILITY TO PREDICT WHAT'S HAPPENING IN THE NEXT FEW WEEKS.

WHAT'S HAPPENING IN THE NEXT FEW MONTHS.

LET'S NOT WORRY ABOUT 100 YEARS FROM NOW, WE'LL DO THAT EVENTUALLY. BUT LET'S DEAL WITH ISSUES THAT REALLY COUNT IN TERMS OF THE NEXT PLANTING SEASON AND THE NEXT HARVEST SEASON.

SO THAT'S WHERE WE ARE ON THAT.

LET'S, LET'S TAKE A LOOK AT WHAT'S HAPPENED SO FAR.

I WANT TO EXPLAIN GEOSS TO YOU.

GLOBAL EARTH OBSERVATION SYSTEM OF SYSTEMS.

IT'S A NEGOTIATED TERM WITH MANY COUNTRIES AND MANY U.N. ORGANIZATIONS.

IT TALKS ABOUT THE FACT THAT IT IS... IT'S HARD TO GRASP.

THE EARTH IS NOT NECESSARILY ONE SYSTEM, IT'S A COLLECTION OF SYSTEMS, AND WE DO HAVE A COLLECTION OF SYSTEMS OBSERVING IT.

THERE ARE NATIONAL SYSTEMS, THERE ARE SPACE SYSTEMS, THERE ARE GROUND-BASED SYSTEMS. THERE ARE U.N. SYSTEMS. SO THERE ARE LOTS OF DIFFERENT SYSTEMS THAT WE HAVE OUT THERE TODAY.

BUT THIS EFFORT STARTED TWO YEARS AGO WITH THE UNITED STATES LEADERSHIP THAT GENERATED FROM ISSUES THAT WERE DISCUSSED AT THE WORLD SUMMIT OF SUSTAINABLE DEVELOPMENT. DISCUSSED IN THE G8 NATIONS.

THE UNITED STATES HOSTED THE FIRST EARTH OBSERVING SUMMIT WITH 30-SOME NATIONS THAT CAME TO WASHINGTON.

AND NOW WE HAVE A COALITION OF 60 COUNTRIES AND THE EUROPEAN COMMISSION, AS WELL AS 40 GLOBAL ORGANIZATIONS. AND WHEN I SAY GLOBAL ORGANIZATIONS, THOSE ARE U.N. ORGANIZATIONS AND INTERGOVERNMENTAL ORGANIZATIONS.

SO WHILE THIS IS NOT A U.N. ORGANIZATION PER SE, GEO-- THE GROUP ON EARTH OBSERVATIONS-- IT IS, IN FACT, A SORT OF A CLEARINGHOUSE OR OVERSEEING BODY OF THE U.N. ORGANIZATIONS THAT DEAL WITH OBSERVING SYSTEMS AND THE USE OF THE INFORMATION, LIKE THE F.A.O. TO HELP US AROUND THE WORLD DO A BETTER JOB.

HE-- TECHNICALLY, YOU LOOK AT-- THERE'S A PICTURE THERE THAT JUST GIVES YOU A SMALL VARIETY OF THE SYSTEMS THAT ARE OUT THERE TODAY

FROM SHIPS, MANNED SYSTEMS LIKE SHIPS, AND OBSERVERS THAT LOOK AT THINGS GOING ON, TO HIGHLY TECHNICAL SPACECRAFT THAT ARE MENTIONED. BUOYS THAT DIVE. BUOYS THAT ARE FIXED ON THE SURFACE OF THE OCEAN. LAND-BASED SYSTEMS THAT MEASURE CARBON, AND MEASURE RAINFALL, AND CLIMATE VARIABLES.

SO THERE'S A WIDE VARIETY OF TECHNICAL MEANS TODAY THAT WE CAN GAIN FROM, IF WE'RE ABLE TO FIGURE OUT HOW TO LINK IT TOGETHER.

SO TECHNICALLY, IT'S LOOKING AT ALL THOSE PIECES THAT ARE OUT THERE COLLECTING DATA AND BUILDING THE WORLD'S LARGEST INFORMATION SYSTEM.

AND THEN MAKING IT AN END-TO-END SYSTEM, SO THAT IT'S NOT JUST COLLECTING DATA, IT'S GOING INTO SOME COMPUTER MODELING, SOME DATA ASSIMILATION, AND DELIVERING PRODUCTS TO VARIOUS PEOPLE IN SECTORS AROUND THE WORLD.

AND WE'RE TALKING ABOUT THE UNITED STATES TODAY, HOW IMPORTANT IT WILL BE TO OUR ECONOMY, AS WELL AS TO THE REST OF THE WORLD.

SO THAT ISSUE OF DATA EXCHANGE AND INFORMATION IS A BIG ONE, NOT ONLY IN A TECHNICAL SENSE, HOOKING THESE INSTRUMENTS TOGETHER AND CREATING THE COMPUTERS AND THE PROTOCOLS TO DO IT.

IT'S A HUGE ISSUE INTERNATIONALLY, TO BUILD THE GLOBAL AGREEMENTS TO BE ABLE TO EXCHANGE THE DATA THAT WE NEED TO SET UP A GLOBAL EARTH OBSERVING SYSTEM OF SYSTEMS, AND PROVIDE THAT DATA FOR THE BENEFIT OF EVERY COUNTRY THAT BELONGS.

AND I THINK YOU'VE SEEN THIS, THE NUMBER OF COUNTRIES DOUBLE IN THE LAST YEAR AND A HALF, AND I THINK YOU'LL SEE IT DOUBLE AGAIN BECAUSE EVERYONE SEES THE BENEFIT OF THIS.

THIS IS, THIS IS A WIN-WIN SITUATION FOR EVERY MEMBER OF THIS ORGANIZATION.

NOW, THE-- WE JUST HAD THE FIRST MEETING.

WE CREATED A 10-YEAR PLAN.

THERE'S A 10-YEAR PLAN TO BUILD A GLOBAL EARTH OBSERVING SYSTEM.

THESE HUNDRED ORGANIZATIONS AGREED ON A GOVERNANCE STRUCTURE, WHICH WAS JUST COMPLETED A MONTH AGO.

THAT IS THE EXECUTIVE COMMITTEE.

YOU CAN SEE IT UP THERE FOR YOURSELF.

THERE ARE FOUR CO-CHAIRS.

TWO FROM DEVELOPED NATIONS AND TWO FROM DEVELOPING NATIONS.

THE UNITED STATES IS A CO-CHAIR.

THE E.C. IS A CO-CHAIR.

SOUTH AFRICA IS A CO-CHAIR, AND CHINA IS A CO-CHAIR.

AND YOU CAN SEE THAT THEY REPRESENT GEOGRAPHIC DIVISIONS AROUND THE WORLD, WHICH IS SIMILAR TO THE WAY THE U.N. ORGANIZATIONS ARE ORGANIZED.

AND IT HAS BASICALLY, AS YOU SEE, A 12-MEMBER EXECUTIVE COMMITTEE COMPOSED OF BOTH DEVELOPING AND DEVELOPED NATIONS.

THIS IS THE COMMITTEE THAT WILL DO THE WORK.

I AM THE U.S. REPRESENTATIVE AT THE AGENCY HEAD LEVEL.

MY BOSS, SECRETARY GUTIERREZ WAS THE CABINET-LEVEL AGENT WHO REPRESENTED US AT THE THIRD EARTH OBSERVING SUMMIT IN BRUSSELS JUST TWO MONTHS AGO.

SO WE HAVE A GOVERNANCE SYSTEM, AND IT'S UP AND FUNCTIONING.

I'M GOING TO TELL YOU MORE ABOUT WHAT THIS MEANS ON THE NEXT SLIDE, BUT WHILE I'M TALKING INTERNATIONALLY, WE HAVE IN THE UNITED STATES SET UP AN INTERAGENCY EFFORT TO BE ABLE TO BUILD OUR SYSTEM, AND MAKE OUR SYSTEM WORK FOR YOU, WORK FOR THE TAXPAYERS.

BUT IT'S ALSO BEEN PICKED UP BY OTHER COUNTRIES, WHICH I CONSIDER A VERY EXTRAORDINARY EVENT.

AS YOU KNOW, ALL GOVERNMENTS ARE STOVEPIPED.

BUT OUR GOVERNMENT IS STARTING TO LEARN HOW TO TALK TO EACH OTHER.

YOU SAW THAT TODAY, WITH A MEMBER OF THE SENATE, A MEMBER OF THE AGRICULTURE DEPARTMENT AND A MEMBER OF COMMERCE ALL HERE TALKING TO YOU ABOUT THE SAME SUBJECT.

WHICH I THOUGHT IS ABSOLUTELY EXTRAORDINARY IN SOME CASES.

BUT WE'RE ALL TOGETHER.

AND SO, OTHER COUNTRIES ARE PICKING UP THIS MODEL BECAUSE THEY'VE COME TO US AND SAID "HOW ARE YOU DOING THIS?"
"HOW ARE YOU PROVIDING THESE BENEFITS?"
HOW ARE YOU GOING TO DO IT?"

AND WE EXPLAINED THAT YOU NEED TO HAVE AN INTERAGENCY PROCESS.

SO CANADA, CHINA, AND JAPAN, MORROCO, SOUTH AFRICA HAVE ALREADY FORMED INTERAGENCY COMMITTEES AND GROUPS THAT ARE BUILDING THEIR OWN ENTRIES INTO THE GLOBAL EARTH OBSERVING SYSTEM OF SYSTEMS.

I POINT THIS OUT TO YOU FOR TWO REASONS.

FIRST OF ALL, IT REPRESENTS THE COOPERATION THAT WE ARE ACHIEVING IN THIS INITIATIVE.

BUT IT ALSO REPRESENTS THE COMPETITION IN THIS INITIATIVE THAT YOU SEE.

SO WE NEED TO STAY UP WITH THE REST OF THE WORLD IN DOING THIS.

THE UNITED STATES SHOULD BE THE LEADERS.

THERE'S NO REASON WE CANNOT MAINTAIN THE LEADERSHIP ROLE.

THIS IS THE RESULTS OF THE WORK THAT, RESULTS OF THE WORK THAT WAS FINISHED BY OUR OWN INTERAGENCY GROUP.

IT'S HARD TO READ THE FINE PRINT ON YOUR LEFT-HAND SIDE, BUT THAT'S THE LIST OF 15 CABINET DEPARTMENTS AND AGENCIES AND THREE WHITE HOUSE AGENCIES, INCLUDING THE OFFICE OF MANAGEMENT AND BUDGET, WHO HAVE WORKED TOGETHER TO PRODUCE THE STRATEGIC PLAN FOR THE U.S. INTEGRATED EARTH OBSERVATION SYSTEM.

IT'S AVAILABLE ON THE WEBSITE OF THE WHITE HOUSE AGENCIES, AS WELL AS THE AGENCIES THAT ARE MEMBERS OF IT.

IT'S AN IMPORTANT GROUP OF FOLKS WHO ARE WORKING TOGETHER, DIRECTLY CONNECTED TO THE WHITE HOUSE.

AND THEY HAVE BUILT A STRATEGIC PLAN FOR OUR SYSTEM, WHICH TALKS ABOUT THE BENEFITS THAT IT'S GOING TO ACCRUE, AND HOW WE ARE GOING TO DEAL WITH IT.

WE HAVE ALSO JUST COMPLETED A WORKSHOP FOR THE PUBLIC.

THIS WILL NOT WORK UNLESS IT IS A PUBLIC/PRIVATE ENTERPRISE SYSTEM.

IT CANNOT BE GENERATED BY ITSELF, BY THE FEDERAL GOVERNMENT.

AND ITS VALUE CANNOT BE OBTAINED, CLEARLY THE VALUE CANNOT BE OBTAINED WITHOUT PRIVATE SECTOR INVOLVEMENT, AND PRIVATE SECTOR

INVESTMENT AND USE OF THE SYSTEM.

THESE ARE THE NINE BENEFIT AREAS.

THESE ARE BASICALLY, COME FROM CONVERSATIONS THAT HAVE BEEN HELD INTERNATIONALLY AND NEGOTIATED.

AND YOU CAN THINK OF A DIFFERENT TAXONOMY, BUT IN THE END, THIS IS THE WORDS AND THE CATEGORIES THAT WE CHOSE.

AN EXAMPLE THAT I USE THAT'S NOT UP THERE IS TRANSPORTATION WILL BE A BENEFICIARY, TOO.

YOU DON'T SEE THAT DIRECTLY, BUT THERE ARE OTHER, I CAN IMAGINE, MANY OTHER BENEFICIARIES.

BUT THESE LARGE AREAS HAVE BEEN INTEGRAL IN BRINGING TOGETHER THE NATIONS OF THE WORLD BECAUSE THESE ARE MAJOR ISSUES.

FOR INSTANCE, NATURAL AND HUMAN-INDUCED DISASTERS.

YOU SAW THAT WITH THE TSUNAMI THAT WE JUST HAD IN THE INDIAN OCEAN.

IF WE HAD HAD A GLOBAL OBSERVING SYSTEM IN PLACE, WE WOULD HAVE SAVED 200,000 LIVES WITHOUT EVEN BLINKING.

SO THERE'S ENORMOUS BENEFIT TO BE GAINED FROM THIS, JUST IN THAT AREA ALONE.

HUMAN HEALTH, OBVIOUSLY HUGE.

AND THE SUBJECT WE'RE TALKING ABOUT TODAY, IS SUSTAINABLE AGRICULTURE AND DECARBONIZATION HAS BEEN ADDED TO THAT.

THESE ARE THE NINE BENEFIT AREAS THAT ARE OUTLINED IN OUR STRATEGIC PLAN, AND I URGE YOU TO LOOK AT IT.

NOW LET'S TALK ABOUT-- LET'S BRING IT DOWN TO AGRICULTURE SO WE CAN GET INTO OUR PANEL HERE.

I WANT TO GIVE YOU AN EXAMPLE OF WHY, OF HOW AND WHY IT'S WORKING TODAY.

THE PICTURE, THE SATELLITE PICTURE THAT YOU SEE IS A PICTURE OF SEA SURFACE TEMPERATURE ANOMALIES SHOWING BASICALLY AN EL NIÑO CONDITION.

I THINK EVERYBODY IN THE AMERICAN PUBLIC TODAY UNDERSTANDS THE EL NIÑO ISSUE.

IT TOOK US 20 TO 25 YEARS TO BUILD ENOUGH INSTRUMENTS AND ENOUGH SCIENTIFIC UNDERSTANDING TO BE ABLE TO PREDICT EL NIÑO THREE TO SIX MONTHS IN ADVANCE.

WE CAN DO THAT TODAY.

IT HAS A HUGE IMPACT.

JUST A CURSORY ESTIMATE INDICATES \$450 TO \$550 MILLION PER YEAR OF SAVED COSTS IN AGRICULTURE JUST BY BEING ABLE TO CONNECT OUR CLIMATE PATTERNS, NEAR-TERM CLIMATE PATTERNS, WITH JUST THIS ONE CYCLE THAT WE HAVE BEEN ABLE TO, TO INVESTIGATE, TO DETERMINE AND PREDICT FOR THE FUTURE.

IMAGINE WHAT WE CAN DO WHEN WE PREDICT AND CAN TIE TOGETHER ALL THE OTHER OCEAN AND ATMOSPHERIC CYCLES THAT WE HAVE THAT AFFECT THE FARMER IN IOWA AND THE FARMER IN KANSAS AND NEBRASKA.

THOSE ARE GOING TO BE IMPORTANT-- IMPORTANT ADVANCES IN SCIENCE AND IMPORTANT ADVANCES IN OUR ECONOMY.

THE OTHER THING THAT YOU SEE DOWN HERE IS A RUDIMENTARY PRODUCT THAT WE'VE CREATED BETWEEN AGRICULTURE AND COMMERCE AND THE NATIONAL DROUGHT INVESTIGATION CENTER THAT HAS-- ALLOWS US TO STATE WHAT THE DROUGHT SITUATION IS IN THE UNITED STATES. AND IT ALLOWS US, ALSO TODAY, WE ARE MAKING PREDICTIONS OF HOW THAT WILL CHANGE IN THE FUTURE.

IT'S A VERY RUDIMENTARY TOOL, BUT IT'S BEEN USEFUL.

AND WHAT I'M DEMONSTRATING THERE, IF YOU HAVE SPEND A COUPLE OF MINUTES LOOKING AT IT, YOU CAN SEE THAT IT GOES THROUGH CYCLES.

WE HAVE SEVERAL YEARS OF DATA THAT WE'VE PUT TOGETHER. AND YOU CAN SEE HOW DROUGHT CHANGES AROUND THE COUNTRY. IT IS CYCLICAL. AND THAT'S WHAT'S HAPPENING IN OUR PATTERN.

AND I REMEMBER, AND MOST OF YOU REMEMBER, WE HAD A DROUGHT ON THE EAST COAST 3 1/2 YEARS AGO THAT WAS CONSIDERED SEVERE.

NOBODY'S WORRIED ABOUT THAT NOW, ARE THEY?

WE'VE GOT OUR UMBRELLAS OUT TODAY.

SO THESE ARE CYCLES, FOLKS.

IT DOESN'T ALWAYS GO UP.

IT GOES UP, IT COMES DOWN.

IT GOES UP, IT COMES DOWN.

WE CAN FIGURE OUT HOW TO DEAL WITH THAT IN A MUCH MORE PROACTIVE WAY.

NOW THE OTHER ISSUE THAT'S THERE IS NOT ONLY THIS GLOBAL LEVEL. AND REMEMBER, THAT'S PRETTY SPARSE DATA THAT'S MAKING UP THOSE CHARTS.

THE OBJECT HERE IS TO GET DOWN TO FINE-GRAIN DATA.

GET IT DOWN TO COUNTY AND FARM-LEVEL DATA THAT CAN LOOK AT SOIL CHEMISTRY, SOIL MOISTURE, GROUNDWATER, SURFACE WATER, BIOLOGICAL FACTORS THAT ARE INVOLVED, AS WELL AS THE GLOBAL CYCLES THAT CONNECT TO THESE MESOSCALE OR MICROSACLE INFORMATION SYSTEMS THAT WE CAN PUT TOGETHER.

MANY OF THOSE SYSTEMS WILL HAVE TO BE GENERATED LOCALLY OR GENERATED BY THE PRIVATE SECTOR TO HOOK TOGETHER.

BUT WHEN THIS IS HOOKED TOGETHER WITH THE GLOBAL PIECES THAT WE CAN TIE ON WITH THE LARGE CYCLES, YOU'LL BE ABLE TO GET DOWN TO THE INDIVIDUAL LEVEL FARM, COUNTY LEVEL AND MAKE SOME PRETTY, I THINK, ECONOMICALLY-VIABLE PREDICTIONS AND PLANNING FOR THE FUTURE.

CERTAINLY IT CAN HELP SUCH THINGS AS PLANNING OUR EXPORT LEVELS. PLANNING WHAT WE WANT TO HAVE IN RESERVE. HOW WE'RE GOING TO REACT WITH THE MARKETS IN THE WORLD.

SO THERE'S ENORMOUS ECONOMIC BENEFIT IN TAKING A GLOBAL SYSTEM, WHICH LOOKS AT THE LARGE PATTERNS, AND BRINGING IT DOWN TO THE COUNTY AND FARM LEVEL.

AND THAT'S WHAT WE'RE TALKING ABOUT HERE.

JUST TO GIVE YOU A LITTLE IDEA, THESE ARE THE SIX NEAR-TERM OPPORTUNITIES THAT WE'VE LOOKED AT ACROSS THE FEDERAL SECTOR.

AND ONE OF THEM, I THINK, IS VERY IMPORTANT FOR THE AGRICULTURAL SECTOR.

IT'S THIS NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM THAT WE WORKED ON WITH THE GOVERNOR, THEN-GOVERNOR JOHANNIS AND THE WESTERN GOVERNORS' ASSOCIATION TO BUILD A CONCEPT, AND INITIAL, SOME INITIAL FUNDING TO WORK ON THAT SYSTEM.

THAT IS ONE OF THE THINGS WE ARE WORKING ON TODAY.

IT WILL PROVIDE-- BEGIN TO BUILD THIS FINE-GRAIN DATA, AND ALLOW MUCH BETTER ECONOMIC DECISIONS, PLANNING DECISIONS TO BE MADE BY FARMERS AND LOCAL MANAGERS, AS WELL AS THE FEDERAL GOVERNMENT.

AND, FINALLY, THIS IS-- AND I WANT TO CLOSE BECAUSE I'VE TAKEN UP MORE THAN MY TIME.

THIS IS THE PICTURE OF SECRETARY GUTIERREZ AT THE THIRD EARTH OBSERVING SUMMIT.

THIS IS A QUOTE FROM THE SPEECH HE MADE TO THE 60 NATIONS AND 40 INTERGOVERNMENTAL ORGANIZATIONS THAT WERE THERE AT THE EARTH OBSERVING SUMMIT.

A MINISTERIAL-LEVEL SUMMIT HOSTED BY THE EUROPEAN COMMISSION IN BRUSSELS ON FEBRUARY 16th.

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AND I, I CAN ONLY LET YOU READ THAT.

I THINK IT SPEAKS FOR ITSELF.

AS HIS UNDERSECRETARY OF COMMERCE FOR OCEANS AND ATMOSPHERE, I'M COMMITTED TO MAKING THIS WORK FOR HIM AND FOR THE PRESIDENT.

I'M DELIGHTED TO BE HERE TODAY TO EXPLAIN TO YOU WHERE WE ARE.

AND I LOOK FORWARD TO THE NEXT PANEL WHERE WE'RE GOING TO GET INTO SOME OF THE DETAILS.

THANK YOU VERY MUCH.

[APPLAUSE]

(LIAM WESTON)

THE MODERATOR FOR OUR DISTINGUISHED PANEL WILL BE DR. WILLIAM HOOKE.

DR. HOOKE JOINED A.M.S. HE'S THE DIRECTOR OF THE ATMOSPHERIC POLICY PROGRAM FOR THE AMERICAN METEOROLOGICAL SOCIETY.

DR. HOOKE JOINED A.M.S. AFTER NEARLY 33 YEARS OF FEDERAL SERVICE WITH NOAA.

HE WAS DEPUTY CHIEF SCIENTIST OF NOAA FOR SIX YEARS, AND ALSO SERVED AS A CHIEF SCIENTIST FOR THE SECRETARY OF COMMERCE FOR TWO YEARS.

PLEASE JOIN ME IN WELCOMING DR. WILLIAM HOOKE.

[APPLAUSE]

THANK YOU, LIAM.

I'M GOING TO ASK THE PANELISTS TO JOIN ME AT THIS TIME, IF YOU DON'T MIND COMING UP AND TAKING YOUR SEATS.

AND WHILE WE'RE IN THAT LITTLE BIT OF TRANSITION, I WANT TO REMIND YOU OF THE MAJOR MESSAGES THAT WE'VE JUST HEARD THIS LAST HALF HOUR OR SO.

ONE OF THEM WAS THE MESSAGE FROM CONRAD LAUTENBACHER.

ADMIRAL LAUTENBACHER DESCRIBED FOR ALL OF US A PICTURE OF 60-SOME NATIONS AND A NUMBER OF N.G.O.'S MOBILIZING FOR A SUSTAINED, MULTI-YEAR EFFORT THAT YOU HEARD SECRETARY JOHANNIS REFER TO AS A SUBSTANTIAL KIND OF STEP FUNCTION IN THE EARTH OBSERVING CAPABILITY.

AS LIAM MENTIONED, ADMIRAL LAUTENBACHER WAS CUSTOMARILY MODEST ABOUT HIS ROLE IN THAT, BUT IF YOU CAN IMAGINE TRYING TO GET 60 NATIONS MOVING IN A COLLABORATIVE VENTURE IN THE YEAR 2003-2004-2005, WHICH IS NOT A PERIOD EXACTLY MARKED FOR ITS

INTERNATIONAL COLLABORATION, I THINK YOU'LL HAVE A LITTLE BIT OF A PICTURE OF WHAT ONE PERSON'S DREAM AND HIS PERSISTENT EXECUTION OF THAT DREAM, AND HIS REACHING OUT TO OTHERS TO SHARE IT HAS MEANT FOR US.

SO I HOPE YOU'LL REFLECT ON THAT A LITTLE BIT.

ONE OF THE THINGS THAT SECRETARY JOHANNIS SAID WAS THAT THESE NEW CAPABILITIES AND OBSERVATION ARE NOT SIMPLY GOING TO AUGMENT OUR PRODUCTION OF FOOD AND FIBER, BUT REVOLUTIONIZE IT.

HE DIDN'T REALLY MENTION, BECAUSE OF THE NATURE OF THE OCCASION, THAT THAT'S JUST ONE OF THE REVOLUTIONS THAT ARE OCCURRING IN AGRICULTURE.

THE PANEL THAT YOU'RE GOING TO HEAR FROM OVER THE NEXT 40 MINUTES OR SO WILL PAINT YOU A KIND OF OVERVIEW OF REVOLUTIONS THAT ARE OCCURRING IN BIOENGINEERING, IN THE NATURE OF MARKET STRUCTURES AS THEY SURROUND THIS AGRICULTURAL CAPACITY, AND SO ON.

SO I THINK WE'LL ALL FIND IT A VERY INTERESTING SUMMARY OF THAT WORK.

I WANT TO BEGIN BY INTRODUCING THE PANELISTS TO YOU IN THE ORDER IN WHICH THEY'RE SEATED HERE, AND THE ORDER IN WHICH THEY'LL SPEAK.

THE'S ONE CHANGE IN YOUR PROGRAM, AS YOU FIND IT.

WE'LL COME IT THAT SHORTLY.

OUR FIRST SPEAKER WILL BE HERB SATTERLEE WHO IS CHAIRMAN AND C.E.O. OF DIGITALGLOBE.

HE'LL BE FOLLOWED BY TOM ERICKSON, THE VICE PRESIDENT FOR GOVERNMENT AND INDUSTRY AFFAIRS OF BUNGE.

HE'LL BE FOLLOWED BY STEVE FAIVRE WHO'S DIRECTOR OF GLOBAL AG SERVICES FOR JOHN DEERE.

IN TURN, HE'LL BE FOLLOWED BY MICHAEL DYKES WHO'S VICE PRESIDENT FOR GOVERNMENT AFFAIRS AT MONSANTO.

AND HERE'S WHERE WE HAVE THE SWITCH IN THE PROGRAM.

KENNETH HOOD, WHO IS THE FORMER CHAIR OF THE NATIONAL COTTON COUNCIL WILL SPEAK NEXT.

AND THEN BATTING CLEANUP WE'LL HAVE JON DOGGETT FROM THE-- WHO'S VICE PRESIDENT FOR PUBLIC POLICY OF THE NATIONAL CORN GROWERS ASSOCIATION.

NOW THESE FOLKS ALL DESERVE AN EXTENSIVE INTRODUCTION, BUT THEIR STORY IS FAR MORE POWERFUL THAN THAT INTRODUCTION, SO I VERY MUCH HOPE YOU WILL READ THE BIOS THAT ARE IN YOUR PACKET AND WE CAN THEREFORE GIVE A LITTLE BIT MORE TIME TO THE SPEAKERS.

Transcript of C-SPAN Coverage - *Agribusiness in the 21st Century – Putting Earth Science to Work for America*, U.S. Chamber of Commerce, May 20, 2005

THE MECHANICS OF THE PANEL DISCUSSION ARE THIS:

EACH OF THE PANELISTS WILL HAVE SOMETHING LIKE SIX TO EIGHT MINUTES TO SPEAK.

I WAS CHOSEN AS THE MODERATOR BECAUSE I CAN COUNT TO EIGHT.

AND I WILL BE STANDING UP TOWARD THE END OF THAT TIME IF ANY OF THEM IS STILL GOING STRONG.

AND I'LL BE STANDING UP TO PROVIDE THEM SUPPORT, BUT AT THE SAME TIME KIND OF INDICATING THAT WE'RE GOING TO GET ON TO THE OTHER SPEAKERS.

WE'RE GOING TO HOLD OUR QUESTIONS UNTIL THE END.

AT THE END ADMIRAL LAUTENBACHER WILL REJOIN THE PANEL UP HERE IN THE FRONT, AND WE'LL TAKE QUESTIONS FROM THE GROUP.

SO WITH THAT, I'D LIKE YOU TO JOIN ME IN WELCOMING HERB SATTERLEE.

[APPLAUSE]

(HERB SATTERLEE)
THANK YOU, BILL.

I'D ALSO LIKE TO THANK OUR FRIENDS FROM NOAA AND THE CHAMBER, LIAM AND DAVID FOR THE OPPORTUNITY HERE.

I KIND OF FEEL LIKE I'M A UNIQUE PRESENCE.

I DON'T KNOW ANYTHING ABOUT AGRICULTURE.

I KNOW A LITTLE BIT ABOUT WHAT OUR TECHNOLOGY MAY BE ABLE TO DO TO BENEFIT IT, BUT I'D LIKE TO KIND OF OPEN WITH A THOUGHT THAT IT'S JUST ONE OF MANY TECHNOLOGIES.

AND I KNOW THAT THE ADMIRAL TALKED A LOT ABOUT THE EARTH OBSERVATION SYSTEMS.

THAT IS WHAT WE DO AT DIGITALGLOBE.

IN TERMS OF OUR COMPANY, AND IN TERMS OF THE INDUSTRY, WHICH I FEEL I GET THE OPPORTUNITY HERE TO REPRESENT THE WHOLE INDUSTRY.

WE'RE REALLY IN THE HIGH-RESOLUTION BUSINESS.

A ONE METER AND BETTER KIND OF RESOLUTION.

AND SO FOR US, AGRICULTURE REPRESENTS TREMENDOUS OPPORTUNITIES BECAUSE WE USE OUR MULTISPECTRAL DATA, AND WE CAN DO A LOT OF DIFFERENT TYPES OF ANALYSIS.

AND WE'LL TALK A LITTLE BIT ABOUT THAT.

I ALSO THINK THAT OUR SYSTEMS DOVETAIL VERY NICELY INTO WHAT THE ADMIRAL WAS TALKING ABOUT IN THE GEOS, BECAUSE AS TIME GOES ON, THERE'S A LOT OF SYSTEMS OWNED BY GOVERNMENTS AROUND THE WORLD, BUT MORE AND MORE YOU'RE SEEING COMMERCIALY OWNED SYSTEMS IN SPACE. AND THESE ARE GOING TO FIT IN VERY NICE FOR THINGS LIKE DISASTER MANA-AAHH, CAN'T TALK-- DISASTER MONITORING AND AGRICULTURAL MONITORING.

SOME OF THE THINGS THAT WE PROVIDE IN TERMS OF PRODUCTS-- TOO MANY CHARTS... OH, THERE WE ARE.

REMOTE SENSING PROVIDES KIND OF A UNIQUE PROSPECTIVE BECAUSE IT CAN SEE THINGS GOING ON ABOUT TWO WEEKS IN ADVANCE OF THE HUMAN EYE BEING ABLE TO DETECT IT.

AND WHEN YOU COMBINE THESE OBSERVATIONS WITH G.P.S, WITH YIELD MONITORS, WITH VARIABLE RATE APPLICATION EQUIPMENT, THEN THE GROWER HAS A SET OF TOOLS THAT TOGETHER ARE VERY POWERFUL FOR IMPROVING YIELD AND REDUCING COST.

SOME OF THE PRODUCTS THAT WE PUT OUT THAT WE FEEL ARE IMPORTANT TO THE OVERALL ANALYSIS IS LOOKING AT THE SOILS AND CATEGORIZING THE FIELD INTO ZONES, AND MANAGING EACH ZONE INDEPENDENTLY.

WE DO LOOK AT GREEN VEGETATION WHICH IS, IF YOU'RE A SCIENTIST, THE OLD M.D.V.I. CALCULATIONS THAT WERE DEVELOPED IN THE 70s AND 80s. SORT OF A IMPROVEMENT OF THAT MAKES THE VARIABILITY MUCH LESS.

AND THEN, MAYBE MOST IMPORTANT, WE LOOK AT CHANGE FROM TIME, FOR PERIODS OF TIME.

WORKING WITH ALL THE INFORMATION TOGETHER FROM THE YIELD MONITORS AND EVERYTHING ELSE, IT DOES PROVIDE THE GROWER OPPORTUNITY TO LOOK AT SEVERAL THINGS.

BETWEEN RISK REDUCTION, COST SAVINGS AND, MOST IMPORTANT, IMPROVING YIELD.

I HAVE A COUPLE OF CASE STUDIES HERE THAT ARE REAL APPLICATIONS. AND THIS FIRST ONE IS JUST LOOKING AT PUTTING SOIL AMENDMENTS ON A COTTON FIELD.

AND IN THIS CASE, IT'S GYPSUM.

AND IF YOU LOOK AT THE CHARTS DOWN AT THE BOTTOM-- I HOPE THEY'RE NOT TOO BIG AN EYE TEST-- BUT IF YOU FOLLOW THE STANDARD PROCEDURE, YOU TREAT THE WHOLE FIELD THE SAME, YOU'LL SEE THAT YOU GET ABOUT A QUARTER OF A BALE IMPROVEMENT IN YOUR YIELD.

AND IF YOU LOOK AT THAT, THAT WOULD TRANSLATE FOR A 150-ACRE FIELD TO ABOUT \$15,000 REVENUE WHEN YOU SOLD YOUR COTTON.

AND YOU CAN SEE ADDING UP THE VARIOUS COSTS BETWEEN THE APPLICATION OF THE PRODUCT, THE IMAGERY, THE SOIL SAMPLES, ETC., YOU'RE

NET PROFIT'S ABOUT \$8,000-- OR ABOUT HALF.

NOW IF YOU LOOK-- IF YOU USE THE REMOTE SENSE DATA, YOU USE THE VARIABLE RATE EQUIPMENT, PUT THEM TOGETHER.

YOU SEE THAT MIDDLE COLUMN, VARIABLE APPLICATION.

SO NOW YOUR YIELD IMPROVES FROM A QUARTER OF AN ACRE TO 40% OF A BALE IMPROVEMENT BREAKER.

WHAT DOES THAT MEAN TO YOU?

IT MEANS THAT YOUR REVENUE IS UP SIGNIG-AAHH--SIGNIFICANTLY.

YOUR COSTS ARE ACTUALLY DOWN.

AND YOUR NET PROFIT IS NEARLY DOUBLE.

IT'S A VERY IMPORTANT POINT, AND I REALLY THINK THAT THAT'S WHAT'S BEHIND ALL THIS.

IS HOW DO WE IMPROVE YIELD, AND MORE IMPORTANTLY, IMPROVE PROFITABILITY TO THE GROWER?

BECAUSE AGRICULTURE IS A VERY DIFFICULT BUSINESS.

NEXT EXAMPLE IS LOOKING AT SOMETHING MUCH DIFFERENT WHICH IS HAIL DAMAGE.

AND THIS IS SOMETHING WHERE YOU'RE LOOKING OVER TIME.

THERE'S ALWAYS A BIG DEBATE BETWEEN THE GROWER AND THE INSURANCE ADJUSTER ON HOW MUCH DAMAGE WAS ACTUALLY DONE.

AND IF YOU'RE FAMILIAR WITH SAY A CORNFIELD WHEN IT'S FULLY UP, IT'S VERY DIFFICULT TO WALK THROUGH AN 80-ACRE CORNFIELD AND LOOK AT THE WHOLE THING.

SO THE ADJUSTER'S AT A GREAT DISADVANTAGE.

WHAT THE REMOTE SENSING DATA DOES IS IT PROVIDES AN OVERVIEW OF THE ENTIRE FIELD.

YOU CAN LOOK AT WHERE THINGS ARE DAMAGED.

AND THIS APPLICATION HERE, LOOK AT DATA JULY 17th, IN THE MIDDLE AND BEFORE THE EVENT...AUGUST 12th AFTER THE EVENT, AND THEN YOU DO A CHANGE ANALYSIS.

AND YOU CAN SEE THE BOX IN THE MIDDLE THERE.

THE RED AREA IS THE FIELD THAT WAS DAMAGED.

MOST OF THE YELLOW WAS CROP THAT WAS ALREADY IN SENESCENCE.

AND IF YOU GO THE NEXT STEP AND JUST LOOK AT--
IF YOU GO OUT IN THE FIELD AND PHOTOGRAPH IT, YOU CAN LOOK AT
VARIOUS AREAS IN THE FIELD AND YOU CAN SEE SOME OF THE HAIL DAMAGE.

YOU CAN ALSO SEE AREAS WHERE THERE IS NO HAIL DAMAGE.

IT'S A VERY POWERFUL TOOL ON BOTH SIDES OF THE EQUATION.

BOTH FOR THE INSURANCE COMPANY AND WITH THE FARMER BECAUSE NOW YOU
HAVE FACTS FROM WHICH TO NEGOTIATE A SETTLEMENT.

AND IT MAKES IT MUCH MORE STRAIGHTFORWARD AND HOPEFULLY BRINGS A
TREMENDOUS AMOUNT OF FAIRNESS TO THE PROCESS.

ANOTHER QUICK EXAMPLE IS CLASSIFYING CROPS.

NOW HOW DO YOU DO THAT?

NOW THERE'S MANY WAYS TO DO IT.

THE EASIEST WAY OF COURSE IS TO WALK INTO THE FIELD AND LOOK AT IT.

AND YOU'LL SAY, "OH, THAT'S CORN."

WELL, IF YOU'RE NOT CLOSE TO THE FIELD-- LET'S SAY YOU'RE HERE IN
THE U.S. AND YOU'RE CONCERNED ABOUT THE NUMBER OF ACRES PLANTED IN
BRAZIL OF SOYBEANS.

BY USING SATELLITE DATA, YOU CAN LOOK AT WHAT'S GOING ON IN THAT
FIELD.

NOW THERE'S WAYS TO DO IT.

YOU CAN LOOK AT THE SPECTRAL SIGNATURE, WHICH IS A LITTLE
COMPLICATED, AND DO ANALYSIS OF EACH INDIVIDUAL CROP.

OR YOU COULD SIMPLY IT SOME, AND LOOK AT THE FIELDS LOOKING AT THE
GROWTH FACTOR,

BECAUSE ALL PLANTS GROW AT DIFFERENT RATES, AND SO YOU CAN MEASURE
THE RATE OF GROWTH.

THIS IS ONE OF THE THINGS THAT WE DO TO IDENTIFY WEEDS, BECAUSE
WEEDS TEND TO GROW-- AS ANYBODY WHO WORKS IN THEIR GARDEN
KNOWS-- WAY FASTER THAN THE PLANTS AND FLOWERS THAT YOU HAVE
AROUND.

AND SO THAT HELPS.

BUT IN THIS CASE WE'VE BEEN ABLE TO DETERMINE NOT JUST THE FIELD
SIZE-- WHICH IS IMPORTANT FOR SUBSIDY PROGRAMS, IT'S IMPORTANT FOR
INSURANCE-- BUT ALSO WHAT'S GROWING THERE.

AND IF YOU LOOK OVER ON THE FAR SIDE, THERE'S THREE OR FOUR FIELDS.

THEY'RE OUTLINED.

THE TOP ONE IS CORN.

MIDDLE ONE, THE ORANGE ONE, IS ALFALFA.

AND THEN DOWN BELOW, THE YELLOW THERE, WE DON'T KNOW WHAT IT IS YET.

IT DOESN'T HAVE ENOUGH INFORMATION ON THE GROWTH CURVE TO GIVE US AN EXAMPLE.

BUT THESE ARE JUST SOME OF THE THINGS YOU CAN DO WITH THE REMOTE SENSE DATA.

BUT AGAIN I WANT TO STRESS THAT IT'S A POWERFUL TOOL, BUT IT'S JUST A TOOL.

IT STILL COMES BACK TO THE GROWER.

AND I'M SURE MR. HOODE WILL TALK A LITTLE BIT AS THE GROWER ON THE BATTLE HERE ABOUT WHAT HE HAS DONE WITH THIS DATA 'CAUSE HE'S BEEN A PIONEER IN THIS INDUSTRY.

BUT I WANTED TO SAY THANK YOU FOR THE OPPORTUNITY.

THIS IS-- UNFORTUNATELY I DID NOT GET GOOD FERTILIZER ON THIS FIELD, SO IT'S NOT AS BRIGHT GREEN AS WE WOULD HOPE.

WHAT THIS IS A SOCCER FIELD A BLOCK FROM OUR OFFICE.

AND LAST SUMMER WE MARCHED ABOUT 250 EMPLOYEES OVER THERE IN THE MORNING.

THE SATELLITE CAME OVER, TOOK A PICTURE.

SAYS THANK YOU.

NOT EVERYBODY WORE THEIR WHITE SHIRTS LIKE THEY WERE SUPPOSED TO.

BUT THE ANADOTAL PART OF THE STORY WAS THAT THERE WAS A BUNCH OF KIDS OUT PLAYING WITH THEIR MOTHERS AND STUFF, AND 250 PEOPLE JUST COME MARCHING DOWN THE STREET. MARCH IN THE MIDDLE OF THIS FIELD AND ALL THESE MOTHERS ARE GOING, "WHAT IS GOING ON?"

AND SO THEN THEY MILLED AROUND FOR A MINUTE.

THEY TOOK UP A POSITION.

WELL YOU COULD IMAGINE THANK YOU LOOKING STRAIGHT DOWN LOOKS DIFFERENT THAN LOOKING AT PEOPLE ON THE GROUND.

NOBODY REALLY SAID ANYTHING.

THEY JUST SORT OF LINED UP, AND THEN SOMEBODY SAID, "OKAY, DONE,"

AND EVERYBODY MARCHED OFF.

AND THIS MOTHER GRABBED ME AND SAID, "WHAT WAS THAT?"

I SAID, "OH, WE'RE A SATELLITE COMPANY. THE SATELLITE CAME OVER, AND WE JUST TOOK A PICTURE."

SHE GOES, "A PICTURE OF WHAT?"

I SAID, "OH, WE SPELLED OUT THANK YOU."

"YOU DID NOT."

BUT THERE IT IS, THE PROOF.

AND I WANTED TO THANK ALL OF YOU.

THANK YOU VERY MUCH.

[APPLAUSE]

(WILLIAM HOOKE)

OKAY, AND THANK YOU, HERB.

AND OUR NEXT SPEAKER IS TOM ERICKSON, VICE PRESIDENT FOR GOVERNMENT AFFAIRS AT BUNGE.

(TOM ERICKSON)

THANKS, BILL.

THANK YOU.

IT IS A PLEASURE TO BE HERE ON BEHALF OF BUNGE, AND TO BE WITH THIS PANEL TO TALK A LITTLE BIT ABOUT THE FUTURE.

BUNGE FOR THOSE OF YOU WHO AREN'T AWARE IS A GLOBAL AGRIBUSINESS AND FOOD COMPANY THAT OPERATES IN A FARM AND CONSUMER FOOD CHAIN.

WE HAVE APPROXIMATELY 25,000 EMPLOYEES OPERATING IN 32 COUNTRIES.

AND WE HAVE SIGNIFICANT ASSETS IN THE UNITED STATES-- ABOUT 4,600 EMPLOYEES.

AND PRIMARILY IN THE BUSINESSES OF PROCESSING AGRICULTURAL PRODUCTS AND TURNING THEM INTO FOOD PRODUCTS.

WE'RE A MAJOR EXPORTER OF AGRICULTURAL COMMODITIES AND PRODUCTS FROM THE AMERICAS AS WELL AS THROUGHOUT EUROPE, AND INCREASINGLY EASTERN EUROPEAN COMPANIES WHERE THERE'S RENEWED INTEREST IN AGRICULTURAL PRODUCTION.

IT'S FROM THIS UNIQUE COMMERCIAL PROSPECTIVE THAT I'D LIKE TO OFFER A FEW OBSERVATIONS AND PERSPECTIVES ON THE APPLICATIONS OF REMOTE SENSING, SATELLITE IMAGING AND PRECISION FARMING TECHNOLOGIES.

AND WHAT I'D LIKE TO DO THOUGH REALLY IS ACTUALLY TAKE A STEP BACK FROM THE TECHNOLOGIES FOR A MINUTE AND JUST SPEAK DIRECTLY TO THE QUESTION OF WHY THESE TECHNOLOGIES, IF DEPLOYED PROPERLY, WILL BENEFIT ADDITIONAL AND INCREASED BENEFIT TO AGRICULTURE, BUT MORE IMPORTANTLY EVEN TO CONSUMERS.

BUNGE SEES THE WORLD OF THE FUTURE WITH ROBUST FOOD DEMAND.

THIS IS WELL-ILLUSTRATED BY WHAT WE'VE SEEN OVER THE LAST 10 TO 15 YEARS IN AGRICULTURAL PRODUCTION SUPPLY AND DEMAND.

LET'S TAKE SOYBEANS JUST FOR A BRIEF MINUTE AND TALK A LITTLE BIT ABOUT WHAT'S HAPPENED.

GLOBAL CONSUMPTION OF SOYBEANS IS UP ABOUT 90% IN 12 YEARS.

GLOBAL SOYMEAL CONSUMPTION IS UP OVER 100% IN 13 YEARS.

ANIMAL PROTEIN CONSUMPTION, WHICH SOY IS A MAJOR COMPONENT OF, IS UP OVER 50% IN 12 YEARS.

CHINA ALONE HAS GONE FROM IMPORTING 800,000 TONS, METRIC TONS, OF SOYBEANS TO IMPORTING WELL OVER 22 MILLION METRIC TONS OF SOYBEANS IN JUST 10 YEARS.

ANALYSTS EXPECT CHINA'S DEMAND TO GROW FROM CONSUMPTION OF AROUND 33 TO 35 MILLION METRIC TONS TO OVER 50 MILLION TONS, AND GLOBAL DEMAND FOR SOYBEANS TO GROW TO 70 MILLION TONS JUST IN THE NEXT 10 YEARS.

ON THE PRODUCTION SIDE, THE AMERICAS, NORTH AND SOUTH AMERICA, CURRENTLY PRODUCE 80% OF THE SOYBEANS CONSUMED BY THE WORLD.

GLOBAL DEMAND IS SUCH THAT THE WORLD IS NO LONGER-- CAN AFFORD TO BE DEPENDENT ON A SINGLE ORIGIN FOR SOYBEANS, OR REALLY ANY OTHER COMMODITY.

THE DYNAMIC IS SIMILAR FOR OTHER COMMODITIES.

NEARLY 90% OF U.S. FEED GRAIN PRODUCTION IS CONSUMED DOMESTICALLY IN THE UNITED STATES.

AND DESPITE A CORN CROP THAT THE SECRETARY REFERRED TO JUST A FEW MOMENTS AGO OF NEARLY 12 BILLION BUSHELLS LAST YEAR, STOCKS REMAINED MODEST AT BEST.

ONE OF THE CONCLUSIONS THAT YOU COULD DRAW IS THAT WITH ALL THIS GLOBAL DEMAND, ALL THE DEMAND COULD REALLY SOAK UP VIRTUALLY EVERYTHING THAT WE COULD PRODUCE AND THEN SOME.

WHILE SUPPLIES OF AGRICULTURAL COMMODITIES ARE AMPLE, WE NO LONGER LIVE IN THE WORLD WE THOUGHT WE'VE KNOWN FOR THE LAST 50 YEARS OF WHAT WE'VE CALLED SURPLUS COMMODITIES.

RATHER, AGRICULTURE TODAY LOOKS A LOT MORE LIKE THE MANUFACTURING

SECTOR THAT WE KNOW, JUST IN TIME DELIVERY.

BECAUSE OF THIS VIEW OF AGRICULTURAL SUPPLY AND DEMAND, WE STRONGLY BELIEVE THAT THE APPLICATION OF NEW TECHNOLOGIES WILL BE A KEY TOOL IN HELPING ALL OF AGRICULTURE PROVIDE FOR THIS ROBUST GROWING DEMAND FOR FOOD.

AND THE UNITED STATES PLAYS A KEY LEADERSHIP ROLE IN THIS, IN THIS EVOLUTION.

ADVANCES IN TECHNOLOGY HAVE BEEN A KEY TO AGRICULTURAL ECONOMY FOR CENTURIES.

ADVANCES HAVE COME IN MANY FORMS:

MECHANIZATION, AS WE'VE HEARD FROM PREVIOUS SPEAKERS;

PLANT AND ANIMAL BREEDING;

AND WEED AND PEST CONTROL.

THE GOAL OF THESE ADVANCES ALWAYS HAS BEEN INCREASED PRODUCTIVITY, DECREASED INPUTS, IMPROVED QUALITY, AND OVERALL IMPROVEMENT OF EFFICIENCY.

REMOTE SENSING, SATELLITE IMAGING, AND PRECISION AGRICULTURE-- THE GOALS OF THESE DEVELOPING, AND SOMETIMES NASCENT TECHNOLOGIES, IS REALLY THE SAME.

AND THEY'LL BE MEASURED BY THOSE BENCH MARKS.

BEING ABLE TO INCREASE OUTPUT, DECREASE INPUTS, AND IMPROVE OVERALL EFFICIENCY AND QUALITY OF THE PRODUCT.

WE'VE ALREADY SEEN SOME OF THE POSSIBILITIES, AND WE'LL HEAR MORE OF THEM, I THINK, ABOUT JUST THE PRECISION FARMING AND IT'S VALUE AT THE FARM LEVEL.

THE VALUE OF THESE TECHNOLOGIES REALLY IS GOING TO BE WHEN THEY COMPLEMENT OUR EXISTING SYSTEMS TO EVALUATE, AND HAVE AN ECONOMIC ANALYSIS OF WHAT'S GOING ON IN VARIOUS PARTS OF THE WORLD, AND WHAT'S GOING ON AS FAR AS CONDITIONS-- WHETHER IT'S WEATHER, SOIL, MOISTURE, DISEASE CONDITIONS.

HAVING IMPROVED CLARITY AND ADVANCE WARNING AS HERB JUST TALKED ABOUT WILL ENABLE AGRIBUSINESSES TO BETTER FORECAST AND PLAN AHEAD FOR SOURCING AND LOGISTICS, AND ALSO FOR COMMUNICATING WITH OUR CUSTOMERS BOTH AT THE PRODUCER SIDE AND ALSO THE UNUSED CUSTOMERS ABOUT WHERE PRODUCTION MIGHT COME FROM FOR THERE OWN DEMANDS.

I SHOULD ALSO ADD JUST A NOTE ABOUT SUSTAINABLE AGRICULTURE AND IT'S, IT'S...AND THE IMPORTANCE OF THESE TECHNOLOGIES THERE.

THIS IS SOMETHING THAT'S BEING USED IN BRAZIL.

WE HAVE A MAJOR PRESENCE IN BRAZIL.

AND SUSTAINABLE AGRICULTURE IS IMPORTANT FOR THOSE COMPANIES OPERATING IN BRAZIL.

IT'S ALSO VERY IMPORTANT FOR THE GOVERNMENT.

AND THE USE OF IMAGING HAS BEEN VERY HELPFUL IN, I THINK, THE GOVERNMENT TRYING TO ACHIEVE ITS GOAL OF SUSTAINABLE AGRICULTURE.

ALL OF THIS IS REALLY AS WE'VE TALKED ABOUT AS SOMETHING THAT, IT'S KIND OF UNIQUE, I THINK, IT MUST BE THE THEME FOR 2005... PARTNERSHIP.

WE HEARD ABOUT IT IN ALMOST EVERY CONVERSATION, AND, INTERESTINGLY, THAT'S THE TITLE OF BUNGE'S ANNUAL REPORT THIS YEAR, "PARTNERING FOR THE FUTURE."

BUT PUBLIC/PRIVATE INVESTMENT WILL BE KEY.

PRECISION AG, AND TAPPING INTO THE G.P.S. HAS HAD SOME SUCCESS IN A PUBLIC/PRIVATE PARTNERSHIP, BUT PUBLIC INVESTMENTS ARE GOING TO BE CRITICAL BECAUSE OF THE MULTIPLICITY OF USES THAT WE SEE IN THESE TECHNOLOGIES.

THE RATHER EXPENSIVE TECHNOLOGY FROM A COMMODITY COMPANY.

TRADERS TEND TO LOOK AT THINGS IN QUARTER OF A PENNY, SO WHEN YOU START ADDING COSTS OF TECHNOLOGY, IT BECOMES A BIT MORE TO SWALLOW.

BUT TECHNOLOGY COSTS.

AND THE PRIMARY DELIVERABLE HERE IS INFORMATION.

AND TO THE EXTENT THAT YOU HAVE A PRIVATE/PUBLIC PARTNERSHIP HERE, AS I THINK IS BEING ENVISIONED IN WHAT'S PROPOSED, THAT WILL BE VERY HELPFUL TO THIS INDUSTRY BECAUSE THE INFORMATION NEEDS TO BE ACCESSIBLE, IT NEEDS TO PROMOTE COMPETITION, AND IT NEEDS TO BE ABLE TO BE AVAILABLE IN A FORM THAT MULTIPLE USERS CAN USE FOR THEIR OWN INTERNAL BUSINESS PURPOSES.

FOR AGRICULTURAL SYSTEMS, JUST AS A SUMMARY, I'D SAY THAT THE INFORMATION HAS TO BE PROVIDED IN A READILY, READILY ACCESSIBLE WAY AND IT MUST BE TIMELY.

AND HERB TALKED ABOUT THE FACT THAT THESE SYSTEMS CAN PROVIDE MAYBE TWO WEEKS ADVANCE NOTICE.

THAT'S IMPORTANT.

IT'S IMPORTANT FOR OUR ABILITY TO COMMUNICATE WITH PRODUCERS.

IT'S IMPORTANT FOR PRODUCERS TO COMMUNICATE WITH US.

AND IT'S IMPORTANT FOR US TO BE ABLE TO PLAN FOR TWO, THREE, SIX MONTHS OUT IN ADVANCE.

THE CONDITIONS-- CONDITIONS CHANGE RAPIDLY.

AND THE CLOSER TO REAL TIME THE INFORMATION IS, THE BETTER FOR ALL OF US.

I'D JUST LIKE TO CLOSE TO APPLAUD EVERYONE WHO'S BEEN INVOLVED IN THE GEOSSE EFFORT BECAUSE I THINK THAT AS TIME MOVES FORWARD, WE WILL ALL FIND BENEFITS THAT WE REALLY NEVER FELT POSSIBLE WHEN WE STARTED THIS PROJECT.

AND I'M VERY EXCITED ABOUT THE FUTURE, AND LOOK FORWARD TO YOUR QUESTIONS.

[APPLAUSE]

(DR. WILLIAM HOOKE)
THANK YOU, TOM.

NEXT UP IS STEVE FAIVRE FROM AGAIN THE DIRECTOR OF GLOBAL AG SERVICES AT JOHN DEERE.

(STEVE FAIVRE)
THANK YOU, DR. HOOKE.

I WANT TO START US OFF WITH A LITTLE BIT OF AGRICULTURE 101, AS LEAST AS VIEWED FROM JOHN DEERE'S PERSPECTIVE.

BASICALLY, WE LOOK AT AG PERFORMANCE AS A FUNCTION OF THREE FACTORS: GENETICS, ENVIRONMENT, AND MANAGEMENT.

WITH GENETICS, THE EXPRESSION OF THOSE GENETICS IS DEPENDING ON GETTING THESE IN THE RIGHT PLACE, AT THE RIGHT TIME, USING THE RIGHT PROCESS AND THE RIGHT RESOLUTION.

WITH THE ENVIRONMENT, HIGH RESOLUTION TOOLS IMPROVE RESPONSE.

GIVES US THE OPPORTUNITY TO GET THE RIGHT PLACE AND THE RIGHT PROS, AND THE RIGHT PROCESSES.

LASTLY, BUT CERTAINLY NOT LEAST, IS MANAGEMENT.

MANAGEMENT WITH INFORMATION-DRIVEN DECISIONS IS CRITICAL TO SUCCESS.

AND THOSE THREE BULLETS THERE, WE FEEL, ARE KEY TO THAT SUCCESS. SIMPLIFICATION-- WE CAN'T OVER STRESS THAT-- CONTROL, AND SCALABILITY.

IT'S NOT WORTH A LOT IN TECHNOLOGY IF WE CAN'T TAKE WHAT WE LEARN AND SPREAD IT ACROSS A BROAD NUMBER OF ACRES.

MAXIMIZING THIS FUNCTION IS WHAT DRIVES THE SUCCESS IN THE PROCESS.

AND WHAT WE'RE LOOKING AT IS STARTING AT A BASELINE WITH AGRICULTURE AS IT HAD BEEN TRADITIONALLY DONE.

YOU SEE THE SHADED AREA IN THE CHART NEXT TO THE BLUE CURB IS WHAT WE'RE REALLY AFTER.

THAT'S WHAT WE'RE AIMING FOR.

WHEN WE BRING GENETICS IN, WE MOVE A LITTLE BIT IN THAT DIRECTION.

WHEN WE ADD THOSE GENETICS IN THE RIGHT LOCATION, WE GET A LITTLE CLOSER. AND WHEN WE MATCH THAT UP WITH THE RIGHT MANAGEMENT, WE GET ALMOST ON TARGET.

HIGH RESOLUTION SOIL INFORMATION WE LOOK AT AS BEING THE FOUNDATION FOR THIS WHOLE PROCESS.

YOU'LL SEE A MAP UP THERE WHICH IS A MAP OF A VINEYARD OUT IN CALIFORNIA.

THE USDA'S SOIL SURVEY SHOWED THAT WE HAD TWO SOIL TYPES IN THIS VINEYARD.

WHEN WE TOOK A CLOSER LOOK AT THAT, AGAIN EMPLOYING TECHNOLOGIES THAT HAVE BEEN DEVELOPED OVER THE LAST FIVE YEARS, WE GET A HIGH RESOLUTION SOIL MAP THAT SHOWS NOT TWO SOIL TYPES, BUT SEVEN SOIL TYPES. AND THESE VARY IN LAYERS AS WE GO DOWN THE TWO METERS OF THE ROOTING DEPTH.

THAT INFORMATION CAN BE IN TURN CONVERTED INTO SOME MAPS FOR PLANT AVAILABLE WATER, AND THAT'S KEY IN THE PRECISION MANAGEMENT OF WATER AND THE UTILIZATION OF OTHER RESOURCES.

HIGH RESOLUTION WEATHER INFORMATION IS ANOTHER CRITICAL DECISION DRIVER.

THE MAP ON THE LEFT IS A DOPPLER MAP OF AN ESTIMATE OF RAINFALL IN AN EVENT IN LATE AUGUST IN NORTHERN ILLINOIS.

THE AREA THAT IT COVERS THERE IS ROUGHLY TWO TOWNSHIPS.

THE HORIZONTAL LINES ARE ABOUT A MILE APART SO YOU GET AN IDEA OF THE RESOLUTION.

SO THE COMBINATION OF THE NATIONAL WEATHER SERVICE STATIONS AND THE DOPPLER GAVE US AN ESTIMATE OF ROUGHLY THREE-QUARTERS OF AN INCH.

THE MAP ON THE RIGHT IS WHAT ACTUALLY OCCURRED.

AND THIS IS NOT OLD DATA.

SO WE HAVE A LONG WAY TO GO IN GETTING THE RESOLUTION DOWN EVEN BELOW THE TOWNSHIP LEVEL, DOWN TO THE FARM LEVEL.

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THE BLACK DOTS THAT YOU SEE ON THERE ARE WEATHER STATIONS THAT WERE PUT OUT TO MEASURE THIS.

SO YOU CAN SEE THERE'S A SIGNIFICANT DIFFERENCE.

AS A GROWER, IF I WAS GOING OUT-- AND KEN CAN VOUCH FOR THIS-- AND YOU'RE TRYING TO PLANT A PROCESS, AND YOU TOOK THE WEATHER PREDICTION, THE WEATHER ON THE LEFT AND SENT TRACTORS OUT INTO THE FIELD. THOSE RED AREAS, YOU'D BE SENDING IN OTHER TRACTORS TO PULL 'EM OUT.

SO IF IT WAS WORTH FARMING OVER BROADER AND BROADER AREAS, WE NEED MORE ACCURATE WEATHER DATA ON THE LOCAL LEVEL.

RELIABLE FORECASTS ENABLE IMPROVED DECISIONS.

THIS IS A, IT'S A PICTURE ACTUALLY OF OUR FAMILY'S FARM IN NORTHERN ILLINOIS.

AND IT'S NOT SO MUCH AS BEING ABLE TO AVOID THE WATER, IS MAKING SURE THAT YOU GET THE TRACTOR AND THE CORN PLANTER OUT OF THERE SO THAT IT'S NOT SITTING IN THE WATER.

IF WE LOOK AT THE HIGH-RESOLUTION DATA, THIS IS REALLY THE FOUNDATION FOR INPUT TO CROP MODELS.

AND AS CROP MODELS HAVE EVOLVED COMING OUT OF LABS, ONE OF THE ISSUES HAS BEEN WE CAN'T APPLY THEM IN THE FIELD BECAUSE WE DON'T HAVE DATA, THE RESOLUTION, OR THE ACCURACY IN BOTH TIME AND LOCATION THAT WE NEED TO TAKE ADVANTAGE OF THE POWER OF THE MODELS.

THIS IS A FIELD FROM THIS SPRING.

ON MAY 11th THE FIELD WAS FIT, AS YOU CAN SEE.

IT STARTED RAINING SOMETIME BEFORE 4pm AND THE FIELD BEGAN TO GET A LITTLE TACKY, AND A LITTLE MOIST WHERE IT WAS MARGINAL.

SOMEWHERE AROUND 6pm, BY THE TIME THAT IT STOPPED RAINING, THE FIELD IS BASICALLY IMPASSABLE.

AND SO THE CHALLENGE FOR A GROWER, IF YOU'RE MANAGING ACROSS BROAD AREAS, IS TO IDENTIFY WHEN CAN I GET BACK IN THE FIELD AGAIN.

SO WE LOOKED ON MAY 12th, THE NEXT MORNING, ABOUT 10am.

YOU CAN SEE THAT THE FIELD IS STARTING TO DRY OUT.

WE'RE STARTING TO GET SOME AREAS THAT ARE MARGINAL.

BY 5pm THAT DAY IT'S IMPROVED EVEN MORE.

AND WHEN WE GET DOWN TO 8am THE NEXT MORNING WE CAN FINALLY GET BACK IN THE FIELD.

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NOW HAVING THE INFORMATION TO KNOW WHICH FIELDS WE CAN GO INTO WHEN YOU'RE MANAGING PERHAPS HUNDREDS OF FIELDS LIKE THIS ACROSS BROAD AREA.

LOOKING AT THE WEATHER VARIABILITY THAT WE SAW IN ONE OF THE PREVIOUS SLIDES GIVES YOU AN IDEA OF THE CHALLENGES, BUT ALSO THE OPPORTUNITY WE HAVE.

THIS IS ACTUAL FIELD, USING REAL MODELS, RUNNING ACROSS HIGH-RESOLUTION WEATHER DATA.

THE OPPORTUNITY THAT WE HAVE ON FORECASTING IS IF WE CAN LOOK AT THIS WHERE WE'RE SITTING AT MAY 11th AND THE FORECAST CAN TELL US THAT THAT'S WHAT IT'S GOING TO LOOK LIKE AT 4 IN THE AFTERNOON. THAT'S WHAT IT'S GOING TO LOOK LIKE AT 6pm, 10am, AND SO ON. YOU CAN UNDERSTAND THE POWER THAT THIS BRINGS DIRECTLY TO THE GROWER AT THE FIELD LEVEL.

WE'RE NOT TALKING BROAD AREAS OR BROAD COUNTIES.

BUT THIS IS DOWN TO THE LEVEL WHERE AS A GROWER I CAN MAKE SOME DECISIONS AND WORK FROM IT.

SO TO MEET THE ACCELERATING, RAPIDLY CHANGING NEEDS FOR FOOD AND FIBER IN THE WORLD, AGRICULTURE NEEDS TIMELY AND RELIABLE INFORMATION NOT TOMORROW, BUT WE NEED IT TODAY.

THANK YOU.

[APPLAUSE]

(DR. WILLIAM HOOKE)
THANK YOU, STEVE.

OUR NEXT SPEAKER IS MICHAEL DYKES, VICE PRESIDENT FOR GOVERNMENT RELATIONS AT MONSANTO.

(MICHAEL DYKES)
I DON'T KNOW ABOUT THE REST OF YOU, BUT FOR ME IT'S AN EXCITING TIME IN AGRICULTURE.

I'M JUST TURNED 50 THIS PAST YEAR. I STARTED WHEN I WAS 5 YEARS OLD MILKING COWS BY HAND WITH MY MOM AND DAD.

WE MILKED ABOUT NINE OR TEN COWS.

AND I THINK ABOUT THE CHANGES THAT HAVE HAPPENED IN 45 YEARS.

AND THERE MAY BE A COUPLE IN HERE THAT CAN RELATE TO MILKING COWS BY HAND, AND I'M LOOKING AT PROBABLY ONE OF THEM, BUT NOT MANY OF YOU.

BUT IT IS AN EXITING TIME IN AGRICULTURE!

AND IF YOU'RE IN AGRICULTURE AND YOU AREN'T EXCITED, AS SENATOR

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ROBERTS SAID, WE PROBABLY BETTER DO A PULSE CHECK ON YOU 'CAUSE SOMETHING'S GOING ON.

AND AS I LOOK AHEAD TO THE FUTURE, I SEE ONLY MORE EXCITEMENT OUT THERE FOR AGRICULTURE.

AS I COME TO CONFERENCES LIKE THIS, AND WE WERE TALKING EARLIER BEFORE WE GOT STARTED, AND I WAS ASKING SOME RATHER SIMPLE QUESTIONS FOR THESE, THESE GUYS WHO DEAL WITH THIS ALL THE TIME.

BUT THE OPPORTUNITY IS PHENOMENAL OUT THERE FOR PEOPLE IN AGRICULTURE.

AND THE PARTNERSHIPS, AND THE TOOLS, AND THE OPTIONS, AND THE CHOICES FOR GROWERS TO MAKE, TO MANAGE, TO PRODUCE THE FOOD SUPPLY THAT'S GOING TO FEED THIS WORLD.

IT IS, IT'S AND EXTREMELY EXCITING TIME.

AND AS I TALK TO GRADUATING STUDENTS COMING THROUGH OUR OFFICES FROM VARIOUS UNIVERSITIES, I TELL ALL OF THEM THAT YOU'RE IN AGRICULTURE IN ONE OF THE MOST EXCITING TIMES THAT I'VE EVER SEEN.

SO I'M PROUD TO BE HERE TODAY, AND I APPRECIATE THE INVITATION.

I'M PLEASED TO REPRESENT MONSANTO HERE TODAY.

I WILL GIVE YOU A LITTLE BIT OF A BACKGROUND ABOUT WHO MONSANTO IS, WHAT SOME OF OUR CROPS AND PRODUCTS ARE IN TERMS OF TECHNOLOGY AND AGRICULTURE, AND I'LL HAVE ONE SLIDE OR TWO SLIDES THAT LOOKS TO THE FUTURE.

SO.

MONSANTO IS AN AGRICULTURAL BIOTECHNOLOGY COMPANY.

SEEDS, TRAITS, AND AGRICULTURAL CHEMICALS, AND OUR FLAGSHIP PRODUCT HAS BEEN ROUNDUP, WHICH EVEN THOSE OF YOU WHO ARE NOT INVOLVED IN AGRICULTURE ARE PROBABLY FAMILIAR WITH ROUNDUP.

YOU PROBABLY USE IT ON THE WEEKENDS IN YOUR HOMES.

BUT WITH US IDENTIFYING GENES AND TRAITS, AS WE CALL THEM, TO MAKE CHANGES IN AGRICULTURE, THE DELIVERY MECHANISM-- IF YOU NOTICE WHERE I'M SEATED, I'M SEATED BETWEEN THE CORN PLANTER AND THE, OR THE COTTON PLANTER AND THE COTTON PRODUCER-- IT'S THE SEED THAT GOES IN THERE.

THAT'S THE LINK FOR THAT.

AND THAT'S THE DELIVERY MECHANISM FOR THE GENES AND THE TRAITS THAT WE ARE WORKING WITH AT MONSANTO, AND OUR OTHER COMPETITOR COMPANIES AS WELL.

WE'RE ABOUT 14,500 EMPLOYEES WORLDWIDE, 380 LOCATIONS WORLDWIDE IN

FOUR PRIMARY REGIONS OF THE WORLD.

WE HAVE ABOUT 20 PLUS BASIC SCIENCE RESEARCH CENTERS WHERE WE'RE LOOKING AT... ANALYZING DATA.

TRYING TO DETERMINE THE VERY BEST GERM PLASM, THE VERY BEST VARIETIES OF SEEDS, SO THAT WE CAN PUT THE LATEST GREATEST GENES AND TRAITS INTO THOSE, SO THAT WE HAVE SOMETHING TO OFFER TO THE FARMERS THAT MAKE A DIFFERENCE IN THEIR PROFITABILITY.

WE'RE ABOUT \$4.7 BILLION IN SALES ANNUALLY, AND WE'RE INVESTING OVER \$500 MILLION A YEAR, OR \$1.2 MILLION A DAY IN RESEARCH.

AND AGAIN, I THINK IT GOES TO-- THAT'S JUST WHAT ONE COMPANY'S DOING.

THINK ABOUT ALL THE THINGS THAT ARE GOING ON IN AGRICULTURE.

AND AGAIN, I COME BACK TO THE FUTURE IS EXTREMELY BRIGHT AND EXCITING FOR AGRICULTURE.

IN TERMS OF BIOTECHNOLOGY TODAY, WHERE ARE WE TODAY?

THE UNITED STATES PLANTS MORE BIOTECHNOLOGY CROPS THAN ANY OTHER COUNTRY.

WE'RE ABOUT 117 MILLION ACRES.

ABOUT 59% OF ALL U.S. CROPS CONTAIN A BIOTECH TRAIT IN 2004 UP FROM 11% IN 2003.

IN THE PRIMARY BIOTECHNOLOGY CROPS IN THE UNITED STATES ARE SOYBEANS AT ABOUT 85%.

I PUT APPROXIMATES ON THESE' CAUSE DEPENDING ON THE DATA YOU GO WITH.

BUT ABOUT 85% OF OUR SOYBEANS, ABOUT 76% OF OUR COTTON, AND ABOUT 45% OF OUR CORN CONTAINS SOMEBODY'S BIOTECHNOLOGY TRAIT TODAY.

WHAT ARE SOME OF THE BENEFITS OF WHAT WE'RE DOING TODAY?

REDUCED PESTICIDE USE.

LEONARD AND (INAUDIBLE) DID A STUDY IN 2002, DEMONSTRATED ABOUT 46 MILLION POUNDS OF PESTICIDE REDUCTION FROM THE USE OF BIOTECHNOLOGY CROPS.

INCREASED YIELDS.

REDUCED TIME SPENT IN THE FIELD.

WHICH IS, FOR THOSE OF YOU WHO HAVE GROWN UP ON A FAMILY FARM OR ARE STILL INVOLVED IN FARMING, HAVING TIME TO SPEND WITH YOUR FAMILY AND NOT CONSTANTLY WORKING IS AN EXTREMELY IMPORTANT THING, PROBABLY ONE OF THE PRIMARY BENEFITS WE HEAR FROM BIOTECHNOLOGY

FROM MANY OF OUR FARMER CUSTOMERS.

IF WE LOOK AT BIOTECHNOLOGY GLOBALLY TODAY, ABOUT 17 COUNTRIES OR 8.25 MILLION FARMERS ARE PLANTING BIOTECH CROPS AROUND THE WORLD.

ABOUT 200 MILLION ACRES WERE PLANTED IN 2004, AND INCREASE OF ABOUT 20% OVER 2003.

TOP EIGHT BIOTECH COUNTRIES:
THE U.S., ARGENTINA, CANADA, BRAZIL, CHINA, PARAGUAY, INDIA, AND SOUTH AFRICA.

AND THE PRIMARY CROPS:
SOYBEANS, COTTON, CORN, AND CANOLA.
AND YOU CAN SEE THE RELATIVE PERCENTAGES OF THOSE ON A GLOBAL BASIS.

WHAT ARE WE DOING WITH EARTH SCIENCES TODAY AT MONSANTO?

ONE OF THE USES THAT WE, WE ARE USING TODAY IS GPS DATA AT THE USDA FOR OUR FIELD TRIALS FOR NEW BIOTECH CROPS FOR LOCATIONS.

PEST MANAGEMENT, AND WE'RE USING FIELD MAPPING OF PEST PRESSURE TO DETERMINE THE ECONOMIC BENEFITS OF GROWING INSECT-RESISTANT AND HERBICIDE-TOLERANT CROPS IN THE DIFFERENT LOCATIONS.

AND AGAIN, I THINK YOU CAN SEE FROM THE PREVIOUS SPEAKERS HOW THAT'S POSSIBLE.

SCREENING OF VARIETIES.

WE UTILIZED GPS, FIELD MAPPING, AND OTHER TECHNOLOGIES IN OUR SEED PRODUCTION, JUST LIKE FARMERS DO AS WELL.

IT'S EXTREMELY IMPORTANT TO US.

WHAT ARE WE LOOKING AT IN TERMS OF THE FUTURE?

WE'RE EXTREMELY EXCITED.

ONE OF THE THINGS THAT WE'RE WORKING ON AT MONSANTO ARE SOME... EVALUATING THE WAY PLANTS REACT TO STRESS.

CORN, AS THEY UNDERGO STRESS FROM DROUGHT, LEAVES ROLL UP.

THEY TRY TO PRESERVE MOISTURE.

WE HAVE SOME GENES TODAY THAT WE'VE SEEN SOME VERY PROMISING RESULTS IN THE GREENHOUSE AND IN EARLY FIELD TRIALS WITH SOME GENE INTERACTIONS TO HELP PLANTS MANAGE STRESSFUL CONDITIONS OF DROUGHT.

AND WE THINK WE COULD EVEN DO MORE WITH THAT ONCE THAT COMES ON STREAM BY BEING ABLE TO HELP BY WITH KNOWING WHERE RAINFALLS GOING TO BE.

SOME OF THE STUFF WE'VE HEARD ABOUT PREDICTING WEATHER.

TO KNOW WITHIN SECTIONS OF THE FARM WHERE THAT MAY BE MOST BENEFICIAL.

SOIL TYPES, ALL THOSE KINDS OF THINGS TO MAKE FARMERS-- GIVE FARMERS THE TOOLS TO MAKE OPTIMAL DECISIONS.

THE OTHER AREA THAT WE SEE AS THE FUTURE IS PLANT DISEASES.

AND WE CAN COMBINE WEATHER MAPPING, PEST PRESSURES, AND OTHER TECHNOLOGIES TO DETERMINE WHICH VARIETIES DO THE BEST UNDER DIFFERENT KIND OF PEST PRESSURES.

WE'LL GIVE FARMERS MORE INFORMATION SO THEY CAN MAKE MORE INFORMED CHOICES, AND SEED PURCHASES, AND YIELD AND PROFITS WITH THEIR CROPS.

ANOTHER USE MAY BE EARLY DETECTION AND MORE TARGETED APPLICATIONS OF TREATMENTS BY DOING SOME SATELLITE IMAGING OF DIFFERENT CROPS TO SEE THAT THEY'RE UNDERGOING DROUGHT STRESS RATHER THAN WAITING 'TIL HARVEST, AND REALIZE THAT WE MAY HAVE HAD SOME KIND OF INFESTATION BECAUSE WE SEE A DECREASED YIELD.

BECAUSE YIELDS ARE, AS WE ALL KNOW, ARE HIGHLY VARIABLE.

WE MAY BE ABLE TO USE IT FOR MONITORING AND IDENTIFYING VARIETIES THAT PROVIDE THE MOST AND PRECISE RESISTANCE TO DIFFERENT DISEASE OR PEST.

SO THOSE ARE JUST SOME OF THE SMALL POSSIBILITIES THAT LIE AHEAD FOR AGRICULTURE.

AND AGAIN, AS I SAID EARLIER, I THINK IT'S AN EXTREMELY EXCITING TIME TO BE IN AGRICULTURE.

THANK YOU FOR HAVING ME TODAY.

[APPLAUSE]

(DR. WILLIAM HOOKE)

THANK YOU, MIKE.

OUR NEXT SPEAKER IS KEN HOOD WHO IS FIRST AND FOREMOST A COTTON GROWER, BUT ALSO PAST CHAIR OF THE NATIONAL COTTON COUNCIL.

(KEN HOOD)

WHAT I WANT TO DO IS JUST TAKE THE PRECISION AG APPROACH AND THAT'S GOING TO BE THE ENVIRONMENTAL PART OF IF, AND THEN THE LEAST COST OF PRODUCTION WOULD BE THE ECONOMY OF SCALE THAT YOU'VE HEARD THE OTHER PRESENTERS IN.

I TELL YOU WHAT, THIS IS A HARD PANEL TO FOLLOW.

I TELL YOU WHAT, THEY'VE ALREADY SAID EVERYTHING I WAS GOING TO

SAY.

BUT I AM A COTTON FARMER FROM MISSISSIPPI.

I PUT THIS MAP IN JUST TO SHOW YOU WHERE, WHERE I AM.

MEMPHIS, TENNESSEE, MOST OF YOU PROBABLY KNOW WHERE MEMPHIS, TENNESSEE, WOULD BE.

IT'D BE RIGHT UP THERE.

AND I FARM IN BOLIVAR COUNTY, RIGHT THERE ON THE MISSISSIPPI RIVER.

AND THAT'S A PICTURE OF OUR FAMILY FARM, PERTSHIRE FARMS.

THAT'S THE MISSISSIPPI RIVER IN THE BACK.

YOU CAN'T HARDLY SEE IT, IT WAS A HAZY DAY WHEN THAT WAS TAKEN.

BUT I LIKE YOU ON YOUR VINEYARD, OUR SOILS CHANGE ABOUT FIVE TO SIX TIMES FROM ONE END OF THE FIELD TO THE OTHER.

SO IT'S A CHALLENGE IN THE ALLUVIAL SOILS OF THE MISSISSIPPI DELTA TO FARM.

AND THE CHALLENGE IS IN PLANTING, PLANT GROWTH, NUTRIENTS, INSECTS, WEEDS, PLANT SIZE, AND THEN CROP TERMINATION WHEN YOU GO TO HARVEST, WHICH IS VERY, VERY IMPORTANT.

AND I'M GOING TO GO THROUGH THESE SLIDES PRETTY FAST BECAUSE I'VE GOT A LOT OF INFORMATION THAT I WANT TO GET TO.

BUT THESE ARE THE THINGS, SIX THINGS THAT WE'RE ACTUALLY DOING ON PERTSHIRE FARMS.

THE VARIABLE RATE SEEDING, THE VARIABLE RATE FERTILIZATION, SPATIALLY VARIABLE INSECT CONTROL, SPATIAL WEED CONTROL, SPATIAL PLANT GROWTH REGULATORS, AND FOLIATION OR VARIABLE RATE HARVEST AIDS.

AND I'M JUST GOING TO RUN THROUGH SOME THINGS REAL FAST TO SHOW YOU HOW WE COLLECT THAT DATA, AND HOW WE PROCESS THE DATA, AND THE FINAL RESULTS.

OF COURSE ON VARIABLE RATE SEEDING, AS I MENTIONED THE FIVE TO SEVEN TIMES THE SOIL CHANGED FROM ONE END TO THE OTHER, IT'S ALL BASED ON A SAND-BASED CRITERIA.

OR MAYBE IT'S CLAY, OR IT'S A MIXTURE OF THE TWO.

IT JUST CHANGES FROM END TO END.

SO WE HAVE TO LOOK AT THAT.

NEXT THING WE LOOK AT IS THE TOPOGRAPHY OF THE SOIL.

THERE'S A SOIL, IS IT ROLLING?

WHAT'S THE ELEVATION OF IT?

THEN THE NEXT THING WE LOOK AT, WHAT IS THE WATER HOLDING CAPACITY OF THAT SOIL?

SOME SOILS CRUST.
SOME SOILS DON'T CRUST OVER.

SO YOU HAVE TO TAKE ALL THESE FACTORS INTO CONSIDERATION.

JUST A PICTURE OR AN IMAGE WON'T DO ALL OF THESE THINGS FOR YOU IS THE THING.

AND FROM THAT, FROM ALL THESE THINGS WE JUST TALKED ABOUT IS WHAT WE DO WITH THE VARIABLE RATE.

AND THAT'S HOW WE WRITE THE PRESCRIPTION.

AND WE'LL TAKE A BARE SOIL IMAGERY AND LAY IT ON TOP OF ALL THESE OTHER FOUR OR FIVE THINGS I JUST MENTIONED.

THEN WE WRITE THE PRESCRIPTION FROM THAT.

NOW LET ME SHOW YOU WHAT THE RESULTS ARE.

INCREASED YIELDS FROM 2% TO 10%.

IN OTHER WORDS, WE VARIED OUR SEEDING RATE FROM THREE SEED PER FOOT OF ROW TO FIVE SEED PER FOOT OF ROW.

REDUCED OUR SEED COSTS-- THE MONSANTO MAN DOESN'T LIKE THIS VERY MUCH-- BUT FROM 31% TO 66%.

BECAUSE WE WERE PLANTING THE SEED WHERE THEY NEEDED TO BE, AND THE PLANT POPULATION THAT IT NEEDED TO BE ALSO.

AND THEN, OF COURSE, WE INCREASED OUR PROFITS FROM 7% TO 13%.

THIS IS A PLANT ON A PLANT BUG MAP.

INSECTS, WE FOUND OUT, ARE SIMILAR TO YOU AND I.

THEY LIKE CERTAIN THINGS BETTER THAN THEY LIKE CERTAIN OTHER THINGS.

THEY LIKE CERTAIN PLANTS BETTER THAN THEY LIKE A PLANT RIGHT NEXT TO IT.

BECAUSE OF A REASON.

WE'VE WRITTEN ALGORITHMS AND USED CERTAIN FILTERS ON THE CAMERAS

TO BE ABLE TO DECIPHER THESE PLANTS THAT THEY GO TO.

AND SO YOU CAN SEE THE DARK GREEN PLANTS AS THEY'RE INDICATED BY THE ARROWS.

THAT'S WHERE THE PLANT BUGS CAN GO.

THEN WE CAN TAKE, WRITE THAT PRESCRIPTION, PUT IT IN AN APPLICATOR, AND DO IT.

LET ME SHOW YOU WHAT THE DIFFERENCE IS.
THE GREEN IS WHERE WE SAW WE NEEDED THE PLANT BUGS CONTROL.

THERE'S A FIELD HERE.

THESE ARE NOT 10-12 ACRE FIELDS.

THESE ARE 500 AND 600-ACRE BLOCKS OF FIELDS THAT WE DO THIS ON.

THIS IS THE ACTUAL, THE MACHINE YOU SAW, THIS IS THE ACTUAL SPRAY.

THAT'S WHERE HE SPRAYED, WHERE IT'S GREEN.

THE GRAY IS NOT, AND THE RED IS WHERE WE TOLD HIM WE HAD SOME TEST SPOTS IN THERE JUST TO CHECK AND MAKE SURE, THAT WE DIDN'T DO ANYTHING TO.

SO YOU SEE 67% SAVINGS.

WE DIDN'T SPRAY THOSE GRAY AREAS.

NOW ENVIRONMENTALLY, HOW FRIENDLY IS THAT WHEN I PUT OUT 67% LESS MATERIAL?

ON TOP OF THE ECONOMICS BECAUSE I DIDN'T HAVE TO BUY THE MATERIALS THERE.

THIS IS PLANT GROWTH REGULATORS.
ALL OF YOU, IF YOU'VE HAD A GARDEN YOU'LL THINK SOME PLANTS GROW FASTER THAN OTHERS.
SOME GROW SLOW.

IT CAN BE FOR A NUMBER OF REASONS.

DARK GREEN PLACES THERE, YOU CAN SEE THIS IS A PLANT VIGOR ON AN NDVI.

WITH THE ALGORITHMS THAT WE USE, IT'S GOT SEVEN LEVELS THERE THAT WE LOOK AT, AND SO WE CAN KNOW WHERE TO PUT.

THE DARK BROWN AREAS MEANS THAT THERE'S LESS VIGOROUS PLANTS.

THE DARK GREEN ARE THE MOST VIGOROUS.

THAT DOESN'T MEAN IT'S SORRY COTTON OR SORRY SOYBEANS OR CORN, IT

JUST MEANS THAT THE VIGOR IS NOT THERE LIKE IT IS IN THAT.

PLAN GROWTH REGULATOR DOES NOT NEED TO BE PUT ON THAT PARTICULAR AREA, SO YOU SEE THE COST THE SAVINGS ON THAT ALSO.

PLANT GROWTH NUTRIENTS, FERTILIZATION.

THIS GIVES YOU AN IDEA.

WE USE LOW-LEVEL AIRCRAFT TO DO THAT.

SATELLITE IMAGERY HAS ITS PLACE ALSO.

BUT THIS IS A LOW-LEVEL AIRCRAFT FLYING AT 12,000 FEET.

THE INFRARED IMAGE.

WE USE CERTAIN FILTERS AND ALGORITHMS, AS I'VE SAID A MINUTE AGO.

FROM THAT WE WRITE THE PRESCRIPTION MAP, AND THEN YOU HAVE THE ACTUAL APPLICATION.

SO YOU CAN SEE FROM EVERYTHING THAT I'VE TOLD YOU, WE DON'T TAKE THE FARMER OR THE CONSULTANT, HIS CONSULTANT, OUT OF THE LOOP.

WE DO THIS WITH HIM THERE SO THAT WE HAVE THE IMPUTES.
AND WE ARE ACTUALLY GROUND-BASED AND HAVE THE TRUTH, GROUND TRUTH IN THERE.

AND YOU CAN SEE THE SAVINGS PER ACRE IN THAT.

YOU'LL NOTICE THIS RIGHT HERE.

THAT'S DIFFERENT FROM THE REST OF THE FIELD, ISN'T IT?

SOMETHING HAPPENED RIGHT THERE, AND WE PICKED IT OUT.

THAT WAS ACTUALLY A CASE ON A NEIGHBORING FARM OF OURS WHERE THE APPLICATOR GOT TO THE WRONG FIELD AND PUT OUT A LAY BY APPLICATION.

HE GOT THE CHEMICAL MIXED UP, AND PUT THE WRONG CHEMICAL OUT ON THAT FIELD, AND IT SHOWED IT UP.

WE WENT TO HIM AND SHOWED HIM.

HE CAME TO US AND SAID THERE WAS SOMETHING WRONG WITH THIS COTTON, AND WHAT IT WAS?

AND WE FOUND OUT FOR HIM WHAT IT WAS.

SO ENVIRONMENTAL BENEFITS ARE PRICELESS, ABSOLUTELY PRICELESS.

YOU SEE THE WATER HERE, THE GROUND, THE BUFFER ZONE RIGHT THERE?

WHAT WE DO, WE WRITE THE PRESCRIPTION.

IF THAT PERSON THAT'S DRIVING THAT MACHINE COMES OVER HERE, THE COMPUTER ON BOARD JUST WILL NOT TURN THE MACHINE ON.

IT WON'T SPRAY THAT BUFFER ZONE.

SO YOU SEE HOW MUCH MORE ENVIRONMENTALLY FRIENDLY WE ARE TO BE ABLE TO DO THOSE KINDS OF THINGS?

AND THAT'S WHAT WE'RE DOING.

SO LOOKING INTO THE FUTURE, THE VISION.

WE'VE GOT TO HAVE A FARMER, SPEAKING FROM A FARMER, WE'VE GOT TO HAVE IMAGERY ON DEMAND.

A COTTON PLANT, FOR EXAMPLE, EVERY THREE DAYS IT PUTS A NEW FRUITING NODE ON.

SO EVERY THREE, OR I'VE WAITED TWO FRUITY NODES, EVERY SIX DAYS AT LEAST I'VE GOT TO HAVE AN IMAGE TO BE ABLE TO GO OUT AND MEET WITH MY CONSULTANT TO DO THAT.

SO THE IMAGERY HAS GOT TO BE ON DEMAND.

IT'S GOT TO BE A HIGH-QUALITY IMAGE TO BE ABLE TO HAVE THE RIGHT RESOLUTION TO SEE WHAT YOU WANT TO KNOW.

YOU'VE GOT TO KNOW WHAT ALGORITHMS YOU'RE LOOKING FOR.

YOU'VE GOT TO KNOW WHAT YOU'RE LOOKING FOR FIRST, AND WHAT FILTERS AND SO FORTH TO DO.

ONLY WAY YOU DO THAT IS THROUGH GROUND TRUTH, AND THEN TECHNICAL SUPPORT.

I'M A FARMER.

MY VARIABLE RATE EQUIPMENT MAY NOT WORK.

I'VE GOT TO HAVE SOMEBODY TO HOLD MY HAND, OR MY EMPLOYEES NEED SOMEBODY TO HOLD THEIR HAND, TO WALK THEM THROUGH TO GET THE RIGHT EQUIPMENT, AND TO MAKE IT SPRAY CORRECTLY.

THAT'S ANOTHER THING THAT HAS TO HAPPEN.

THE EQUIPMENT HAS TO HAVE OPEN ARCHITECT.

IF I HAVE A NEIGHBOR WHO GETS THROUGH DOING SOMETHING AND HE COMES AND HELPS ME, I NEED FOR HIS MACHINE TO BE ABLE TO READ MY PRESCRIPTION CARD AND TALK TO IT SO WE CAN HELP EACH OTHER.

AND WE DO THAT.

PARTICULARLY IF YOU'VE GOT A FAMILY FARM OPERATION.

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AND THE COST HAS GOT TO BE COST EFFECTIVE TO A FARMER TO WHERE IT'S NOT OVERPRICED AND HE CAN'T AFFORD IT.

SO THOSE THINGS ARE VERY, VERY IMPORTANT.

AND BY THE WAY, THERE IS A COMPANY OUT THERE THAT DOES THAT.

I DIDN'T HAVE ANYBODY THAT DID THAT WHEN I STARTED IN PRECISION AG, SO I FORMED A COMPANY CALLED IN TIME.

AND PRECISION DOES PAY.

AND WE ARE LOCATED IN THE U.S.A., AND WE'RE IN THE RED, WE'RE IN TEN STATES NOW.

SO WE ARE, THERE IS A SERVICE PROVIDER OUT THERE THAT DOES THAT.

THANK YOU.

[APPLAUSE]

(DR. WILLIAM HOOKE)

THANK YOU, KEN.

AND OUR NEXT SPEAKER IS JON DOGGETT, VICE PRESIDENT FOR PUBLIC POLICY AT THE NATIONAL CORN GROWERS ASSOCIATION.

(JON DOGGETT)

WELL, THANK YOU, BILL.

WHEN I GOT HERE THIS AFTERNOON, BILL SAID, "DO YOU MIND BEING THE LAST SPEAKER?"

THE ANSWER TO THAT WAS "NO," OF COURSE.

BUT I SAID, "JUST AS LONG AS EVERYONE IS STILL AWAKE."

YOU ALL DO APPEAR TO BE SOMEWHAT ATTENTIVE.

BUT THERE WAS A BIT OF AN ADDED BONUS BECAUSE IF YOU LISTENED TO SENATOR PAT ROBERTS, HE SAID HE WAS THE OPENING JUGGLER FOR GARTH BROOKS.

AND I DON'T KNOW IF THAT MAKES ME GARTH BROOKS OR NOT, BUT IT CERTAINLY DOESN'T MICHAEL DYKES TRISH YEARWOOD.

[LAUGHTER]

SENATOR ROBERTS ALSO MENTIONED THE CURRENT BROUHAHA IN THE UNITED STATES SENATE REGARDING JUDGES AND A MR. BOLTON.

I WOULD JUST LIKE TO TAKE A MOMENT AND MENTION THAT THOSE ARE NOT THE ONLY NOMINATIONS THAT HAVE BEEN HELD UP.

AND THERE'S ONE THAT WE'RE PARTICULARLY CONCERNED ABOUT, AND THAT

IS THE UNDER SECRETARY FOR WORLD DEVELOPMENT USDA.

AND THERE'S A MAN WHO DESERVES THAT JOB.

HE HAS THE INTELLIGENCE, THE EXPERIENCE, AND THE VISION TO BE AN EXCELLENT UNDER SECRETARY.

AND WE ARE VERY HOPEFUL THAT TOM DORR WILL SOON BE CONFIRMED BY THE SENATE IN THAT POSITION BECAUSE ALL OF WHAT WE'VE TALKED ABOUT TODAY ARE THE KINDS OF THINGS THAT HE'S TALKED ABOUT FOR A NUMBER OF YEARS.

AND SO TOM, LIKE I TOLD YOU EARLIER, I LOOK FORWARD TO THE DAY THAT WE CAN CALL YOU MR. SECRETARY.

AND YOU HAVE MY ASSURANCE THAT OUR ORGANIZATION WILL BE WHOLEHEARTEDLY BEHIND THAT.

OKAY.

NATIONAL CORN GROWERS ASSOCIATION, WE ARE A FEDERATION OF STATE ASSOCIATIONS AND STATE CHECK OFF BOARDS.

WE HAVE 20, EXCUSE ME, 33,000 MEMBERS, ALL TIME HIGH.

WE ARE GROWING EVERY YEAR IN OUR MEMBERSHIP BOTH IN THE STATE AREA AND IN THE INDIVIDUAL MEMBER AREA.

WE'VE TALKED A LOT TODAY ABOUT TECHNOLOGY, AND ONE OF THE THINGS THAT-- FARMERS ALL LOVE TECHNOLOGY.

AND WE WERE LOOKING AT A COUPLE YEARS AGO IS HOW IS THIS TECHNOLOGY EVOLVING, AND WHERE ARE WE GOING WITH TECHNOLOGY?

AND WE TAKE A LOOK AT WHAT FARMERS HISTORICALLY DO WITH TECHNOLOGY IS THEY TEND TO TAKE IT, REDUCE, THEY BECOME MORE EFFICIENT, THEY BECOME MORE PRODUCTIVE.

THEY LOWER THEIR COSTS OF PRODUCTION.

BUT WE'RE DRIVING OUR PRODUCT PRICE DOWN WHEN WE DO THAT.

AND WHAT WE WANT TO LOOK AT IS WHAT ARE THE OPPORTUNITIES OUT THERE TO ADD VALUE, AND TO TAKE SOME OWNERSHIP OF THE TECHNOLOGY, AND TO TAKE SOME OWNERSHIP OF ADDING VALUE NOT ONLY FOR THE PRODUCTS WE PRODUCE, BUT ADDING VALUE IN THE RURAL COMMUNITY THAT WE LIVE IN, AND TO KEEP IT CLOSER TO HOME.

PROBABLY ON ONE OF THE CLASSIC EXAMPLES OF TAKING TECHNOLOGY, GIVING OWNERSHIP OR TAKING OWNERSHIP BY FARMERS, AND ADDING VALUE AND MOVING ECONOMIC VALUES BACK INTO RURAL AMERICA, AND THAT'S THE ETHANOL INDUSTRY.

IT IS ONE OF THE CLASSIC EXAMPLES OF A VALUE ADDED INDUSTRY.

AND TEN YEARS AGO, WHEN YOU TALKED ABOUT ETHANOL, IT WAS ARCHER,

DANIELS, MIDLAND.

IT'S NO LONGER THE CASE.

THE ETHANOL INDUSTRY IS ABOUT 50% OWNED BY FARMERS-.

FARMER-OWNED CO-OPS, FARMER OWNED LLP'S.

500 TO 1,000, 1,500, 2,000 FARMERS GET TOGETHER AND PUT UP EQUITY AND GO WORK WITH INVESTORS OR OTHER PROVIDERS OF CAPITAL.

AND THEY TAKE CUTTING-EDGE TECHNOLOGY, AND THEY TAKE THAT NUMBER 2 YELLOW CORN THAT THEY RAISE SO EFFICIENTLY, AND ADD VALUE TO IT IN THAT SMALL COMMUNITY.

AND THEY ADD JOBS. SO THAT FARM KID THAT-- THERE'S NOT QUITE ENOUGH ROOM ON THE FARM, BUT DOESN'T WANT TO MOVE AWAY FROM THAT SMALL TOWN HAS A JOB.

AND THAT JOB NORMALLY PAYS PRETTY GOOD, AND IT HAS HEALTH INSURANCE BENEFITS.

AND THAT'S IMPORTANT IN SMALL TOWNS THAT HAVE LOST POPULATION.

IT'S IMPORTANT TO HAVE THE ECONOMIC DRIVER THAT KEEPS THE SCHOOL IN THE LOCAL COMMUNITY.

AND IT'S TAKING ADVANTAGE OF THE TECHNOLOGY.

WE'VE SEEN PRODUCTION IN ETHANOL DOUBLE IN LESS THAN FOUR YEARS.

NO OTHER ENERGY SOURCE IN THE COUNTRY OR IN THE WORLD HAS DOUBLED IN FOUR YEARS.

IN A WORLD THAT IS MORE AND MORE DEPENDANT ON ENERGY ALL THE TIME, WE'VE TAKEN AN ENERGY SOURCE AND DOUBLED ITS PRODUCTION.

AND WE'VE TAKEN TECHNOLOGY AND WE'VE DONE IT IN A WAY THAT WE'VE INCREASED THE NET ENERGY BALANCE.

HOW MANY BTU'S... IF YOU TAKE ONE BTU TO CULTIVATE THE SOIL, PLANT THE SEED, GROW THE CROP, HARVEST THE CROP, HAUL IT TO THE ETHANOL PLANT, PRODUCE THE ETHANOL, AND HAVE IT READY TO GO IN SOMEBODY'S GAS TANK-- HOW MANY BTU'S DO YOU GET BACK?

THAT'S THE NET ENERGY BALANCE.

NOW THERE ARE SOME THAT SAY THAT, "WELL, YOU USE MORE ENERGY THAN YOU PRODUCE."

THAT'S TRUE IF YOU'RE TAKING 1970 TECHNOLOGY.

AND HOW MANY OF YOU HAVE USED YOUR CELL PHONE FROM 1970 TODAY?

IT IS CHANGED. IT IS EVOLVED. OUR EFFICIENCIES ARE GREATER TODAY THAT THEY WERE FIVE YEARS AGO, TWO YEARS AGO, ONE YEAR AGO, AND SIX

MONTHS AGO.

WHEN I TALK TO FOLKS INVOLVED IN ETHANOL PLANTS, THEY TALK ABOUT THE NEWEST ENZYME.

THEY TALK ABOUT THE NEWEST TECHNOLOGY.

AND IT IS EVOLVING AT AN EVER-INCREASING RATE.

AND THEY HAVE TO BE ABLE TO HAVE THE TOOLS TO TAKE ADVANTAGE OF THAT.

AS A LOBBYIST AND SOMEONE WHO REPRESENTS AGRICULTURE, PUBLIC POLICIES IS WHAT I DO.

AND HOW DO YOU ADD VALUE?

AND HOW DO YOU HELP THESE ADDED VALUE ENTITIES GROW AND USE TECHNOLOGY WHETHER IT BE EARTH OBSERVATIONS, OR WHETHER IT BE ETHANOL PLANTS, OR ANY ONE OF A NUMBER OF DIFFERENT THINGS?

WE'VE GOT TO EVALUATE THE RESEARCH.

WE'VE GOT TO ENCOURAGE TECHNOLOGY AT EVERY TURN, AND BE TAKE AND ADD VALUE TO THE BASIC CROP.

INFRASTRUCTURE NEEDS.

WE CAN TALK ABOUT SATELLITES IN THE SKY, AND THAT'S GREAT.

AND THE THINGS THEY DO ARE MIRACULOUS.

BUT IF THE BRIDGE AT THE CREEK WON'T CARRY, WON'T... ISN'T STRONG ENOUGH OR IS TOO OLD AND YOU CAN'T RUN THAT GRAIN TRUCK OVER THAT BRIDGE TO GET TO THE ETHANOL PLANT, IT DOESN'T DO YOU ANY GOOD TO HAVE A SATELLITE IN THE SKY TELLING YOU HOW TO GO AHEAD AND PRECISION FARM.

WE NEED LOCKS AND DAMS IN THE UPPER MISSISSIPPI.

WE HAVE AN ANTIQUATED SYSTEM UP THERE THAT IS AT LEAST 40 YEARS BEYOND ITS TERM OF, OF SERVICE.

WE NEED RURAL ACCESS TO BROADBAND INTERNET, SO THAT WE CAN USE THE TECHNOLOGY, AND SO THAT THE THINGS THAT WE GET FROM SATELLITES ARE READILY AVAILABLE TO PRODUCERS IN THEIR HOME OFFICE, IN THE SHOP, AND ON THE TRACTOR.

AND WE NEED TO HAVE A WORK FORCE THAT IS WILLING AND ABLE, AND IS PRESENT ON THE FARM IN THE RURAL COMMUNITIES TO GO AHEAD AND TAKE AND MAKE SURE THAT THE TRANSFER OF TECHNOLOGY FROM WHEREVER IT IS, WHATEVER URBAN AREA, IS AVAILABLE THERE AT THE FORK OF THE CREEK.

AGRICULTURE HAS ALWAYS BEEN TRANSFORMED BY, BY TECHNOLOGY.

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GOING BACK TO WHEN MAN FIRST TOOK A STICK AND SCRATCHED THE EARTH AND PUT A SEED IN THERE.

BUT MORE AND MORE WE IN AGRICULTURE HAVE THE RESPONSIBILITY TO TAKE AND TRANSFORM TECHNOLOGY BY TAKING OWNERSHIP OF IT, BY TAKING IT AND USING IT WISELY, TO ADD VALUE TO IT.

AND IN ORDER TO DO THAT WE'RE GOING TO HAVE TO HAVE A COMMITMENT TO RESEARCH.

WE'RE GOING TO HAVE TO HAVE A COMMITMENT TO EVERY NEW PIECE OF TECHNOLOGY THAT COMES OUT THERE.

AND WE'RE GOING TO HAVE TO MAKE A COMMITMENT TO AVAIL OURSELVES OF THE OPPORTUNITY TO USE THEM.

THANK YOU.

[APPLAUSE]

(DR. WILLIAM HOOKE)
THANK YOU, JON.

THANK YOU, PANEL.

I'M GOING TO ASK THE ADMIRAL TO COME UP HERE AND JOIN US.

AND KIMBER IS GOING TO BE MIC-ING THE MEMBERS OF THE PANEL SO THEY CAN RESPOND TO YOUR QUESTIONS.

THE WAY WE'RE GOING TO DO THIS IS YOU'RE GOING TO RAISE YOUR HANDS, WE'LL RECOGNIZE YOU, AND THEN SOMEONE WILL BE BY TO HAND YOU A MICROPHONE.

YOU HAVE A CHANCE TO IDENTIFY YOURSELF, SAY WHO YOU ARE AND WHO YOU WORK FOR, AND THEN FRAME YOUR QUESTION OR BRIEF COMMENT.

DO WE HAVE SOMEBODY WHO'S EAGER TO GO FIRST?

YEAH, DON.

(DON)
I APPRECIATE ALL OF YOUR COMMENTS, AND VICE ADMIRAL YOUR COMMENTS ABOUT THE GEOSS SYSTEM.

OBVIOUSLY THERE'S A LOT OF SCIENCE THAT NEEDS TO GO INTO THE DEVELOPMENT OF GEOSS, AND THE GLOBAL PARTNERS THAT YOU HAVE IN DEVELOPING THAT IS REALLY QUITE, QUITE AMAZING AT THIS POINT. SO I APPLAUD YOU FOR THAT.

I GUESS MY COMMENT OR QUESTION TO YOU--

(DR. WILLIAM HOOKE)
UH, DON, DO YOU WANT TO JUST MENTION WHERE YOU'RE FROM?

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(DON)

OH, I'M SORRY.

YOU MENTIONED MY NAME, AND SO ONE ASSUMES.

I'M DON WILHIDE.

I'M DIRECTOR OF THE NATIONAL DROUGHT MITIGATION CENTER AT THE UNIVERSITY OF NEBRASKA.

WE'RE ONE OF THE COOPERATING PARTNERS ON THE U.S. DROUGHT MONITOR MAP THAT THE ADMIRAL WAS SHOWING A FEW MINUTES AGO WITH NOAA AND ALSO THE U.S. DEPARTMENT OF AGRICULTURE.

MY COMMENT AND QUESTION IS MORE-- TAKING THE SCIENCE AND THE OUTPUT FROM THE GEOSS SYSTEM AND BUILDING PARTNERSHIPS WITH THE PRIVATE SECTOR IN ORDER TO TRANSLATE THAT SCIENCE TO THE PUBLIC, AND IN GETTING THE PUBLIC TO ADOPT THAT SORT OF TECHNOLOGY, I JUST WONDERED IF YOU COULD ADDRESS THAT ISSUE AND MAYBE OTHER MEMBERS OF THE PANEL MIGHT CHOOSE TO CONTRIBUTE TO THAT AS WELL.

THANK YOU.

(ADMIRAL LAUTENBACHER)

THANK YOU.

LET ME START WITH JUST A COUPLE OF COMMENTS.
WE'RE JUST IN THE INFANCY OF BEING ABLE TO DO WHAT YOU'RE ASKING TO DO.

MY, MY IMPRESSION IS FROM TALKING WITH PEOPLE IN THE INDUSTRY, AGRICULTURE INDUSTRY, IS THAT WE, WE NEED TO DO A BETTER JOB OF EXPLAINING WHAT THIS ABOUT AND HOW IT CAN HELP, AND HOW THEY CAN CONNECT WITH IT.

AND SO THAT'S WHY WE HAD THIS PUBLIC WORKSHOP.

THE GOVERNMENT STARTED BY TALKING TO ITSELF-- WHICH IS ALWAYS GOOD SINCE WE DON'T TALK VERY WELL AMONG OUR STOVEPIPES-- AND BUILDING A COLLABORATION AMONG FEDERAL AGENCIES.

AT THIS POINT, WE ARE TRYING TO ENGAGE THE CONSUMERS AND THE USERS TO MAKE SURE THAT WE DO CREATE THE KINDS OF PARTNERSHIPS THAT WE'VE TALKED ABOUT THAT CAN MAKE THIS TECHNOLOGY VALUABLE.

SO WE ARE LOOKING FOR FEEDBACK, CLEARLY, IN OUR AREAS.

AS I SAID, THAT'S WHAT THIS PUBLIC WORKSHOP WAS ABOUT... PEOPLE FROM VARIOUS PARTS OF THE USER SECTORS COMING IN TO TALK TO US ABOUT HOW TO DEVELOP THE WAYS TO MAKE THIS BENEFICIAL.

(DR. WILLIAM HOOKE)

OTHER PANELISTS CARE TO COMMENT ON THAT?

YEAH, MIKE.

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(MIKE DYKES)

I JUST HAVE A GENERAL COMMENT ABOUT TECHNOLOGY, AND ADOPTION, AND BENEFITS IT BRINGS.

I'M A FIRM BELIEVER THAT, ESPECIALLY WHEN THIS TECHNOLOGY SHOW DOWN TO THE FARMER LEVEL.

FARMERS ARE SMART PEOPLE, AND FARMERS ARE GONNA ADOPT TECHNOLOGY AND UTILIZE TOOLS THAT MAKE ECONOMIC SENSE FOR THEM.

AND I THINK THAT'S THE GUIDING PRINCIPLE FOR ALL THESE THINGS.

THEY'RE EITHER GOING TO SUCCEED, OR THEY'RE GOING TO FAIL DEPENDING ON THE BENEFITS THEY BRING TO THE END USERS.

AND I THINK THIS TECHNOLOGY WILL BE NO DIFFERENT FROM OTHERS.

AND WE CAN THINK ABOUT TECHNOLOGIES THROUGHOUT AGRICULTURE.

WELL, THAT'S BEEN THE QUESTION, OR BEEN THE DEBATE.

BUT I THINK WE HAVE SEEN THAT THE MARKETS HAVE TRIED TO ADJUST THOSE THINGS, AND FARMERS HAVE ADOPTED THEM, AND EVERYONE'S BEEN BETTER OFF.

AND A BASIC BELIEF THAT PROGRESS IS MADE THROUGH SCIENCE AND TECHNOLOGY, WHICH I FOR ONE SUBSCRIBE TO THAT THEORY.

SO, I THINK IT DEPENDS ON THE BENEFITS THEY BRING.

(DR. WILLIAM HOOKE)
KEN.

(KENNETH HOOD)

FROM THE PRODUCER'S PERSPECTIVE THERE'S BASICALLY THREE THINGS THAT I HAVE LITTLE OR NO CONTROL OVER.

ONE OF THEM'S PRICE.

THE OTHER ONE IS INSECTS.

AND I CAN'T WAIT TILL TO WHERE I CAN MAKE TIMELY MANAGEMENT DECISIONS THROUGH GEOS FOR WEATHER.

IN OTHER WORDS, FOR IRRIGATION TIMING.

SO I'M WAITING FOR THAT DAY.

(DR. WILLIAM HOOKE)
OTHER COMMENTS, NEXT QUESTION?

OTHER QUESTION FROM THE GROUP.

YES, SIR.

WAIT FOR THE MIC AND PLEASE IDENTIFY YOURSELF.

(CHRIS)

I'M CHRIS VERHANEY, SAIC.

THIS IS A QUESTION TO THE PANEL AT LARGE.

ONE OF THE COMMON THEMES IN THE STRATEGIC PLAN FOR THE U.S. INTEGRATED EARTH OBSERVATION SYSTEM ACROSS MOST OF THE SOCIETAL BENEFIT AREAS INCLUDING AGRICULTURE AND FORESTRY IS A NEED FOR BETTER SPATIAL, SPECTRAL, AND TEMPORAL RESOLUTION.

AND ONE PROPOSED SYSTEM THAT'S COMING UP, THE GERMAN RAPID EYE PROGRAM, PROMISES TO MEET THE NEEDS OF THE GLOBAL AGRICULTURE INSURANCE MARKETS STARTING TWO YEARS FROM NOW BY FIELDING A SIX AND A HALF METER SPECTRAL SYSTEM THAT OFFERS 50% BROADER SWATH... THAT WILL BE LIKE FIVE DAY AVERAGE REVISIT OF FIELDS IN NORTH AMERICA-- FOR ONE-FORTH TO ONE-FIFTH THE TRADITIONAL LANDSAT ACQUISITION COST.

SO BY ADOPTING THE SAME APPROACH, IT SEEMS LIKE A U.S. GOVERNMENT AND INDUSTRY PARTNERSHIP COULD ACQUIRE AN EVEN BETTER SYSTEM, SAY DOWN TO FIVE METER RESOLUTION AND EVEN BROADER SWATH, TALKING ONE THAT WOULD ENABLE TWICE WEEKLY REVISIT OF YOUR FIELDS FOR ABOUT HALF OF THE TRADITIONAL LANDSAT ACQUISITION COST.

GIVEN THE BENEFITS THAT WOULD HAVE NOT ONLY FOR AGRICULTURE AND FORESTRY BUT FOR MANY OF THE OTHER USERS-- WHETHER THEY'RE NATIONAL DEFENSE, HOMELAND DEFENSE, FOREIGN POLICY, DISASTER MANAGEMENT-- IS THIS THE TYPE OF SYSTEM THE U.S. GOVERNMENT WITH ITS INDUSTRY PARTNERS SHOULD ACCESS THE BENEFITS OF?

(DR. WILLIAM HOOKE)
PANEL?

HERB?

(HERB SATTERLEE)
I'D LIKE TO COMMENT ON THAT.

(DR. WILLIAM HOOKE)
YEAH?

(HERB SATTERLEE)
I THINK THAT INDUSTRY AND THE U.S. GOVERNMENT ALREADY ASSESSED THE BENEFITS, AND LOOKED AT IT.

AND, YOU KNOW, IT WAS A LANDSAT LDCM WAS THE NAME OF IT.

AND IT WAS DETERMINED BY NASA A COUPLE OF YEARS AGO THAT IT WASN'T AFFORDABLE.

I PERSONALLY DISAGREED WITH THAT DECISION, FRANKLY.

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AND I THOUGHT IT WAS POLITICAL IN NATURE, BUT I'M VERY BIASED ON THIS PARTICULAR ISSUE, SO I'M NOT GOING TO SAY ANY MORE THAN THAT.

(KENNETH HOOD)

FROM THE USER'S STANDPOINT, THERE IS A DEFINITE NEED TO BE ABLE TO HAVE THAT TECHNOLOGY AVAILABLE.

THAT'S THE REASON I USE LOW-LEVEL AIRCRAFT FLYING AT 12,000 FEET NOW, IS TO BE ABLE TO GET THE IMAGERY.

AND THEY MAY NOT EVER DISAPPEAR SIMPLY BECAUSE OF CLOUD COVER.

UNLESS WE HAVE SATELLITES THAT CAN LOOK THROUGH THE CLOUDS, AND I'M NOT SURE... AND THAT'S PROBABLY GOING TO BE COST PROHIBITIVE ALSO TO PRODUCTION AGRICULTURE.

(DR. WILLIAM HOOKE)

JON, DID YOU HAVE A COMMENT ALSO?
YES, TOM.

(THOMAS ERICKSON)

I DON'T KNOW THE DIRECT ANSWER TO THE QUESTION THAT'S POSED, BUT CERTAINLY IT GOES TO THE POINT THAT I TALKED A LITTLE BIT ABOUT AND THAT IS ACCESSIBILITY, TIMELY INFORMATION.

AND IT'S SOMETHING THAT THIS INDUSTRY IS... IT'S CRITICAL FOR BECAUSE YOU'RE DEALING CROP CYCLES AND GROWING SEASONS WHICH ARE RELATIVELY SHORT.

YOU'VE GOT WHAT, 70 TO 90 DAY CYCLES?

AND A LOT HAPPENS IN A WEEK.

(DR. WILLIAM HOOKE)

NEXT QUESTION?
YES.

(JIM COOPER)

HI.
I'M JIM COOPER FROM EARTH SATELLITE CORPORATION.

AND CERTAINLY IN OUR WORK WITH AGRICULTURAL INTERESTS THERE'S ALWAYS A LAND-BASED COMPONENT TO ANY SURFACER-- MEANING SPACE-BASED OBSERVATIONS.

AND SO I GUESS I'M INTERESTED IN HEARING SOME WAYS THAT PERHAPS THE SURFACE OBSERVATION NETWORK IS GOING TO BE AUGMENTED IN ORDER TO COMPLEMENT THE SPACE-BASED PART.

(DR. WILLIAM HOOKE)

ANYBODY LIKE TO TACKLE THAT ONE?
ADMIRAL?

(VICE ADMIRAL LAUTENBACHER)

UH, LET ME TALK FOR A SECOND.

I DIDN'T MAKE IT VERY CLEAR BECAUSE OF THE TIME CONSTRAINTS THAT THE SPACE BACKBONE IS VERY CRITICAL, OBVIOUSLY, TO EARTH OBSERVING, AND PROVIDES AN ADVANTAGE THAT YOU HAVE NO OTHER WAY.

BUT THE COMBINATION WITH GROUND SYSTEMS IS CRITICAL BECAUSE YOU CAN'T DO THE SCIENCE THAT I'M TALKING ABOUT WITHOUT HAVING THAT COMBINATION.

SO I LOOK... I LOOK TO IT AS BEING A COMBINATION OF GROUND-BASED SYSTEMS.

I DON'T THINK THE FEDERAL GOVERNMENT CAN... CAN PROVIDE THE MESH LEVEL AND THE DETAIL THAT WE'RE TALKING ABOUT HERE.

I THINK THAT'S GOING TO BE-- HAVE TO FIGURE OUT WHAT THE PARTNERSHIP IS AND, AS MENTIONED UP HERE, WHAT THE BENEFITS ARE THAT INDUSTRY WILL GAIN FROM IT.

BUT I SEE THAT AS SOMETHING THAT WE NEED TO WORK ON IN THE FUTURE 'CAUSE I CAN FORESEE LOTS OF BENEFITS IN MY HEAD, BUT WE HAVE TO, YOU KNOW, PUT THEM INTO SOMETHING THAT'S CONCRETE.

BUT ABSOLUTELY, THE GROUND-BASED SYSTEMS ARE CRITICAL. AS MENTIONED, YOU CAN'T SEE THROUGH CLOUDS ALL THE TIME. YOU NEED TO HAVE SOME OF THESE SYSTEMS AVAILABLE.

(DR. WILLIAM HOOKE)
KEN, YOU WANTED TO ADD SOMETHING TO THAT, AND THEN STEVE.

(KENNETH HOOD)
I AGREE WITH WHAT THE ADMIRAL SAID.

AND ANOTHER CAVEAT THAT YOU'VE GOT TO HAVE IS THE REASON THAT MY COMPANY DOESN'T TAKE THE PRODUCER AND OR HIS CONSULTANT OUT OF THE PICTURE.

IF YOU DON'T HAVE THE CULTURAL INPUTS, YOU MAY NOT HAVE ANYTHING BUT A PRETTY PICTURE ANYWAY.

(STEVE FAIVRE)
KEN BRINGS UP A PRETTY GOOD POINT.

AND THE KEY, I THINK, IS ALSO IS GETTING THE INFORMATION IN A TIMELY FASHION, AND IN A FORMAT THAT'S INTERCHANGEABLE.

WE COLLECT A LOT OF DATA IN AGRICULTURE, BUT A LOT OF IT IS IN PAPER FORMAT.

AND SO ONE OF THE THINGS WE NEED TO WORK TOWARD IS GETTING, YOU KNOW, A TELEMATIC SOLUTION IN PLACE THAT ENABLES MOVEMENT OF THIS DATA FROM THE RURAL AREAS WHERE IT'S COLLECTED.

BUT ALSO SUPPORTING THE AUTOMATION OF THAT DATA COLLECTION, TO GET

IT INTO ELECTRONIC FORMAT WHERE IT CAN BE USED TO DO THE GROUND TRUTHING THAT YOU'RE LOOKING FOR.

(DR. WILLIAM HOOKE)
THANK YOU.

WHILE WE'RE WAITING FOR THE NEXT QUESTION, MAYBE I CAN ADD ONE HERE.

I WAS STRUCK, JON, BY WHAT YOU SAID IN YOUR LAST-- ONE OF YOUR LAST LINES ABOUT INFRASTRUCTURE.

AND YOU MENTIONED TRAINING, I THINK.

COULD ANY OR ALL OF YOU ADDRESS A LITTLE BIT THE CHALLENGE FACING THE FARMER IN BEING EDUCATED, AND SORT OF TRACKING ALL OF THESE TECHNOLOGY DEVELOPMENTS AND SO ON AS WE PROCEED?

HOW DO WE SORT OF MINIMIZE THE LEARNING CURVE THERE-- MAXIMIZE THE EFFECTIVENESS OF THAT TRAINING AND EDUCATION?

(JON DOGGETT)
WELL, I THINK THAT ONE OF THE THINGS YOU HAVE TO LOOK AT IS HOW DO WE KEEP YOUNG PEOPLE BACK IN THAT RURAL COMMUNITY THAT ARE WILLING TO GO OUT AND GO TO COLLEGE, OR GET THE TRAINING, AND THEN COME BACK TO THE RURAL COMMUNITY?

AND FAR TOO OFTEN WHAT WE SEE IS THAT AS YOUNG PEOPLE LEAVE RURAL COMMUNITIES THEY GO TO COLLEGE, AND THEY DON'T COME BACK.

THEY HAVE EVERY INTENTION WHEN THEY LEAVE AT 18, BUT AT 22 HOME DOESN'T LOOK QUITE AS, AS GREAT AN ECONOMIC OPPORTUNITY. AND MAYBE THEY'RE GOING TO HAVE OTHER OPPORTUNITIES IN URBAN AREAS AND SUBURBAN AREAS THAT THEY'RE NOT GOING TO HAVE IN RURAL COMMUNITIES.

I THINK THAT'S PART OF IT... ONE OF THE KEY PARTS.

I THINK MICHAEL DYKES AND I AND A COUPLE OTHERS HERE ARE PROBABLY ALL, YOU KNOW, REFUGES FROM RURAL AMERICA.

(DR. WILLIAM HOOKE)
YEAH, STEVE.

(STEVE FAIVRE)
I THINK, AGAIN, COMING BACK TO THE, TO THE CONSULTANTS AND THE SERVICE PROVIDERS THAT ARE ALREADY WORKING WITH GROWERS THAT PART OF THIS TRAINING COULD TAKE PLACE WITH THEM.

SOMETIMES WE MAKE THE ASSUMPTION THAT GROWERS SIT AROUND AND HAVE A LOT OF TIMES ON THEIR HANDS TO LEARN A LOT OF NEW THINGS AND DO A LOT OF THINGS.

SO WE ALWAYS SAY, "WELL, WE COME OUT WITH SOMETHING THE GROWER CAN DO, THE GROWER CAN DO," AND WHATEVER.

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WE WOULDN'T SAY THAT ABOUT SOMEBODY THAT'S MANAGING A FACTORY FLOOR, AND THAT'S THE EQUIVALENT OF WHAT YOU'VE GOT WITH GROWERS.

SO I THINK GETTING THE SERVICE PROVIDERS AND THE PEOPLE THAT SUPPORT THE GROWER COMMUNITY INVOLVED IN THIS, AND HELPING THEM DELIVER THE TECHNOLOGY AND THESE SERVICES IS GOING TO BE IMPORTANT.

(KENNETH HOOD)

AND LET ME ADD WHO'S GOING TO OWN THAT DATA ONCE IT'S COLLECTED. THAT'S GOING TO BE A BIG POINT FROM THE USER'S STANDPOINT.

(DR. WILLIAM HOOKE)

YES, TOM.

(THOMAS ERICKSON)

I WOULD JUST POINT OUT THAT IT'S A LEARNING CURVE NOT ONLY FOR PRODUCERS, BUT IT'S A LEARNING CURVE FOR THE COMPANIES AND THE INDUSTRY ITSELF.

YOU KNOW A LOT OF THIS REALLY IS PRETTY NEW, AND I'M PERSONALLY GOING TO RECOMMEND A FIELD TRIP TO KEN'S PLACE FOR OUR COMPANY TO LEARN AS MUCH AS WE CAN BECAUSE I THINK IT'S NOT SOMETHING THAT-- YOU KNOW, I THINK WE'RE ALL LOOKING AT WHAT WE CONSIDER A PRETTY NEW TECHNOLOGY BECAUSE IT HASN'T REALLY BEEN EFFECTIVELY DEPLOYED INTO OUR OWN ENGINES OF ANALYSIS FOR, FOR PROJECTIONS. AND SO I THINK IT'S A LEARNING CURVE ACROSS THE SPECTRUM OF AGRICULTURE.

(JON DOGGETT)

ONE OF THE OTHER THINGS IS AS WE LOOK AT PEOPLE GETTING AN EDUCATION AND WHEN THEY ARE TRAINED AND THEY COME BACK TO THE RURAL COMMUNITY, WHERE ARE THEY GOING TO ACCESS THE NEW INFORMATION THEY'VE ACQUIRED.

AS TECHNOLOGY CHANGES SO QUICKLY, HOW ARE THEY GOING TO BE ABLE TO KEEP UP WITH THAT TECHNOLOGY?

IS THE INFRASTRUCTURE IN PLACE FOR THEM TO DO THAT AT THE FAMILY FARM OR THE SMALL RURAL COMMUNITY?

(MICHAEL DYKES)

I'D ALSO ADD THAT FOR THE YOUNG PEOPLE THAT ARE STAYING BACK ON THE FARMS AND FARMING, THEY TOO ARE EXCITED.

IF YOU HAVE NOT BEEN OUT AND TALKED TO FARMERS THAT ARE FARMING AND PRODUCING TODAY, IT'S A DIFFERENT ENVIRONMENT THAN IT WAS WHEN I WAS THERE.

AND AS JON DOGGETT SAID, WE'RE BOTH REFUGES.

I LEFT WHEN I WAS 17 YEARS OLD.

WELL, I INTENDED TO GO BACK.

I'M 50, I'VE STILL NOT MADE IT BACK.

BUT, BUT THE PEOPLE THAT ARE THERE-- MY BROTHERS, FOR EXAMPLE-- IT'S A TOTALLY DIFFERENT WORLD THAN WHEN I WAS AT HOME.

AND THEY ARE EXCITED TO BE IN AGRICULTURE.
AND THEY'RE DOING THINGS THAT WE NEVER DREAMED OF.

AND IT'S-- I'D ALSO SAY THAT AGRICULTURE HAS CHANGED FROM WHEN I WAS HOME.

WHEN I WAS HOME IT WAS KIND OF A WAY OF LIFE.
WE AND ALL OF OUR NEIGHBORS WERE FARMERS.
IT'S WHAT WE DID. EVERYBODY MILKED 8, 10, 12 COWS AND HAD SOME CROPS. AND WE MADE A LIVING, AND WE GOT BY.

TODAY, IT'S NOT A WAY OF LIFE.

THESE PEOPLE ARE DOING IT BECAUSE THEY CHOOSE TO DO IT.

IT'S A BUSINESS.

THEY'RE EXCITED.

THEY'RE EXCITED ABOUT THE POSSIBILITIES, AND EXCITED TO BE IN AGRICULTURE.

SO IT IS A DIFFERENT ENVIRONMENT TODAY, AND I'M WITH JON DOGGETT, IT'S GOING TO TAKE TALENTED PEOPLE.

IT'S GOING TO TAKE EDUCATED PEOPLE TO GO BACK TO DO THE THINGS THAT WE'RE TALKING ABOUT DOING IN AGRICULTURE.

WHEN WE TALK ABOUT FEEDING A GROWING POPULATION, AND LOOKING AHEAD TO THE TRENDS THAT WE SEE REGARDLESS OF WHO'S DATA YOU WANT TO BELIEVE, THERE WILL BE MORE MOUTHS TO FEED ON THIS PLANET THAT WE HAVE TODAY.

AND IT'S GOING TO TAKE MORE CREATIVE INNOVATIVE MINDS AND INNOVATION TO BE ABLE TO DO THAT.

AND I ALWAYS AM ASTONISHED BY THE ONE FACT THAT THE SECRETARY OF AGRICULTURE POINTED OUT.

THIS PAST YEAR 230 MILLION ACRES TO PRODUCE THE CROPS WE HAD.

IF YOU TAKE THE SAME YIELDS ON THE CROPS LAST YEAR, AND IF YOU APPLY 1970s YIELDS TO PRODUCE THAT SAME QUANTITY OF FOOD, IT'D TAKE ANOTHER 122 MILLION ACRES.

THAT'S 50% MORE LAND IN PRODUCTION IF WE HAD NOT DONE JUST BASIC THINGS TO IMPROVE AGRICULTURE PRODUCTIVITY.

SO IF YOU THINK ABOUT THAT, AND YOU EXPAND THAT OVER THE NEXT-- AND

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USE WHOSEVER NUMBERS YOU WANT TO ABOUT GLOBAL POPULATION GROWTH, WE ARE NOT AT THE END OF EXCITEMENT IN AGRICULTURE.

AND SOMEBODY SAID WE'RE SEEING THE TIP OF THE ICEBERG.

I DON'T KNOW IF THERE'S AN ICEBERG UNDERNEATH THERE, BUT WE ARE SEEING THE TIP OF SOMETHING THAT I THINK IS, IS TRULY EXCITING FOR AGRICULTURE.

(DR. WILLIAM HOOKE)
YES.

QUESTION HERE.

(DAVE SHAGNER)
MY NAME'S DAVE SHAGNER.

I'M FROM NORTHERN ILLINOIS UNIVERSITY AND REPRESENT THE ACADEMIC, I GUESS, COMMUNITY IN ATMOSPHERIC SCIENCES HERE TODAY.

AND REALLY ENJOYED WHAT I GOT TO HERE BECAUSE, AGAIN, IT'S ATMOSPHERIC SCIENCE, SO I'M NOT ALWAYS AWARE OF WHAT'S GOING ON IN AGRICULTURE.

BUT I THOUGHT ONE OF THE INTERESTING COMMENTS THAT I REALLY TOOK OUT OF THIS IS THAT TECHNOLOGY DOES TRANSFORM AGRICULTURE AS IT DOES EVERYTHING, BUT JON'S-- I MEAN DON'S-- JON'S COMMENTS ABOUT AGRICULTURE TRANSFORMING TECHNOLOGY, I THINK, IS A REALLY KEY PART OF WHAT WAS SAID TODAY.

AND I THINK IT WAS A KEY PART TO HAVE SAID, ESPECIALLY WITH THE ADMIRAL HERE, IS AS GEOSS DEVELOPS AND EVOLVES, THE IDEA OF GETTING PEOPLE LIKE THIS GROUP TO PARTICIPATE IN THE DISCUSSION, I THINK, IS PRETTY IMPORTANT.

I GUESS ONE OF THE QUESTIONS I HAVE FOR THE PANEL AS WELL AS THE ADMIRAL IS HOW DO YOU SEE IN THE FUTURE GREATER PARTICIPATION OR ACTIVITIES THAT WILL BRING IN PEOPLE LIKE YOURSELVES, SPECIALISTS, INTO THE PROCESS OF THE EVOLVING TECHNOLOGY?

(DR. WILLIAM HOOKE)
WHO WANTS TO BE FIRST? ADMIRAL, AND THEN JON?

(VICE ADMIRAL LAUTENBACHER)
OKAY, I'LL START FOR JUST A SECOND.

I, I DON'T KNOW THE ANSWER TO THE QUESTION.

I'M LOOKING FOR WAYS TO DO THAT.

THIS, OBVIOUSLY, IS ONE WAY THAT WE'VE CONSTRUCTED TO TRY TO GET THERE,

I, I, TEND TO AGREE THAT, YOU KNOW, MONEY TALKS, SO IT'S ECONOMIC BENEFITS.

AND I'M, I'M LOOKING AT A CHAIN THAT GOES TO THE, TO THE SERVICE PROVIDERS, THE PEOPLE WHO TAKE CARE OF INDUSTRIES AND DO THINGS, AND SEEING WHAT THEIR CREATIVE MINDS HAVE.

BECAUSE IT'S A BRIDGE I CAN'T REACH... THE GOVERNMENT CAN'T REACH EVERYONE, AND WE SHOULDN'T.

THE GOVERNMENT SHOULD BE AN INSTIGATOR AND HOPEFULLY A PLACE WHERE PEOPLE CAN HAVE AN HONEST BROKER FOR DOING THINGS, AND MAKING SURE DATA GETS IN THE RIGHT HANDS, THAT SORT OF THING.

BUT THE PRIVATE SECTOR WHERE YOU HAVE THE, YOU KNOW, THE ENHANCERS, THE PEOPLE WHO MAKE THINGS WORK, TO TRY TO GET THEM IN.

SO THAT'S WHAT WE'VE BEEN TRYING TO DO IS TALK THROUGH THE, DOWN THE CHAIN OF VALUE TO THE ULTIMATE USER.

AND THAT'S WHERE I AM AT THIS POINT.

(HERB SATTERLEE)

I WOULD SAY, SPEAKING FROM THE PRIVATE INDUSTRY PERSPECTIVE, THERE'S A LOT OF ENTREPRENEURS OUT THERE, AND WE'RE ALL LOOKING FOR OPPORTUNITIES TO PUT NEW TECHNOLOGIES TO USE, AND TO CREATE VALUE WITH THEM.

AN SO I THINK IF YOU CAN GET THE INFORMATION OUT THAT THE TECHNOLOGY EXISTS AND IT WORKS IN A RELIABLE FASHION, YOU'LL HAVE A LOT OF PEOPLE INTERESTED IN APPLYING IT. BUT I AGREE WITH THE ADMIRAL, IT COMES DOWN TO THE ECONOMICS. IF YOU CAN MAKE MONEY WITH IT THEN IT WILL HAPPEN. IF YOU CAN'T, IT WON'T MATTER. IT WON'T MATTER HOW COOL THE TECHNOLOGY IS.

(DR. WILLIAM HOOKE)

OKAY, WE'RE GOING TO KEEP WORKING DOWN THE LINE HERE, I GUESS. TOM.

(THOMAS ERICKSON)

I'VE, I GUESS FOR BETTER OR WORSE I'VE BEEN IN A POSITION LIKE THE ADMIRAL'S WHERE YOU'RE WITH THE GOVERNMENT, AND YOU'RE HERE TO HELP.

AND BUT UNFORTUNATELY THOSE SOLUTIONS AREN'T REALLY ALWAYS BUSINESS SOLUTIONS.

AND SO I THINK TODAY'S A START, AND I'M SURE THAT THERE'LL BE MORE TO COME.

AND I THINK IS EXACTLY THE KIND OF DIALOGUE THAT WILL HELP GEOSS REALLY REALIZE ITS FULL POTENTIAL FOR EVERYONE IN THE AG INDUSTRY.

(STEVE FAIVRE)

WELL, I WOULD SAY THAT, YOU KNOW, CULTURALLY FARMERS HAVE BEEN AT TIMES MISTRUSTFUL OF SOME IN AGRIBUSINESS, AND I THINK THAT HAS CHANGED A GREAT DEAL.

I WANT TO COMPLEMENT MONSANTO BECAUSE THEY HAVE INVOLVED A NUMBER OF OUR GROWERS WITH SOME OF THE COMMITTEES THAT THEY'VE HAD AND SOME OF THE INTERACTION THEY'VE HAD BECAUSE THEY'RE, THEY'RE COMING TO US AND SAYING, "WHAT IS IT THAT YOU NEED," BECAUSE THAT'S WHERE AGRICULTURE CAN TRANSFORM THE TECHNOLOGY.

BECAUSE WE CAN HAVE "GEE WHIZ, GOSH, THIS IS WONDERFUL STUFF," BUT IF IT DOESN'T ACTUALLY SOLVE A PROBLEM OR TAKE CARE OF A NEED, IT'S STILL GEE, GOLLY WHIZ IT'S A WONDERFUL THING, BUT IT DOESN'T GET WHAT REALLY IS, YOU KNOW, DOESN'T PUT DOLLARS IN FARMER'S POCKETS. AND THOSE FOLKS WHO ARE BACK AT THE FARMS AND RANCHES NOW PROFIT IS A WORD THAT THEY USE A LOT.

(DR. WILLIAM HOOKE)
WE MAYBE HAVE TIME FOR ONE OR TWO MORE QUESTIONS.
I SEE A HAND BACK HERE, AND THEN TWO.
OKAY, WE'RE GOING TO MAKE THAT THREE QUESTIONS.
A HAND, QUESTION HERE, AND THEN OVER HERE TWO QUESTIONS.

(KENNY PESKIN)
I'M KENNY PESKEN.

I'M THE FOOD AND BIOTECHNOLOGY COMMITTEE EXECUTIVE HERE AT THE CHAMBER OF COMMERCE.

WE'VE OBVIOUSLY HAD A LOT OF INTERESTING THINGS ON THE DISCUSSION ON HOW TECHNOLOGY'S ALLOWING FOR MORE PRODUCTIVE ALLOCATION OF RESOURCES IN AGRICULTURE.

I WAS WONDERING WHERE IN RELATION TO THAT DO WE HAVE THE UNDERSTANDING OF SORT OF SOME OF THE AVOIDED ENVIRONMENTAL IMPACTS, AND THE ECONOMIC BENEFITS TO THAT WITH LESS APPLICATIONS OF PESTICIDES?
AND OBVIOUSLY WE DEAL A LOT WITH SOME OF THE MORE ENVIRONMENTAL ISSUES.

AND I WAS JUST WONDERING IF ANYBODY HAD ANY COMMENTS ON THAT REGARD?

(DR. WILLIAM HOOKE)
KEN KIND OF ADDRESSED THAT IN PART.

DO YOU WANT TO EXPAND ON YOUR REMARKS?

(KENNETH HOOD)
WELL, I'M GOING TO ADDRESS IT VERY, VERY SHORTLY BECAUSE IT'S A VERY SERIOUS QUESTION AND IT NEEDS A GOOD ANSWER.

HOW CAN YOU BE, OR I AS A FARMER BE ANY MORE ENVIRONMENTALLY FRIENDLY THAN WHAT YOU'VE SEEN THIS AFTERNOON?

WHEN I GO OUT, AND I APPLY A CHEMICAL IN ONLY THE AMOUNT THAT IS NEEDED, WHERE IT'S NEEDED, WHEN IT'S NEEDED.

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SO I THINK THAT'S THE ANSWER TO YOUR QUESTION RIGHT THERE.

(MICHAEL DYKES)

I'LL JUST ADD ONE COMMENT TO THAT, HAVING GROWN UP ON A FARM AND DEALING WITH FARMERS ALL THE TIME.

FARMERS LIVE IN THE ENVIRONMENT AS WELL.

AND I THINK THAT'S SOMETIMES A POINT WE LOSE 'CAUSE WE KEEP TALKING ABOUT FARMERS AND THE ENVIRONMENT AS THOUGH THE FARMERS LIVE SOMEPLACE OTHER THAN IN THE ENVIRONMENT.

THEY HAPPEN TO LIVE ON THESE FARMS WHERE THEY'RE OUT FARMING.

AND THEY ARE NO BETTER STEWARDS OF THE LAND OR OUR ENVIRONMENT THAN OUR NATION'S FARMERS.

SO TO ME IT'S PRETTY STRAIGHTFORWARD.

(DR. WILLIAM HOOKE)

JON.

(JON DOGGETT)

I THINK THAT ONE OF THE PROBLEMS WE HAVE IS WE HAVE AN INDUSTRY THAT'S FAIRLY LARGE IN THIS NATION THAT'S BUILT AROUND ALARMING FOLKS ABOUT THINGS THAT THEY REALLY DON'T NEED TO EVEN BE WORRYING ABOUT.

BUT TO THE MISUSE OF FIGURES, AND USING OLD DATA, AND MISUSING DATA TO HAVE FOLKS BE CONCERNED ABOUT SOMETHING AND SEND A CHECK IN, THAT'S A PROBLEM.

AND IT'S ONE THAT I THINK ALL OF US HAVE THAT PROBLEM IN OUR INDUSTRY IS HOW DO YOU ADDRESS THE LEGITIMATE CONCERNS ABOUT THE ENVIRONMENT AND HOW FARMERS USE THE ENVIRONMENT WHEN YOU'RE SWIMMING UPSTREAM AGAINST AN INDUSTRY THAT ONLY EXISTS BECAUSE IT'S ABLE TO GIN FOLKS UP BECAUSE THEY'VE MADE THEM SCARED TO DEATH?

(DR. WILLIAM HOOKE)

LAST TWO QUESTIONS OVER HERE.

(BETH SUMMERHUFT)

BETH SUMMERHUFT.

WOULD ANY OF YOU LIKE TO COMMENT ON HOW FAR OFF YOU THINK WE MIGHT BE--

(DR. WILLIAM HOOKE)

EXCUSE ME, BETH, COULD YOU JUST IDENTIFY WHO YOU WORK FOR?

(BETH SU)

OH, EPA.

HOW FAR OFF WE MIGHT BE FROM USING EARTH OBSERVATION SYSTEMS AS A TOOL TO SPECIATE AND QUANTIFY EMISSIONS AT A VERY HIGH LEVEL OF RESOLUTION TO DETERMINE IF THERE ARE ANY ISSUES OF CONCERN?

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AND ALSO, YOU COULD QUANTIFY THE CHANGES IN EMISSIONS FROM IMPLEMENTATION OF A CONSERVATION PRACTICE.

(VICE ADMIRAL LAUTENBACHER)

YEAH, I'LL START.

I THINK THE ANSWER IS YES.

ABSOLUTELY.

I THINK THAT'S POSSIBLE.

I THINK WE HAVE, YOU KNOW, TECHNOLOGY TODAY AND WE'LL DEVELOP TECHNOLOGY IN THE FUTURE THAT IF YOU HAVE AN OBSERVING SYSTEM THAT GETS, THAT'S SUFFICIENTLY ROBUST, YOU'RE GOING TO BE ABLE TO DO THE THINGS THAT YOU'VE, YOU'VE SAID.

AND THEN THAT WILL MAKE LIFE A LOT FAIRER.

INSTEAD OF EVERYBODY ACCUSING EVERYBODY ELSE OF DOING SOMETHING.

AND THAT'S PART OF THE PROBLEM WE HAVE TODAY.

EVERYBODY'S ACCUSING THE OTHER GUY OF RUINING THE ENVIRONMENT, AND WE DON'T HAVE A GOOD WAY TO SORT THAT OUT.

YOU GO TO COURT, AND YOU STILL CAN'T SORT IT OUT.

SO I THINK EARTH OBSERVING WILL ALLOW US TO DEAL WITH THAT ISSUE IN A MUCH MORE EQUITABLE WAY ACROSS THE SOCIETY.

(DR. WILLIAM HOOKE)

YES, SIR.

FINAL QUESTION.

(WAYNE REIS)

I'M WAYNE REIS.

I'M WITH USDA'S AG RESEARCH SERVICE.

AND THESE TECHNOLOGIES ARE GREAT, AND THEY ARE RAPIDLY, YOU KNOW, JUST ADVANCING AND EVOLVING.

AND IT'S INFORMATION, AND INFORMATION IS MONEY.

AND MY QUESTION IS HOW DO WE-- I WANT TO GET THE PERSPECTIVE FROM SOMEBODY FROM THE GOVERNMENT, AND THE PRODUCERS, AND THE TECHNOLOGY COMPANIES, AS WELL AS THE AGRIBUSINESS COMPANIES ON THIS QUESTION IF I CAN.

HOW DO WE MAINTAIN U.S. COMPETITIVENESS IN AGRICULTURE FOR THE PRODUCER IN THE U.S.?

NOT SO MUCH FOR MULTINATIONAL CORPORATIONS WHO DOESN'T CARE IF IT'S COTTON IS COMING FROM CHINA OR FROM BRAZIL OR SOMETHING LIKE THAT.

BUT HOW DO WE MAINTAIN THAT COMPETITIVENESS FOR OUR FARMERS HERE IN THE U.S.?

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(DR. WILLIAM HOOKE)

OKAY.

THAT'S PROBABLY A GOOD BENEDICTION FOR THIS SESSION, AND I'M SUGGESTING THAT MAYBE WHAT WE DO IS HEAR FROM EVERYBODY ON THAT.

ONE LAST COMMENT ON THAT, IF YOU WISH.

AND WE'LL START WITH KEN SINCE HE WAS COMING OUT OF HIS CHAIR.

(KENNETH HOOD)

I WASN'T COMING OUT OF THE CHAIR.

WELL, AND BASICALLY, I GUESS I'LL ANSWER THE QUESTION THIS WAY. THAT WAS THE BIRTH OF IN TIME, THE COMPANY THAT I WAS TALKING ABOUT AT A CONCLUSION OF MY PRESENTATION.

ON OUR FAMILY FARM, WE'RE IN A SURVIVAL MODE.

AND I HAD THE OPPORTUNITY TO DINE WITH 16 GROWERS FROM BRAZIL ABOUT A YEAR OR TWO YEARS AGO NOW.

THEY WENT AROUND THE TABLE, AND THE QUESTION WAS ASKED, YOU KNOW, "WHAT'S YOUR COST OF PRODUCTION?"

ONE OF THEM LOOKED AT ME IN THE EYE-- AND I HAVEN'T FORGOTTEN, IT WAS LIKE I SAID TWO YEARS-- AND HE SAYS, "I CAN RAISE COTTON FOR 42 CENTS A POUND. WHAT CAN YOU RAISE IT FOR?"

SO, SO THE ONLY WAY, I'VE CUT EVERY VALVE THAT I COULD.

I'VE SQUEEZED THIS DOWN.

YOU CAN JUST CUT YOUR INSURANCE SO LOW.

YOU CAN CUT YOUR EQUIPMENT SO LOW.

YOU CAN DO ALL THOSE THINGS.

SO THE ONLY THING THAT I HAD LEFT TO CUT WAS MY ACTUAL INPUTS ON A DAY-TO-DAY OPERATION AS I RAISED MY CROP.

SO THAT WAS THE VARIABLE RATE TECHNOLOGY CAME ON BOARD TILL WHERE I COULD CUT THOSE COSTS.

AND YOU SAW SOME OF THE SAVINGS IN THERE.

SO THAT'S ONE WAY THAT THIS TECHNOLOGY WILL HELP ME BE MORE COMPETITIVE, OR BETTER COMPETITIVE.

SEE, TEN YEARS AGO MY COMPETITOR WAS THE FARMER ACROSS THE TURN ROW; NOW IT'S THE FARMER ACROSS THE OCEAN.

SO I'VE GOT TO GET BACK ON A LEVEL PLAYING FIELD IF I CAN TO THOSE FARMERS IN THOSE THIRD WORLD UNDEVELOPED COUNTRIES THAT HAVE A LESS PRODUCTION COSTS THAN I DO.

(DR. WILLIAM HOOKE)

JON?

(JON DOGGETT)

WELL, FIRST OF ALL, I WOULD SAY AMERICAN FARMERS ARE COMPETITIVE IN THE WORLD.

I THINK THAT WHAT WE'VE TALKED ABOUT IS ADDING VALUE. AND BEING ABLE TO DO SOMETHING THAT IN OTHER PLACES IN THE WORLD YOU CAN'T DO BY TAKING AND PROCESSING OR ADDING VALUE OF BASIC COMMODITIES.

I THINK WE HAVE TO ALSO DECIDE, YOU KNOW, ... I'VE BEEN AROUND AGRICULTURE ALL MY LIFE, AND I'VE HEARD THIS DISCUSSION ABOUT HOW CAN WE BE COMPETITIVE AROUND THE WORLD? AND I TEND TO HEAR THE SAME PEOPLE, OR THE SAME TYPES OF PEOPLE, SAYING THE SAME TYPES OF THINGS IN THESE ONGOING NEVER-ENDING DISCUSSIONS ABOUT ... CONCERNED ABOUT WHAT'S GOING ON IN CANADA, OR WHAT'S GOING ON IN BRAZIL, OR WHAT'S GOING ON SOMEPLACE ELSE.

AND GENERALLY, THOSE ARE THE FOLKS THAT ARE TAKING 90% OF THE TIME TALKING ABOUT THE PROBLEM, AND 10% OF THE TIME TALKING ABOUT A SOLUTION.

THE ONES WHO ARE SUCCEEDING IN AGRICULTURE ARE TALKING ... TAKING 10% OF THE TIME TO IDENTIFY THE PROBLEM, AND 90% OF THE TIME IMPLEMENTING THE SOLUTIONS.

AND THEY'RE THE ONES DOING WHAT KEN'S DOING ON HIS FARM.

AND WE NEED IN AGRICULTURE TO START THINKING MORE POSITIVELY ABOUT WHAT WE DO, AND I THINK IT NEEDS TO START WITH THE FARMER.

HE'S THE ONE AT THE FORK OF THE CREEK THAT NEEDS TO BE, ONE: HAPPY HE'S DOING WHAT HE'S DOING-AND FIND WHAT, YOU KNOW, WHAT ARE THE PROBLEMS, AND FINDING THE SOLUTIONS, AND MOVING ON, AND BEING COMPETITIVE.

WE SPEND TOO MUCH TIME TALKING ABOUT THE PROBLEM.

(DR. WILLIAM HOOKE)

MIKE?

(MICHAEL DYKES)

I THINK WE HAVE WHAT WE HAVE TODAY IN TERMS OF TOOLS, AND AGRICULTURE, AND YOUR COMMENTS ABOUT MULTINATIONAL CORPORATIONS.

BUT WE DO CARE ABOUT OUR CUSTOMERS.

IF WE DON'T HAVE CUSTOMERS, WE DON'T HAVE A BUSINESS.

RESEARCH HAS BEEN THE BASIC BACKBONE FOR WHAT WE HAVE, WHAT WE HAVE TODAY.

AND AGAIN, IT'S WHY WE DON'T MILK BY HAND ANYMORE, AND WE HAVE MILKING MACHINES. THAT'S ONE ELEMENTARY EXAMPLE.

WE MUST HAVE CONTINUED R AND D IN AGRICULTURE.
AND WE HAVE TO HAVE INNOVATION.
AND WE HAVE TO HAVE INNOVATION IN AGRICULTURE.

AND IT'S HAPPENING IN AGRICULTURE, BUT OUR AGRICULTURE RESEARCH NEEDS TO KEEP PACE JUST LIKE CHANGES.

CHANGES ARE HAPPENING IN AGRICULTURE, THAT MEANS CHANGES ARE HAPPENING IN AGRICULTURAL RESEARCH.

AGRICULTURAL RESEARCH HAS TO BE WITH THE LEADING-EDGE RESEARCHERS.

I THINK WE HAVE THEM.
ONE EXAMPLE IN ST. LOUIS, MISSOURI, IN THE DAN FORCE CENTER.

YOU HAVE SOME ARS RESEARCHERS IN THERE WORKING ON COMPETITIVE RESEARCH GRANTS DOING SOME CUTTING-EDGE THINGS.

YOU HAVE TO HAVE RESEARCH THAT'S TARGETED TO THE NEEDS OF THE GROWERS 'CAUSE THEIR NEEDS ARE CHANGING AS THEIR FARMING OPERATION CHANGES, AS THE TOOLS THEY HAVE CHANGE, AS THE TECHNOLOGY IS CHANGING.

INTEGRATION OF BASIC SCIENCE RESEARCH, WE NEED IT.
OF ALL THE THINGS I TALKED ABOUT IN TERMS OF BIOTECHNOLOGY, THOSE ARE ONE GENE CHANGES.

WE'RE ADDING A BT GENE, OR WE'RE ADDING A HERBICIDE-TOLERANT GENE.
WHEN WE'RE TALKING WITH SOME OF THESE PLANTS WITH 50,000 GENES,
SOME OF THESE THINGS ARE MULTIPLE GENE INTERACTIONS.

WE ARE IN THE VERY FIRST STEPS OF THIS STUFF ON TERMS OF GENOMICS.
WE HAVE THE GENOME, THE GENOME MAPS FROM ANY OF THESE CROPS.
BUT SO FAR WE'VE BEEN MOVING ONE AND TWO GENES.

THIS YEAR, THIS CROP YEAR GOING IN THE GROUND NOW WILL BE THE FIRST TIME THAT CORN'S BEEN PLANTED THAT HAS THREE DIFFERENT GENES IN IT.
AN INSECT PROTECTION AGAINST THE CORN BORE, INSECT PROTECTION AGAINST CORN ROOT WORM, AND AN HERBICIDE-TOLERANT GENE.
ALL DONE THROUGH TRADITIONAL BREEDING.

SO IN TERMS OF RESEARCH, I THINK IT'S ENDLESS.

I THINK IF WE LOOK AT WHAT THIS NATION HAS IN TERMS OF HEALTH CARE AND HEALTH RESEARCH, I THINK ABOUT THE NATIONAL INSTITUTES OF HEALTH AND THE CHILDREN'S INN AT NIH.

IF YOU'VE LISTENED TO ANY OF THOSE PRESENTATIONS, IT IS PHENOMENAL WHAT WE'RE DOING IN TERMS OF RESEARCH.

AND I THINK IN TERMS OF AGRICULTURE RESEARCH, IT SHOULD BE VERY, VERY SIMILAR.

THERE'S NO REASON WE CANNOT CONTINUE TO BE AT THE CUTTING EDGE.
WE HAVE BEEN, AND INNOVATION LEADING WHERE WE'RE GOING AS A NATION.

(DR. WILLIAM HOOKE)
STEVE?

(STEVE FAIVRE)

I THINK KEN HAS SHOWN US WHAT'S POSSIBLE, AND I THINK WE'RE EVEN, EVEN WITH THAT WE'RE JUST SCRATCHING THE SURFACE.

I THINK IT'S IMPORTANT THAT THE PEOPLE IN THE INDUSTRY THAT ARE PROVIDING PRODUCTS AND SERVICES TO AGRICULTURE TAKE A MORE HOLISTIC APPROACH TO WHAT THE GROWER'S BUSINESS LOOKS LIKE, SO WE UNDERSTAND THE IMPACT OF GENETICS NOT JUST ON, YOU KNOW, THE INPUTS THAT ARE APPLIED TO IT, BUT WHAT DOES THAT DO UPSTREAM?

WHAT DOES THAT DO TO SATISFYING THE CUSTOMER, AND WHAT THE CUSTOMER IS LOOKING FOR?

SO I THINK IT'S IMPORTANT THAT WE DO WHAT WE CAN TO HELP THE GROWER UNDERSTAND WHAT THEIR CUSTOMER NEEDS, AND MEET THAT NEED.

AND I THINK, YOU KNOW, MONSANTO IS, AND THEIR COMPETITORS HAVE, AND ARE DOING A PRETTY GOOD JOB OF PUSHING THAT THROUGH.

BUT A HOLISTIC APPROACH AND LOOKING AT AN IMPACT OF THE TECHNOLOGY THAT WE PROVIDE AND HOW IT... HOW IT AFFECTS THE GROWERS IS, IS PARAMOUNT.

(DR. WILLIAM HOOKE)

TOM?

(THOMAS ERICKSON)

MAYBE A FIRST A COUPLE OF COMMENTS.

I... WITHIN BUNGE, ONE OF THE THINGS THAT'S UNIQUE IS THAT WE OPERATE IN SIX SEPARATE OPERATING COMPANIES, AND WE'RE ALL SEPARATE PNL LOCATIONS.

AND SO FROM A CORPORATE PERSPECTIVE, BUNGE NORTH AMERICA REALLY IS DEPENDENT ON BEING VERY CLOSE TO ITS CUSTOMERS HERE IN THE UNITED STATES BECAUSE THAT IS THE SOURCE OF OUR OWN PNL.

WE COMPETE AGAINST OUR OWN COMPANIES INTERNALLY WITHIN THE BUNGE UMBRELLA.

COUPLE OF THINGS I WOULD JUST MAYBE ADD ON TO ABOUT WHAT WE'VE HEARD.

TECHNOLOGY, I THINK, IS REALLY KEY.

WE LOOK TO THE UNITED STATES TO BE A LEADER AND A FIRST ADOPTER OF TECHNOLOGY.

WE WORK WITH FOLKS IN THE TECHNOLOGY SIDE, MONSANTO. WE ALSO HAVE A PARTNERSHIP WITH DUPONT.

AND I KNOW BOTH OF US ARE ROLLING OUT NOT JUST THE NEXT GENERATION OF BIOTECH PRODUCTS AS FAR AS PESTICIDES AND PEST RESISTANCE

ELEMENTS, BUT CONSUMER TRAITS, END USER TRAITS.

ONE OF THE THINGS THAT'S GOING ON IS IN THE SOYBEAN WORLD, OF COURSE, IS THE DEBATE OVER TRANS FATS AND HYDROGENATION OF SOYBEAN OIL, AND THE CREATION OF TRANS FATS.

I KNOW MONSANTO'S ROLLING ONE OUT.

WE'RE ROLLING A PRODUCT OUT WITH DUPONT FOR LOW LANO OIL SOYBEANS THAT WILL GIVE FARMERS AN OPPORTUNITY STARTING THIS YEAR TO START GROWING A SOYBEAN THAT DOES NOT NEED TO BE HYDROGENATED, ELIMINATING TRANS FATS FROM SOME OF THE FOOD PRODUCTS.

THOSE ARE THE KINDS OF DEVELOPMENTS THAT WE'RE LOOKING TO.

AND IN CONJUNCTION WITH, WITH WHAT WE TALKED ABOUT TODAY, I THINK WE'LL CONTINUE TO PROVIDE BENEFITS.

I'D BE REMISS IF I DIDN'T ALSO ADD ONTO JON'S POINT FROM EARLIER.

INFRASTRUCTURE.

THAT HAS BEEN A KEY SOURCE OF THE UNITED STATES COMPETITIVE AND COMPARATIVE ADVANTAGE OVER THE YEARS.

AND IT'S NOT JUST LOCKS AND DAMS, IT'S ABOUT JUST BASIC MAINTENANCE AND DREDGING OF OUR INFRASTRUCTURE.

WE HAVE 65% OF OUR PRODUCTS THAT GO ALONG, THAT ARE ON THE MISSISSIPPI RIVER SYSTEM THAT ORIGINATE ON TRIBUTARY RIVERS, AND MANY OF THOSE RIVERS ARE NOT BEING DREDGED.

MANY OF THOSE SMALL HARBORS AND PORTS ARE NOT BEING MAINTAINED.

THAT'S CRITICALLY IMPORTANT TO MAINTAINING COMPETITIVENESS FOR U.S. PRODUCERS.

(DR. WILLIAM HOOKE)
HERB.

(HERB SATTERLEE)
I CAN'T ADD TO MY ESTEEMED COLLEAGUES, SO I'LL DEFER TO THE ADMIRAL.

(VICE ADMIRAL LAUTENBACHER)
I HAVE TO AGREE WITH EVERYTHING THEY'VE SAID.

A COUPLE OF THINGS THAT WE HAVE TO KEEP IN MIND, AND I, I'M, I FIRMLY BELIEVE THE UNITED STATES MUST REMAIN COMPETITIVE, AND THE UNITED STATES MUST BUILD ITS INFRASTRUCTURE, AND THE UNITED STATES MUST INVEST IN DEVELOPMENT.

AND I THINK WE'RE ALL, WE'RE ALL AGREED ON THAT, AND CERTAINLY IN THIS AREA.

THE ISSUE THAT I WANT TO LEAVE YOU WITH IS THAT IS-- THAT IS NOT SOMETHING THAT CAN BE DONE JUST BY GOVERNMENT, OR JUST BY INDUSTRY, OR JUST BY SOME LOCAL GROUP, OR SOME INDIVIDUAL.

IT'S SOMETHING THAT REQUIRES A NATIONAL DEBATE AND NATIONAL CONSENSUS, AND WORK LIKE WE'RE DOING HERE TODAY TO TALK TO EACH OTHER, SO THAT WE CAN ENSURE THAT THE BUDGETS THAT COME OUT MEET THE NEEDS THAT ARE GOING TO KEEP THE UNITED STATES IN THE FOREFRONT.

I WAS CURIOUS.

I THOUGHT IT WAS FUNNY YOU MENTIONED GROWERS FROM BRAZIL. BRAZIL IS ONE OF THE CO-CHAIRS OF THE GLOBAL EARTH OBSERVING SYSTEM OF SYSTEMS, AND THEY'RE THERE 'CAUSE THEY SEE THIS AS A REALLY GOOD THING.

AND THEN THEY FOUGHT AND LOBBIED TO BE A CO-CHAIR ON THE EXECUTIVE COMMITTEE-- OR NOT A CO-CHAIR, BUT ON THE EXECUTIVE COMMITTEE.

SO WE ARE COMPETING.

MAKE NO MIND, YOU KNOW, AND IT WOULDN'T MATTER WHETHER THE UNITED STATES THOUGHT OF THIS OR NOT, THERE'S A LOT OF PEOPLE THAT WANT TO DO THIS.

SO THIS IS GOING TO HAPPEN, AND WE NEED TO COMPETE.

THANK YOU.

(DR. WILLIAM HOOKE)

OKAY.

THE SPEAKERS THIS AFTERNOON HAVE SHOWN ALL OF US THAT WE FACE A CHALLENGE ON THREE LEVELS.

MUCH OF THE REMOTE SENSING DISCUSSION TALKED ABOUT MULTIPLE SCALES. SO PERHAPS WE COULD THINK OF THIS.

THE FIRST LEVEL IS THE GLOBAL ONE WHERE WE'VE GOT A GROWING POPULATION OF 6 BILLION PEOPLE HEADED TOWARDS 8 BILLION OR 10 BILLION OR SO.

AND WE'RE FACED WITH THE CHALLENGE OF FEEDING THAT GROWING POPULATION WITH LESS ARABLE LAND, WITH LAND THAT'S IN QUANTITY, AND LAND THAT MAY NOT BE SO ARABLE IN TERMS OF QUALITY.

SO WE'VE GOT A PROBLEM AT THAT LEVEL.

THE SECOND LEVEL IS THE NATIONAL ONE THAT WE'VE JUST CONSIDERED.

HOW DOES THE U.S. MAINTAIN ITS TRADITIONAL ROLE IN ALL THIS?

THE WORLD IS GOING TO NEED THAT 200 MILLION ACRES THAT ARE BEING FARMED BY THE U.S.

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IT'S NOT A MATTER OF COMPETITION, IT'S A MATTER OF SUSTAINABILITY AND HOW WE KEEP THAT ENTERPRISE AFLOAT AND FUNCTIONING EFFECTIVELY AT THE NATIONAL LEVEL.

AND FINALLY, THIRD, AS THE SPEAKERS HAVE DONE A GREAT JOB OF INDICATING, THAT TRANSLATES TO A FARM BY FARM CHALLENGE.

AND MAKING THOSE CONDITIONS VIABLE ON A FARM BY FARM, CROP BY CROP, FAMILY BY FAMILY, BUSINESS BY BUSINESS KIND OF BASIS.

YOU'VE HEARD THAT IMPLIES, DEALING WITH THOSE THREE CHALLENGES IMPLIES, THAT THERE WILL BE AN UNENDING DEVELOPMENT OF TECHNOLOGY OF ALL SORTS: REMOTE SENSING TECHNOLOGY, PRECISION FARMING, BIOENGINEERING, AND OTHER TECHNOLOGIES.

IF WE'RE GOING TO SUCCEED, WE CAN NEVER STOP THAT PROCESS OF DEVELOPMENT.

THERE'S ALSO A CHALLENGE OF RECONCILING THE SUPPLY OF THESE TECHNOLOGIES AND ENVIRONMENTAL INFORMATION AND SO ON WITH THE DEMAND.

WHAT'S REALLY USEFUL FOR THE FARMER AS HE TRIES TO KEEP GOING?

AND FINALLY, YOU HEARD A CURRENT THROUGH ALL OF THIS THAT THERE'S A CORRESPONDING POLICY DIMENSION.

WE HAVE TO HAVE THE RIGHT POLICIES AT THE INTERNATIONAL, NATIONAL, STATE AND LOCAL LEVELS TO REMOVE THE BARRIERS TO THIS TECHNOLOGY ADVANCE, MAKE IT SUSTAINABLE, AND HELP PROVIDE THAT FOOD AND FIBER TO FOLKS.

I WANT TO THANK THE AUDIENCE FOR COMING TO THIS VERY UNUSUAL FRIDAY AFTERNOON CLUB.

I WANT TO THANK OUR PANELISTS FOR A MOST INTERESTING SPECTRUM OF TALKS.

THAT WAS REALLY EXCELLENT.

AND I WANT TO THANK OUR HOSTS, THE U.S. CHAMBER OF COMMERCE AND THE SPACE ENTERPRISE COUNCIL FOR MAKING THIS AFTERNOON POSSIBLE.

THANK YOU ALL VERY MUCH.

[APPLAUSE]