

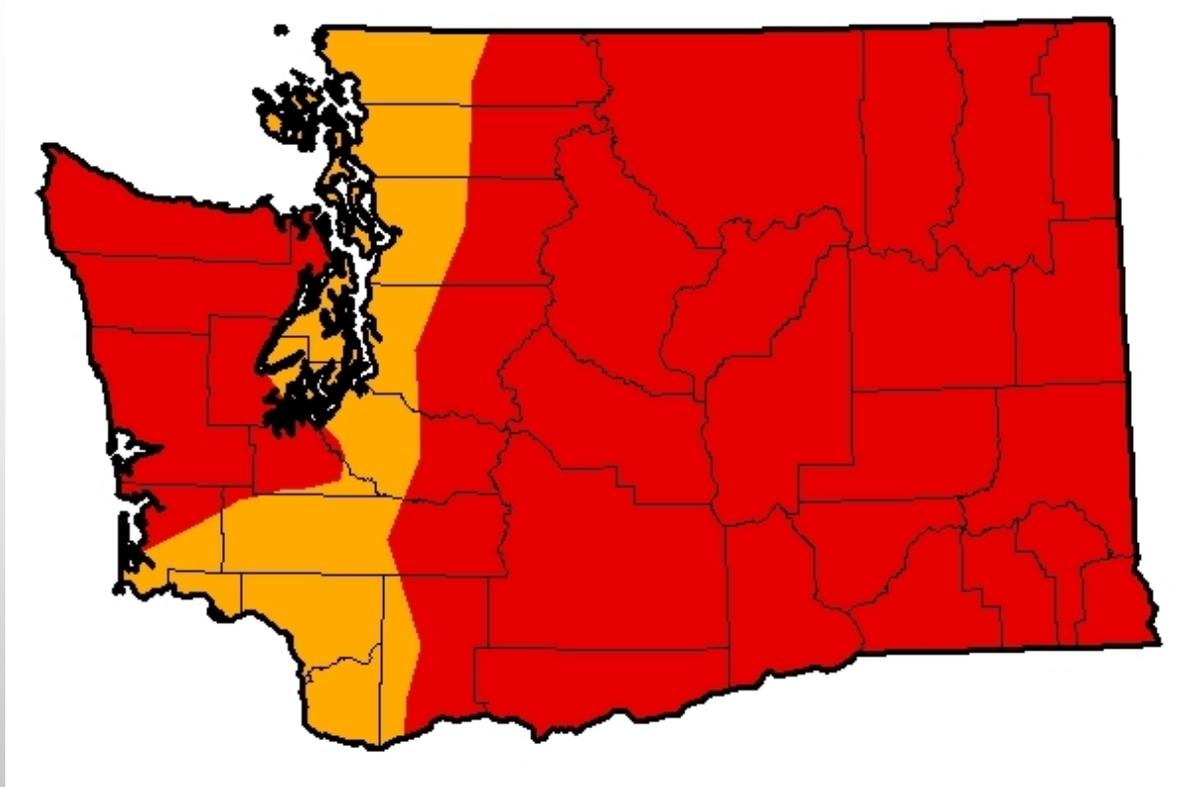
2015 Drought and Agriculture

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Natural Resources Assessment Section

WEEK OF AUGUST 25, 2015



* 85% of Washington State classified as "extreme drought" by USDA

AGRICULTURE IN WASHINGTON

- CONTRIBUTES MORE THAN 160,000 JOBS
- AVERAGES 13% OF STATE'S TOTAL ECONOMIC PROFILE
- MORE THAN 300 CROPS PRODUCED THROUGHOUT THE STATE
- APPLES DOMINATE ECONOMIC OUTPUT: 22% OF STATE'S TOTAL CROP VALUE
- WASHINGTON IS TOP PRODUCER IN US FOR 9 CROPS
- WASHINGTON AGRICULTURE RELIES HEAVILY ON SURFACE WATER SUPPLY

ECONOMIC IMPACT ASSESSMENT

- AGREEMENT WITH ECOLOGY (11/10/15)
- AGRICULTURAL LAND USE MAPPING OF AFFECTED AREAS (FALL 2015)
- INITIAL QUALITATIVE AND QUANTITATIVE ASSESSMENT (DECEMBER 2015)
- FINAL QUALITATIVE AND QUANTITATIVE ASSESSMENT (DECEMBER 2016)
- **ALL WITH THE ASSISTANCE OF OUR AGRICULTURAL PARTNERS**

DATA COLLECTION

- MEETINGS WITH COMMODITY GROUPS
 - TREE FRUIT, WHEAT, BLUEBERRIES, RED RASPBERRIES
- TARGETED MAPPING EFFORT (KITITAS RECLAMATION DISTRICT)
- ONLINE SURVEY
 - ANONYMOUS
 - GROUPED BY CROP TYPE AND REGION
 - IMPACTS TO YIELD, QUALITY, MARKETABILITY, AND STORAGE

INTERIM RESULTS

- WHEAT: FINAL HARVEST FOR 2015 WAS 22% BELOW FIVE YEAR AVERAGE, **\$212.4 MILLION**
- APPLES: 7 MILLION BOXES LOST, **\$86.5 MILLION** (BASED ON EARLY HARVEST ESTIMATES)
- BLUEBERRIES: 8 MILLION POUND LOSS, **\$10.56 MILLION**
- RED RASPBERRIES: 26% CROP LOSS (BASED ON 2014 YIELD), **\$13.9 MILLION**

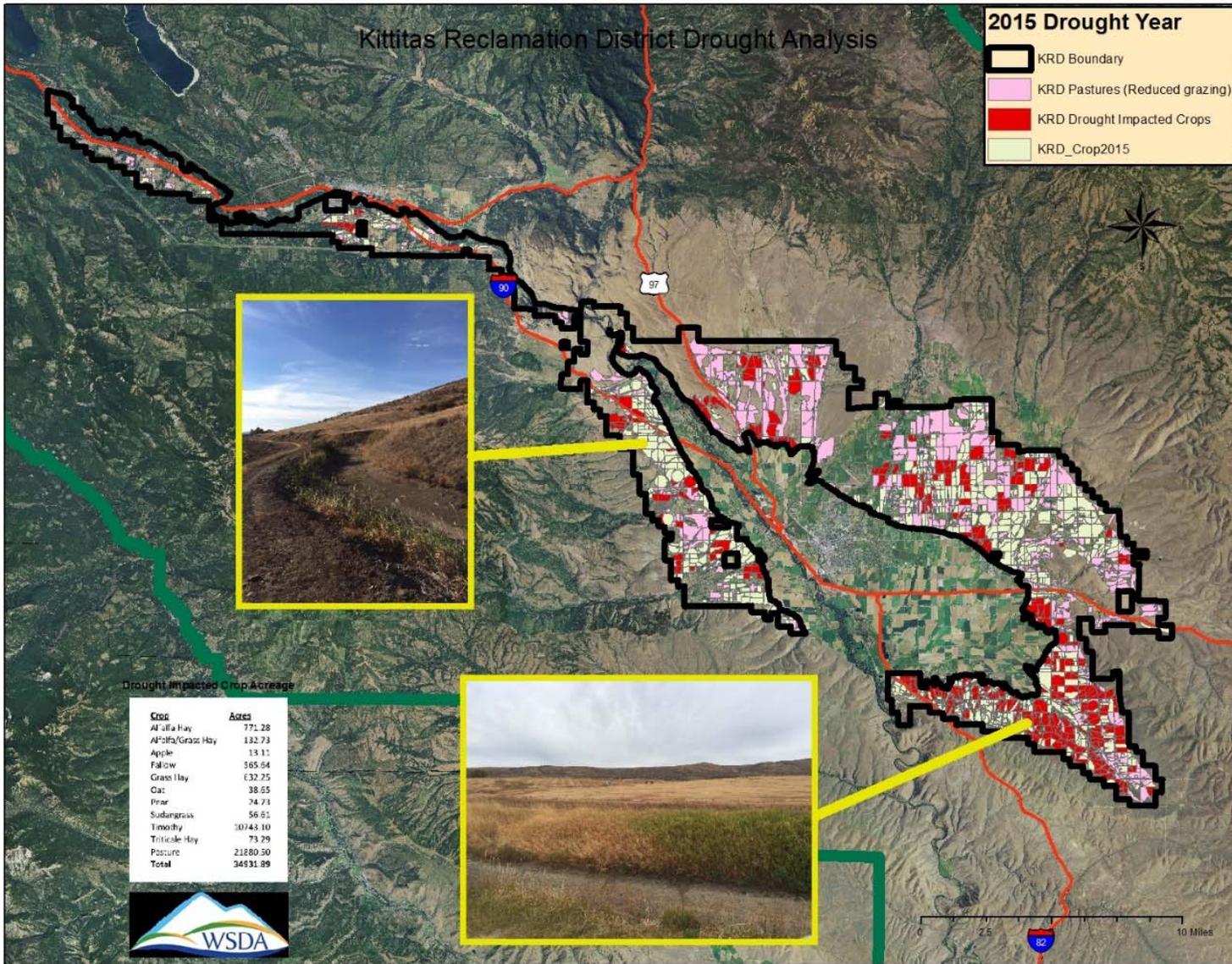
KRD MAPPING RESULTS

<u>Impacted Crop</u>	<u>Impacted Acres</u>	<u>Value/acre (\$)</u>	<u>Correction factor</u>	<u>Impact (\$)</u>
Alfalfa Hay	771.28	1,001.00	0.50	386,025.64
Alfalfa/Grass Hay	132.73	627.20	0.50	41,624.13
Apple	13.11	12,163.00		159,470.10
Fallow	565.64	0.00		0.00
Grass Hay	632.25	627.20		396,547.59
Oat	38.65	178.50		6,898.40
Pear	24.73	10,959.00		270,966.39
Sudangrass	56.61	627.20		35,505.19
Timothy	10,743.10	1,200.00	0.625	8,057,325.00
Triticale Hay	73.29	627.00		45,955.11
Pasture	20,201.90	100.00		2,020,190.00
Total	33,253.29			\$11,420,507.55

Kittitas Reclamation District Drought Analysis

2015 Drought Year

-  KRD Boundary
-  KRD Pastures (Reduced grazing)
-  KRD Drought Impacted Crops
-  KRD_Crop2015



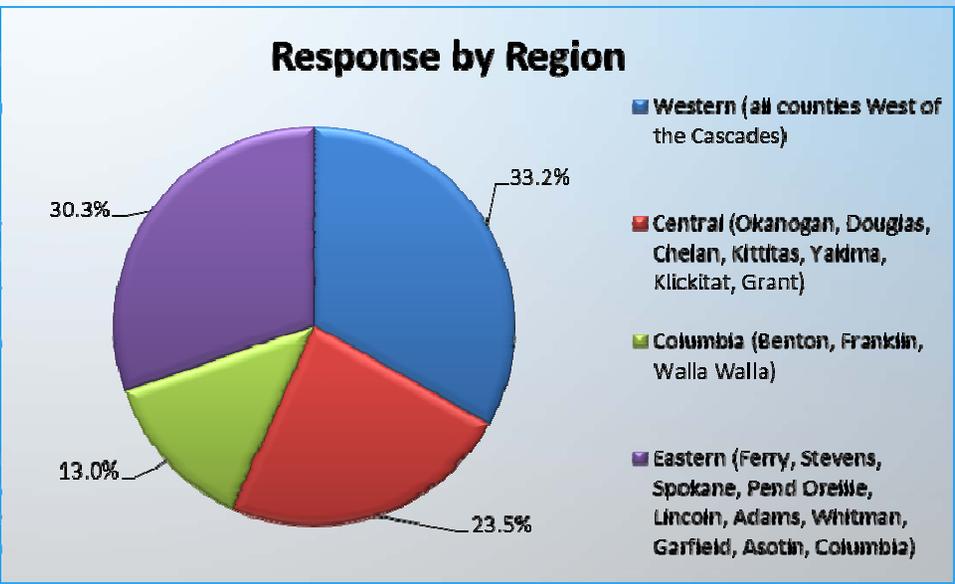
Drought Impacted Crop Acreage

Crop	Acres
Alfalfa Hay	771.28
Alfalfa/Grass Hay	132.73
Apple	13.11
Fallow	165.64
Grass Hay	132.25
Oat	38.65
Pear	74.71
Sudangrass	56.61
Timothy	10743.10
Triticale Hay	73.29
Passure	21880.50
Total	34931.89



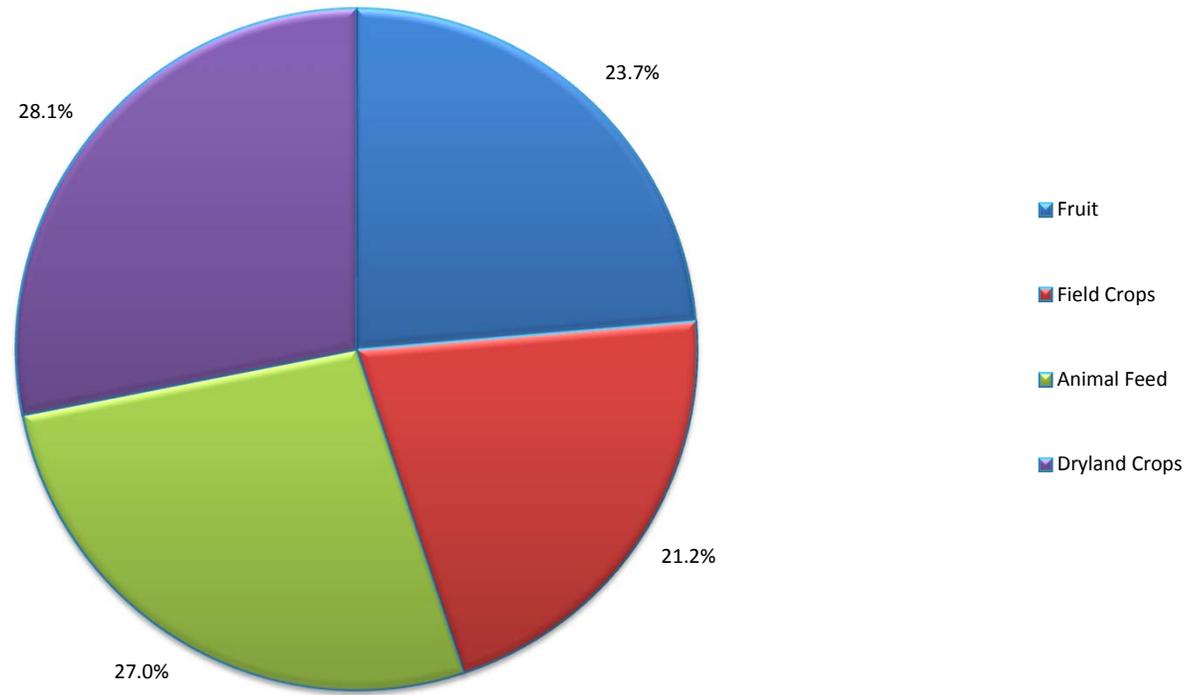
SURVEY DETAILS

- LAUNCHED DECEMBER 2, 2015 – DATA PULLED DECEMBER 21, 2015
- TOTAL RESPONDENTS CATEGORIZED BY CROP GROUP AND GROWING REGION
- 452 TOTAL RESPONDENTS IN FIRST THREE WEEKS



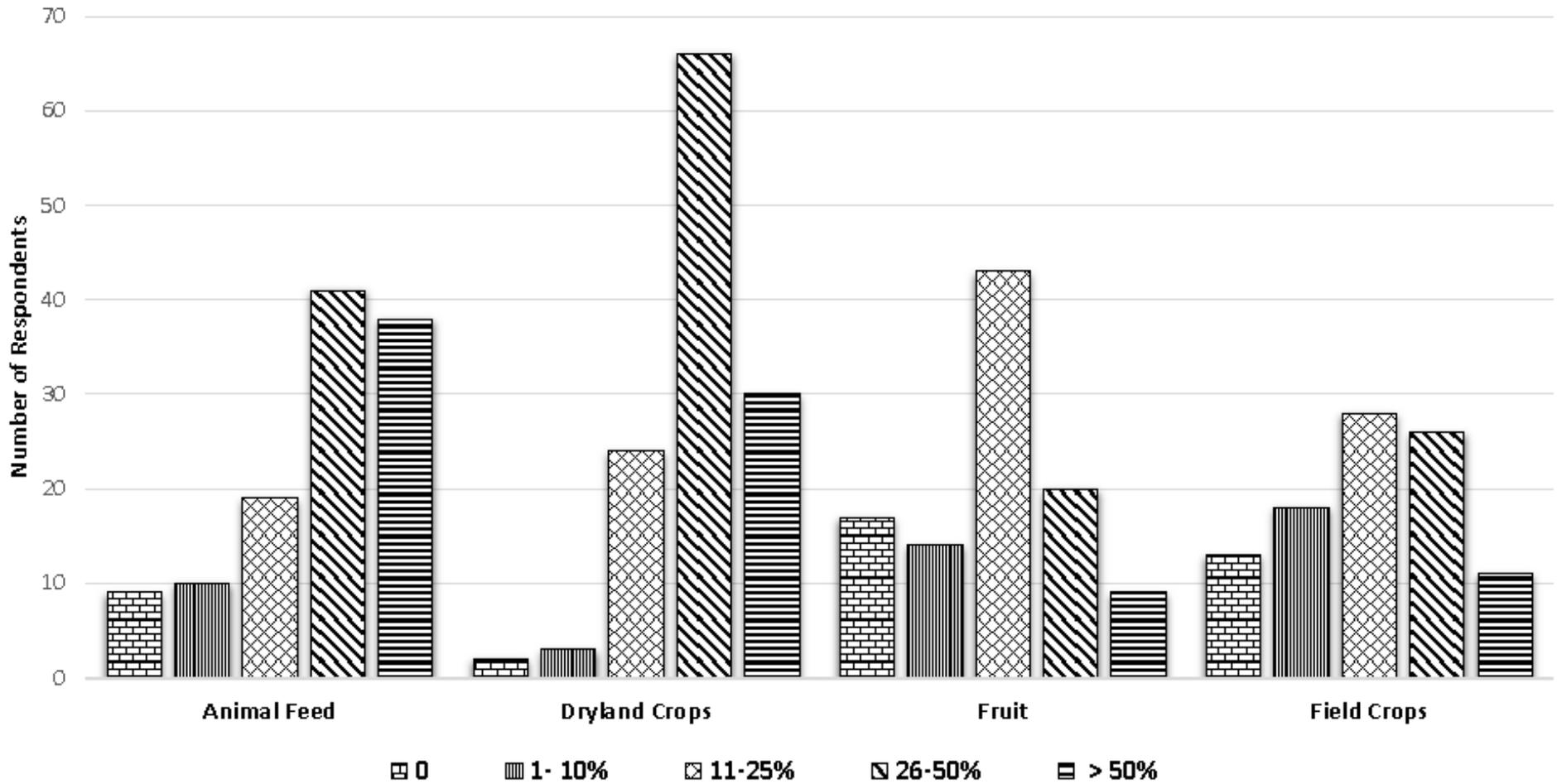
SURVEY RESULTS

Response Percentage by Crop Group



SURVEY RESULTS

Percentage Yield Impact



ADDITIONAL NOTABLE RESULTS

- **QUALITY AND MARKETABILITY:** 64.8% OF RESPONDENTS STATED THERE WERE REDUCTIONS IN QUALITY AND MARKETABILITY
- **STORAGE IMPACTS:** 31.7% OF RESPONDENTS REPORTED STORABILITY OF THEIR 2015 CROP WAS REDUCED BY DROUGHT
- **INFRASTRUCTURE:** 31.8% REPORTED THAT INFRASTRUCTURE IMPROVEMENTS WERE COMPLETED IN 2015 DUE TO DROUGHT
- **NEXT YEAR:** 61.5% OF RESPONDENTS REPORTED THEY EXPECT 2015 DROUGHT TO IMPACT THEIR CROP OR FARMING OPERATION IN 2016

NEXT STEPS

- TARGETED DATA COLLECTION IN THE ROZA IRRIGATION DISTRICT TO BETTER QUANTIFY AREA-SPECIFIC IMPACTS IN THE LOWER YAKIMA.
- EXTENSIVE USE OF 2015 HARVEST INFORMATION AS IT IS RELEASED FROM USDA'S NATIONAL AGRICULTURAL STATISTICS SERVICE.
- CONTINUED USE OF ONLINE SURVEY FOR COLLECTION OF QUALITATIVE DATA ON DROUGHT IMPACTS.

FISH AND WILDLIFE IMPACTS: 2015 DROUGHT

- HIGH WATER TEMPERATURES TRIGGERED FISHERIES AND HYDRAULIC PROJECT CLOSURES IN 23 BASINS
- INCREASED PRE-SPAWN MORTALITY
- LOW BODY SIZE AND FEWER EGGS PER FISH
- MORE ADULT MALES THAN FEMALES
- HIGH DISEASE PRESENCE IN HATCHERY RETURNS

KNOWN IMPACTS ON FISH & WILDLIFE

- 73% REDUCTION IN EXPECTED COHO RETURNS
- FRASER RIVER SOCKEYE RUN WAS 37% OF FORECAST; PINKS WERE 40% OF FORECAST
- OKANOGAN SOCKEYE SPAWNERS WERE ONLY 4% OF FORECAST
- STURGEON MORTALITY IN THE COLUMBIA WAS INCREASED DUE TO LETHAL TEMPERATURES
- SANDHILL CRANE NESTING FAILURES WERE WITNESSED

FINAL THOUGHTS

- IMPACT OF 2015 DROUGHT NOT LIMITED TO CERTAIN CROPS, REGIONS, OR TIMES OF YEAR
- IMPACTS WILL BE ONGOING
- MANY OF THE IMPACTS WILL NOT BE QUANTIFIABLE EVEN WITH MORE DATA COLLECTION IN 2016
- IMPACT DATA IS IMPORTANT TO COLLECT FOR FUTURE PLANNING EFFORTS



THANK YOU

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