SEASONAL WEATHER FORECAST & ITS EFFECTS TO AGRICULTURAL HEALTH

FOR BELIZE

March to May 2021

Alert Level
No Concern
Drought Watch
Drought Warning

	IVESTOCK	Zone	District	Possible Effects and actions to mitigate effect	Drought Warning
1	Poultry	1		Monitor and report possible case of diseases like New C	
	,	North	Corozal & Orange Walk	Vaccinate for New Castle and Fowl Pox Continue monitoring and provide adequate wa	ter and feed supply to poultry barns in drier days
				Maintain biosecurity measures in poultry farms	
				Monitor and report possible case of diseases like New C	astie and Fowl Pox
				Vaccinate for New Castle and Fowl Pox	
		Control		Continue to monitor and report any possible ca	ase of these diseases.
		Central Inland	Сауо	Continue monitoring and provide adequate wa Continue to provide adecuate ventilation in dri Implement adequate water storage systems fo Increase biosecurity measures in poultry farms	r the upcoming drier months
				Monitor and report possible case of diseases like New C	astle and Fowl Pox
		Central		Vaccinate for New Castle and Fowl Pox	
		Coastal	Belize	Continue monitoring and provide adequate wa Maintain biosecurity measures in poultry farms	ter and feed supply to poultry barns in drier days s and barns
				Monitor and report possible case of diseases like New C	
			Stann Creek	Vaccinate for New Castle and Fowl Pox	
				Continue monitoring and provide adequate wa Maintain biosecurity measures in poultry farms	ter and feed supply to poultry barns in drier days s and barns
		South		Monitor and report possible case of diseases like New C	astle and Fowl Pox
				Vaccinate for New Castle and Fowl Pox	
			Toledo		
				Continue monitoring and provide adequate wa	ter and feed supply to poultry barns in drier days
				Maintain biosecurity measures in poultry farms	s and barns

2	Cattle			May cause an increase in internal and external parasites
	Cattle			Administer timely parasite control measures (deworming) of animals along with pasture management
				(silvopastoral system)
				Provide adequate shade supply along with adequate water supply.
				Provide and store hay, ensure adequate management of protein and energy bank, provide citrus
				pellets or multinutritional blocks as supplemental feeding
		North	Orange Walk,	Continue monitoring of black leg and vesicular stomatitis.
		North	Corozal	Vaccinate against blackleg and other cloastridial spp
				Monitor increase of bats activities
				Continue monitoring and vaccinate against rabies, farmers are encouraged to report any suspect cases.
				Monitor for outbreak of Army Worm and Chinch Bug
				spraying special insecticide and improve pasture rotation
				May cause an increase in internal and external parasites
				Administer timely parasite control measures (deworming) of animals along with pasture management
				Provide and store hay, ensure adequate management of protein and energy bank, provide citrus
				Provide adequate shade supply
		Central Inland		Provide adequate water to the herd
			Сауо	Continue monitoring for Blackleg and Vesicular Stomatitis
				Vaccinate against blackleg and other cloastridial spp
				Monitor for outbreak of Army Worm and Chinch Bug
				spraying special insecticide and improve pasture rotation
				Monitor increase of bats activities
				Continue monitoring and vaccinate against rabies, farmers are encouraged to report any suspect cases.
				May cause an increase in internal and external parasites
				Administer timely parasite control measures (deworming) of animals along with pasture management
				(silvopastoral system)
				Provide and store hay, ensure adequate management of protein and energy bank, provide citrus
				Provide adequate shade supply
				Provide adequate share supply Provide adequate water to the herd
		Central	Belize	Continue monitoring for Blackleg and Vesicular Stomatitis
		Coastal		Vaccinate against blackleg and other cloastridial spp
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				Monitor increase of bats activities	
				Continue monitoring and vaccinate against rabies, farmers are encouraged to report any suspect cases. Monitor for outbreak of Army Worm and Chinch Bug	
				spraying special insecticide and improve pasture rotation	
				May cause an increase in internal and external parasites	
				Administer timely parasite control measures (deworming) of animals along with pasture management (silvopastoral system)	
				Provide and store hay, ensure adequate management of protein and energy bank, provide citrus	
				Provide adequate shade supply	
				Provide adequate water to the herd	
			Stann Creek	Continue monitoring for Blackleg and Vesicular Stomatitis	
				Vaccinate against blackleg and other cloastridial spp	
				Monitor increase of bats activities	
				Continue monitoring and vaccinate against rabies, farmers are encouraged to report any suspect cases.	
				Monitor for outbreak of Army Worm and Chinch Bug	
				spraying special insecticide and improve pasture rotation	
		South		May cause an increase in internal and external parasites	
		300111		Administer timely parasite control measures (deworming) of animals along with pasture management (silvopastoral system)	
				Provide and store hay, ensure adequate management of protein and energy bank, provide citrus pellets or multinutritional blocks as supplemental feeding	
				Provide adequate shade supply	
				Provide adequate water to the herd	
			Toledo	Monitor for outbreak of Army Worm and Chinch Bug	
				spraying insecticide and improve pasture rotation	
				Monitor increase of bats activities	
				Continue monitoring and vaccinate against rabies, farmers are encouraged to report any suspect cases.	
			ļ	Vaccinate against blackleg and other cloastridial spp	
3	Pigs			Continue to monitor and report any possible case of these diseases.	

	North	Corozal & Orange Walk	Avoid overcrowding due to heat exhaustion Supply air ventilation where necessary and possible Continue monitoring and provide adequate food and water supply to pig farms Increase biosecurity measures in pig farms
	Central inland	Сауо	Continue to monitor and report any possible case of these diseases. Avoid overcrowding due to heat exhaustion Supply air ventilation where necessary and possible Continue monitoring and provide adequate food and water supply to pig farms Increase biosecurity measures in pig farms Implement adequate water storage systems for the upcoming drier months
	Central coastal	Belize	Continue to monitor and report any possible case of these diseases. Avoid overcrowding due to heat exhaustion Supply air ventilation where necessary and possible Continue monitoring and provide adequate food and water supply to pig farms Increase biosecurity measures in pig farms
	South	Stann Creek	Continue to monitor and report any possible case of these diseases. Avoid overcrowding due to heat exhaustion Supply air ventilation where necessary and possible Continue monitoring and provide adequate food and water supply to pig farms Increase biosecurity measures in pig farms
		Toledo	Continue to monitor and report any possible case of these diseases. Avoid overcrowding due to heat exhaustion Supply air ventilation where necessary and possible Continue monitoring and provide adequate food and water supply to pig farms Increase biosecurity measures in pig farms
Sheep	North	Corozal & Orange Walk.	May cause an increase in internal and external parasites Administer timely parasite control measures (deworming) of animals along with pasture management (silvopastoral system) Provide and store hay, ensure adequate management of protein and energy bank, provide citrus Provide adequate shade supply Provide adequate water to the herd Monitor for outbreak of Army Worm and Chinch Bug

		spraying insecticide and improve pasture rotation
		Monitor increase of bats activities
		Continue monitoring and vaccinate against rabies, farmers are encouraged to report any suspect cases. Continue monitoring for Blackleg and Vesicular Stomatitis
		Vaccinate against blackleg and other cloastridial spp
Central Inland	Сауо	 May cause an increase in internal and external parasites Administer timely parasite control measures (deworming) of animals along with pasture management Provide and store hay, ensure adequate management of protein and energy bank, provide citrus Provide adequate shade supply Provide adequate water to the herd Monitor for outbreak of Army Worm and Chinch Bug spraying insecticide and improve pasture rotation Monitor increase of bats activities Continue monitoring and vaccinate against rabies, farmers are encouraged to report any suspect cases.
		Continue monitoring for Blackleg and Vesicular Stomatitis Vaccinate against blackleg and other cloastridial spp
Central Coastal	Belize	May cause an increase in internal and external parasites (silvopastoral system) Provide and store hay, ensure adequate management of protein and energy bank, provide citrus Provide adequate shade supply Provide adequate water to the herd Monitor for outbreak of Army Worm and Chinch Bug spraying insecticide and improve pasture rotation Monitor increase of bats activities Continue monitoring and vaccinate against rabies, farmers are encouraged to report any suspect cases. Continue monitoring for Blackleg and Vesicular Stomatitis Vaccinate against blackleg and other cloastridial spp May cause an increase in internal and external parasites

		Stann Creek	Administer timely parasite control measures (deworming) of animals along with pasture management Provide and store hay, ensure adequate management of protein and energy bank, provide citrus Provide adequate shade supply Provide adequate water to the herd Monitor for outbreak of Army Worm and Chinch Bug spraying insecticide and improve pasture rotation Monitor increase of bats activities	
		South		Continue monitoring and vaccinate against rabies, farmers are encouraged to report any suspect cases. Continue monitoring for Blackleg and Vesicular Stomatitis Vaccinate against blackleg and other cloastridial spp
			Toledo	May cause an increase in internal and external parasites Administer timely parasite control measures (deworming) of animals along with pasture management Provide and store hay, ensure adequate management of protein and energy bank, provide citrus Provide adequate shade supply Provide adequate water to the herd Monitor for outbreak of Army Worm and Chinch Bug spraying insecticide and improve pasture rotation Monitor increase of bats activities Continue monitoring and vaccinate against rabies, farmers are encouraged to report any suspect cases. Continue monitoring for Blackleg and Vesicular Stomatitis Vaccinate against blackleg and other cloastridial spp
5	Bees	North	Corozal & Orange Walk	 Beehive Managments /Floral and Nectar Avialibility Optimum hive population during this period, strong colonies, delay for the production of honey and other by products. The impact of the hot weather conditions could impact the sudden decrease in flowering which would lead to sudden flower drying out. Pest such as Varroa and Small Hive Beetle is at its lowest population, best to implement IPM and biological control measures, no fungal nor bacterial disease expected to occur.
				Beehive Managments /Floral and Nectar Avialibility

	Central Inland	Сауо	Optimum hive population during this period, strong colonies, delay for the production of honey and other by products. The impact of the hot weather conditions could impact the sudden decrease in flowering which would lead to sudden flower drying out. Pest such as Varroa and Small Hive Beetle is at its lowest population, best to implement IPM and biological control measures, no fungal nor bacterial disease expected to occur.
	Central Costal	Belize	 Beehive Managments /Floral and Nectar Avialibility Optimum hive population during this period, strong colonies, delay for the production of honey and other by products. The impact of the hot weather conditions could impact the sudden decrease in flowering which would lead to sudden flower drying out. Pest such as Varroa and Small Hive Beetle is at its lowest population, best to implement IPM and biological control measures, no fungal nor bacterial disease expected to occur.
	South	Stann Creek Toledo	 Beehive Managments /Floral and Nectar Avialibility Optimum hive population during this period, strong colonies, delay for the production of honey and other by products. The impact of the hot weather conditions could impact the sudden decrease in flowering which would lead to sudden flower drying out. Pest such as Varroa and Small Hive Beetle is at its lowest population, best to implement IPM and biological control measures, no fungal nor bacterial disease expected to occur.
6 Aquacultur e: Shrimp	North	Corozal	 An increase in temperature cause evaporation affecting water level and flow of the New River, which cause eutrophication due to excess nutrients, algae proliferation and crashes and low dissolved oxygen levels. Monitor river water quality parameters and especially dissolved oxygen levels before pumping water to the Hatchery or ponds. An increase in temperature increases physiological and metabolic activity, consequently, activity increases, which causes an increase in oxygen consumption, resulting in less concentration in the water. Closely monitor dissolved oxygen levels, increase water flow, water exchange or aeration if necessary, if this is not possible, lower stocking density Increased temperature also results in increased demand for feed, shrimp consume feed much faster when temperatures are above 32 °C Closely monitor feed rates/consumption and waste, organic matter and build-up of Hydrogen Sulfide (H₂S) in the bottom, improve waste removal. Excess nitrogen and phosphorus from feeding rates and waste caused increases in algae, that causes algae crash and therefore deterioration of water quality in ponds

		Monitor water quality parameters closely, increase water flow or water exchange, or apply white lime to handle problems.
		Increased temperature, may favour shift from beneficial bacterial to pathogen-related events and increase to susceptibility to diseases.
		Monitor shrimp health closely and provide/increase probiotics if necessary, lower stocking densities.
		An increase in temperature cause an increase in salinity due to low rainfall, and evaporation Closely monitor salinity concentration, add new water to top off levels, increase water depth and reduce direct penetration of sunlight.
		An increase in temperature increases physiological and metabolic activity, consequently, activity increases, which causes an increase in oxygen consumption, resulting in less concentration in the water. Closely monitor dissolved oxygen levels, increase water flow, water exchange or aeration if necessary, if this is not possible, lower stocking density Increased temperature also results in increased demand for feed, shrimp consume feed much faster when temperatures are above 32 °C
		Closely monitor feed rates/consumption and waste, organic matter and build-up of Hydrogen Sulfide (H2S) in the bottom, improve waste removal.
	Belize	Excess nitrogen and phosphorus from feeding rates and waste caused increases in algae, that causes algae crash and therefore deterioration of water quality in ponds Monitor water quality parameters closely, increase water flow or water exchange, or apply white lime to handle problems.
		Increased temperature, may favour shift from beneficial bacterial to pathogen-related events and increase to susceptibility to diseases.
		Monitor shrimp health closely and provide/increase probiotics if necessary, lower stocking densities.
		An increase in temperature cause an increase in salinity due to low rainfall, and evaporation
Central		Closely monitor salinity concentration, add new water to top off levels, increase water depth and reduce direct penetration of sunlight.
Coastal		An increase in temperature increases physiological and metabolic activity, consequently, activity increases, which causes an increase in oxygen consumption, resulting in less concentration in the water. Closely monitor dissolved oxygen levels, increase water flow, water exchange or aeration if necessary, if this is not possible, lower stocking density
		Increased temperature also results in increased demand for feed, shrimp consume feed much faster when temperatures are above 32 °C

		Stann Creek	Closely monitor feed rates/consumption and waste, organic matter and build-up of Hydrogen Sulfide (H2S) in the bottom, improve waste removal. Excess nitrogen and phosphorus from feeding rates and waste caused increases in algae, that causes algae crash and therefore deterioration of water quality in ponds Monitor water quality parameters closely, increase water flow or water exchange, or apply white lime to handle problems. Increased temperature, may favour shift from beneficial bacterial to pathogen-related events and increase to susceptibility to diseases. Monitor shrimp health closely and provide/increase probiotics if necessary, lower stocking densities. An increase in temperature cause an increase in salinity due to low rainfall, and evaporation Closely monitor salinity concentration, add new water to top off levels, increase water depth and reduce direct penetration of sunlight.
	South	Toledo	An increase in temperature increases physiological and metabolic activity, consequently, activity increases, which causes an increase in oxygen consumption, resulting in less concentration in the water. Closely monitor dissolved oxygen levels, increase water flow, water exchange or aeration if necessary, if this is not possible, lower stocking density Increased temperature also results in increased demand for feed, shrimp consume feed much faster when temperatures are above 32 °C Closely monitor feed rates/consumption and waste, organic matter and build-up of Hydrogen Sulfide (H2S) in the bottom, improve waste removal. Excess nitrogen and phosphorus from feeding rates and waste caused increases in algae, that causes algae crash and therefore deterioration of water quality in ponds Monitor water quality parameters closely, increase water flow or water exchange, or apply white lime to handle problems. Increased temperature, may favour shift from beneficial bacterial to pathogen-related events and increase to
			susceptibility to diseases. Monitor shrimp health closely and provide/increase probiotics if necessary, lower stocking densities. An increase in temperature cause an increase in salinity due to low rainfall, and evaporation Closely monitor salinity concentration, add new water to top off levels, increase water depth and reduce direct penetration of sunlight.
AGRICULTURE C	OMMODITII		This condition will favour the pest population outbreak of the frog hopper. Surveillance and monitoring of the pest

	North	Corozal & Orange Walk	Control Measures to be implemented where necessary This condition will favour sugar cane borer population outbreak. Surveillance and Monitor of the sugar cane borer. Control measures to be implemented where necessary Overall conditions may favor the yellow sugarcane aphid population outbreak Continue monitoring and control where necessary.
	Central & Inland Coastal	Сауо	This condition will not favour the pest population outbreak of the frog hopper. Continue surveillance and monitoring of the pest This condition will not favour sugar cane borer population outbreak. Continue monitoring of the sugar cane borer.
		Belize	This condition will favour sugar cane borer population outbreak. Surveillance and Monitoring of the sugar cane borer. Control measures to be implemented where necessary
		Stann Creek	This condition may favour frog hopper population outbreak. Continue monitoring of the frog hopper.
	South	Toledo	This condition may favour sugar cane stem borrer population outbreak. Continue monitoring of the sugar cane stem borer. This condition may favour the frog hopper population outbreak Continue monitoring the sugar cane frog hopper.
Citrus		Сауо	This may favour psyllid population growth and outbreak. Monitor the population dynamics Will may favour the mite population increase, a vector for the citrus leprosis virus. Monitor the population dynamics
			Preventative miticide spraying may be done. This will favour psyllid population growth and outbreak.
		Stann Creek	Monitor the population dynamics Control measure be implemented where necessary Will not favour the mite population increase, a vector for the citrus leprosis virus. Monitor the population dynamics
	South	Toledo	This will favour psyllid population growth. Monitor of population dynamics Implement control measures if necessary

	Banana		Stann Creek	This will not favour the mite population increase, a vector for the citrus leprosis virus. Monitor of population dynamics Clean drainage system. Will may favour outbreaks of Sigatoka Monitor and preventative control measures be implemented where necessary. May favour mealybug population outbreak. Monitor and implement control measures for mealybugs and ant population
			Toledo	May favour outbreaks of Sigatoka Monitor and preventative control measures be implemented where necessary. May favour water logging conditions Maintain drainage to get rid of excess water. May favour mealybug population outbreak. Monitor and implement control measures for mealybugs and ant population
4	Grains: Corn, Rice, Beans, Soy bean & Sorghum	North	Corozal & Orange Walk	 This will not favour chances of mite population outbreak. Continue Monitoring mite opulation Will not favour army worm population outbreak Continue monitoring armyworm population This not will favour the yellow sorghum aphid population increase. Continue surveillance of the aphid population.
		Central & Coastal	Сауо	This may favour chances of mite population outbreak. Continue Monitoring and preventative spray with miticide where necessary. This may favour army worm population outbreak Continue monitoring and effective control measures where necessary This may favour the yellow sorghum aphid population increase. Continue surveillance and control where necessary.
		coustar	Belize	This will not favour chances of mite population outbreak. Continue Monitoring the mite population. Will not favour army worm population outbreak Continue to monitor the armyworm population. This will not favour the yellow sorghum aphid population increase. Continue surveillance of the aphid.
				This may favour fungal problems and bacterial outbreak. Continue monitoring and if necessary implement control measures May favour army worm population outbreak

			Stann Creek	Continue monitoring and effective control measures where necessary
	South			This may favour the yellow sorghum aphid population increase.
				Continue surveillance and control where necessary.
			Toledo	This may favour fungal problems and bacterial outbreak. Continue monitoring and if necessary implement control measures May favour army worm population outbreak Continue monitoring and effective control measures where necessary
5	Horticultur e: Tomatoes, Peppers, Onions, Cabbage, Carrots &	North	Corozal, Orange Walk	 This will not favour an increase in white flies, thrips and mite outbreak along with viral diseases. Monitor and implement effective control measures where necessary. Cover structure production where possible This will not favour increase in population for diamond back moth Continue monitoring for the pest. This will favor bacterial and fungal problems Monitoring and control if necessary
	Potatoes	Central Inland & Central Coastal	Сауо	 This may favour an increase in white flies, thrips and mite outbreak along with viral diseases. Monitor and implement effective control measures where necessary. Cover structure production where possible This may favour increase in population for diamond back moth Continue monitoring of the pest and apply insectide where necessary This may not favor bacterial and fungal problems Monitoring and control if necessary
			Belize	 This will not favour an increase in white flies, thrips and mite outbreak along with viral diseases. Monitor and implement effective control measures where necessary. Cover structure production where possible This will not favour increase in population for diamond back moth Continue monitoring of the pest This will favor bacterial and fungal problems Monitoring and control if necessary
			Stann Creek	This may favour an increase in white flies, thrips and mite outbreak along with viral diseases. Monitor and implement effective control measures where necessary. Cover structure production where possible This may favor bacterial and fungal problems

				Monitoring and control if necessary
	South			This may favour an increase in white flies, thrips and mite outbreak along with viral diseases.
				Monitor and implement effective control measures if necessary.
				Cover structure production where possible
			Toledo	This may favour population increase of diamond back moth.
				Continue monitoring of the pest and apply insectide where necessary
				This may favor bacterial and fungal problems
				Continue monitoring and control if necessary
6	Fruits Trees:			Will not favour red mite population in coconuts.
	Coconuts,			Continue monitoring population of the mite
	Avocadoes,			Will not favour white fly population in avocadoes and soursop
	Soursop,		Corozal &	Continue monitoring population of the white flies
	Cacao &	North	Orange Walk	Will not favour the wasp & moth population that affects soursop fruits.
	Pineapple		orange train	
				Continue monitoring of the wasp & moth populations. Bagging of fruits where possible
				This will not favour weevil (Rhyncophorus palmarum) infestations that causes red ring disease
				Continue monitoring and trapping where necessary
				May favour red mite population in coconuts.
				Continue monitoring and spray with miticide where necessary
				May favour white fly population in avocadoes and soursop
			Сауо	Continue monitoring and spray with systemic insecticide where necessary
				May favour the wasp & moth population that affects soursop fruits.
				Continue monitoring of the wasp & moth and insecticide application where necessary followed by
				bagging of fruits
		Central & Coastal		This may favour weevil (Rhyncophorus palmarum) infestations that causes red ring disease
				Continue monitoring and trapping where necessary
				Will not favour red mite population in coconuts.
				Continue monitoring mite population
				Will not favour white fly population in avocadoes and soursop
			Belize	Continue monitoring the insect populations
				Will not favour the wasp & moth population that affects soursop fruits.
				Continue monitoring of the wasp & moth population. Bagging of fruits where possible
				This will not favour weevil (Rhyncophorus palmarum) infestations that causes red ring disease
				Continue monitoring and trapping where necessary

South	Stann Creek	This may favour pyhtophtora problems in coconuts and pineapple. Monitoring and control measures if necessary. This may favour the spread of monilia in cacao. Monitor for monilia and control measure if necessary May favour red mite population in coconuts. Continue monitoring and spray with miticide where necessary
South	Toledo	This may favour pyhtophtora problems in coconuts and pineapple. Monitoring and control measures if necessary. This may favour the spread of monilia in cacao. Monitor for monilia and control measure if necessary May favour red mite population in coconuts. Continue monitoring and spray with miticide where necessary

For further information or feed back on the forecast send an email to:

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Aproximate rainfall amount expected for different areas of Belize for March to May 2021							
REGION	RAINFALL	Category					
North (Corozal & Orange Walk District	200 - 280	Above Normal					
Central Inland areas (Cayo District)	130 - 250	Below normal to Normal					
Central Coastal Areas (Belize District)	250 - 350	Above Normal					
Southern Areas (Stann Creek & Toledo District)	250 - 500	Normal - Slightly above normal					

Nb. Provided by the Met Department

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