MANIPULATOR TECHNICAL INFORMATION
For use on: Wheat (spring, winter & durum), Barley, Oats
Active Ingredient: Chlormequat chloride
Formulation: Solution
Packaging: 2 x 10 L jugs (1 jug treats 14 acres)
Mode of Action: Inhibits gibberellin production

MANIPULATOR is a registered trademark of Eastman Chemical Compar

## APPLICATION TIMING

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ion	Tillering Stem Elongati			True Leaf Emergence				
GS 39	GS 35	GS 30	GS 23	GS 22	GS 21	GS 13	GS 12	GS 10
Flag leaf visible	5-nodes	1-node	3-tillers	2-tillers	1-tiller	3-leaf	2-leaf	1-leaf
		tion window	full applica					
			herbicide timing					
	separate pass							
flag timing								
split				split				

CROP	MANIPULATOR APPLICATION RECOMMENDATIONS	RATE					
Wheat	Single application: GS 21–39 (1 tiller to flag)	0.7 L / acre in at least 10 U.S. gal./acre					
	Split application: GS 21–32 and GS 32–39	0.3 L / acre followed by 0.4 L / acre					
	Flex rate applications GS 21–39 (1 tiller to flag)	0.5 L / acre per when crop biomass potential is below normal					
Consult with grain handler regarding export markets before using Manipulator on oats or barley							
Barley	Single application: GS 21–39 (1 tiller to flag)	0.9 L / acre in at least 10 U.S. gal./acre					
	Split application: GS 21–32 and GS 32–39	0.45 L / acre per application					
Oate	Single application: GS 21–39 (1 tiller to flag)	0.9 L / acre in at least 10 U.S. gal./acre					
Uals	Split application: GS 21–32 and GS 32–39	0.45 L / acre per application					
DO NOT exceed a total of 0.7 L/ac on Wheat in a single DO NOT exceed a total of 0.9 L/ac on Barley or Oats in a single year. DO NOT apply full rate to crops under stress from water-logging, drought or nutrient deficiency.							
In hot, dry weather a better result may be obtained from application in the early morning or evening.							

Always read and follow label directions.



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# MANIPULATOR

**MANIPULATOR** has a unique anti-gibberellin formulation that includes safeners and low temperature activators. Along with a systemic mode of action and long residual, **MANIPULATOR** has the widest application window of any PGR. This gives growers greater application flexibility to manage around weather, spray operation and crop management. (fertility, seeding rate and variety).

### **MAXIMIZE YIELD.**

+ More efficient nutrient transfer increases yield

## **INCREASE FUNGICIDE EFFICACY.**

+ Uniform flowering increases T3 (head timing) fungicide efficacy

## **FASTER HARVEST.**

## LODGING RESISTANCE.

## **APPLICATION FLEXIBILITY.**

Belchim Canada

GROWING TOGETHER





+ Improved combine speeds, reduced wear and tear, less fuel and a more efficient harvest

+ Shorter, stronger stems with thicker walls improve standability in adverse growing conditions

+ "Slow release" technology allows for application from herbicide timing to early flag leaf



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#### **BOOST YIELD & PROTECT IT.**

Over the past few years, improved farming methods and crop varieties have allowed growers to boost yield like never before. **MANIPULATOR** supports the push for higher yields by helping plants develop shorter, stronger stalks that aid in nutrient allocation and help to prevent lodging.

#### FERTILITY

Increased yield in cereal crops starts with a balanced fertility program. The ideal recommendation should consider yield and protein response, as well as ensuring any additional nutrient investment is protected with **MANIPULATOR** plant growth regulator to reduce the risk of lodging in a higher yielding crop.

## **TRIAL RESULTS**

Belchim trials	Height (cm)				Yield (bu/ac)				
2016 - 2024	UTC	Treated	Change (cm)	Change (%)	UTC	Treated	Change (bu/ac)	Change (%)	# Trial
AAC Brandon	78.9	71.6	-7.3	-9.3%	73.8	77.3	3.5	4.8%	43
AAC Elie	75.6	69.1	-6.5	-8.6%	75.1	78.7	3.6	4.0%	5
AAC Hodge	78.1	75.2	-2.8	-3.6%	69.5	71.4	1.9	2.7%	3
CDC Landmark VB	79.4	70.9	-8.5	-10.7%	73.5	76.8	3.3	5.0%	13
AAC Leroy	103.5	97.8	-5.7	-5.5%	43.4	45.2	1.8	4.1%	1
AAC Starbuck	74.8	72.6	-2.2	-2.9%	83.8	86.1	2.3	2.7%	4
AC Stettler	96.4	81.4	-15	-15.5%	72.9	79.1	6.2	9.4%	4
AAC Viewfield	75.4	64.6	-10.8	-14.3%	78.3	83.5	5.2	6.5%	11
AAC Wheatland	-	-	-	-	90	94.8	4.8	5.3%	1



#### LODGING RESISTANCE

Lodging in cereal crops occurs as a result of cultivar susceptibility, weather, and crop management. Increasing fertility and seeding rates often increases the risk of lodging.

- A healthy crop in a good stand:
- improves water and nutrient uptake
- improves light interception
- reduces risk of disease
- improves quality and yield
- saves time and money during harvest

## Faster harvest speed

- Less fuel consumption
- Reduced chance of mechanical breakdown

**IMPROVED HARVESTABILITY** 

• Reduced combine operator fatigue

Perhaps the greatest threat to yield in cereal crops is the loss experienced as a result of lodging. MANIPULATOR helps ensure that every bushel you grow ends up in the bin!

#### The use of **MANIPULATOR PGR** can also contribute to a significant improvement in combine productivity as a result of reduced lodging, shorter straw, or both. The chart below outlines the cost savings associated with a faster, easier harvest in a crop treated with **MANIPULATOR**

Header Width	Combine Speed	Field Efficiency*	Op. Cost / hr.**	Acres / hr.	Cost per / ac.
35'	3.5 mph	80%	\$275	11.88	\$23.15
35'	4 mph	80%	\$275	13.57	\$20.26
35'	4.5 mph	80%	\$275	15.27	\$18.01
35'	5 mph	80%	\$275	16.97	\$16.21

\*Field efficiency accounts for not using full header width, turning, unloading time etc. \*\*Example combine cost includes depreciation, interest, insurance, storage, repairs, fuel costs etc.



#### **FLEX RATE**

Manipulator offers the option to modify rates to meet specific grower needs or changing environmental conditions. The flex rate combined with the widest application window gives growers exceptional PGR customization.

- and promote grain head height uniformity.
- balance moisture conditions (excess or deficit) to intended crop response.

Even in varieties that showed moderate reduction in growth height when treated with **MANIPULATOR**, plants developed stronger thicker stems that improved standability.





**MANIPULATOR** helps take the stress out of harvest season.

• In below average rainfall conditions, the flex rate can protect against excessive straw production

• Growers can protect their fertility investment and yield potential by customizing the rate to