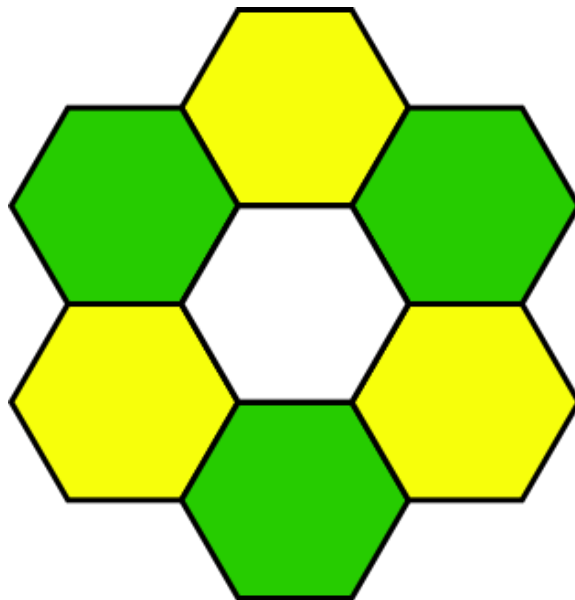




2017



PollenAction

Game Manual

1 - Introduction

PollenAction is a head to head race to Pollinate Flowers. The objective is to Pollinate as many Flowers in a row as possible. Driver skill and strategy are equally important for success.

2 - The Field

The game is played on an approximately 12' wide by 24' long carpet, divided into two equal zones by a wall and a communal goal, known as the Meadow. Near one corner of each zone is the starting target, known as the Hive. In the center of each zone is a target used in autonomous, known as the Landing Pad. The game pieces are 5-inch diameter balls used in the 2017 *FIRST* Robotics Competition game, *STEAMWORKS*. These game pieces are known as Pollen or Propolis. Each team (green and yellow) has their own colour of Pollen and Propolis.

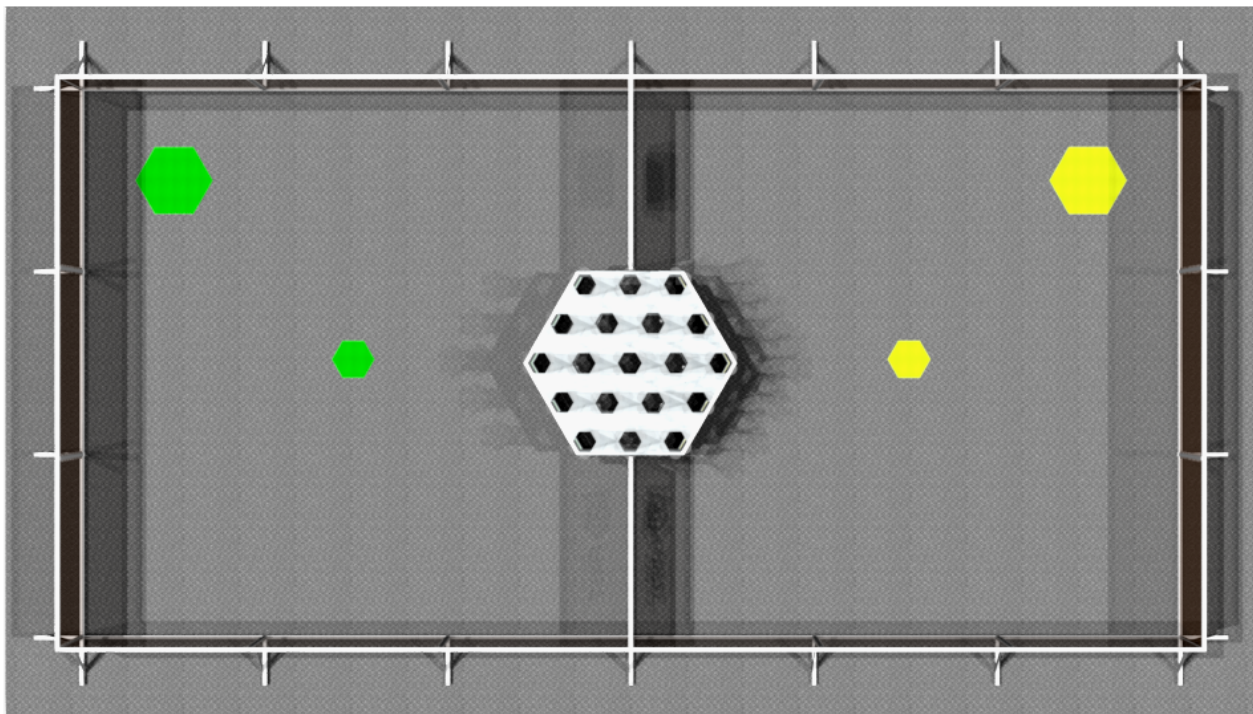


Figure 2-1 - PollenAction Field

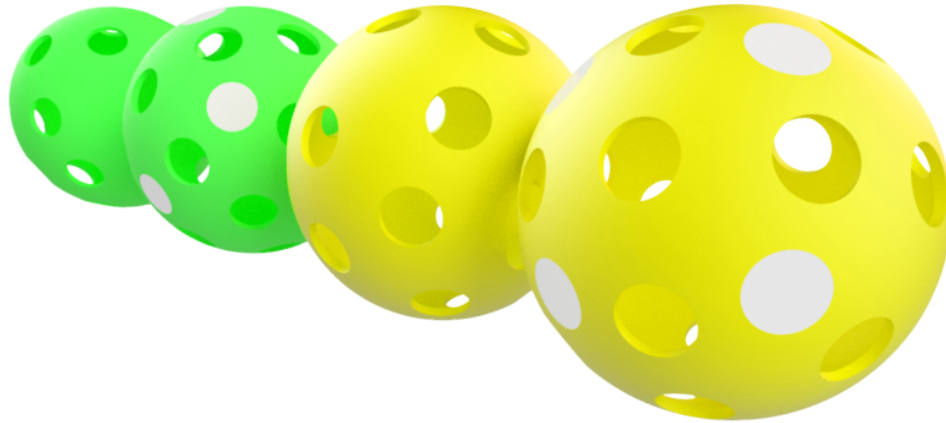


Figure 2-2 - Pollen (solid) and Propolis (with spots)

3 - The Meadow

The Meadow consists of 19 Flowers arranged in a hexagonal pattern. Each Flower consists of a hexagonal tube of clear polycarbonate with a petal pattern at the top. There are 12 outer Flowers, 6 inner Flowers and 1 central Flower. There is a 2-inch wide reflective strip along the circumference of the central flower, directly below the petal pattern.

A game piece is scored when it is entirely within a Flower's tube. Outer Flowers have room for 3 scored game pieces, inner Flowers have room for 4, and the central Flower has room for 6. Any game piece above these limits are not scored and will not count.

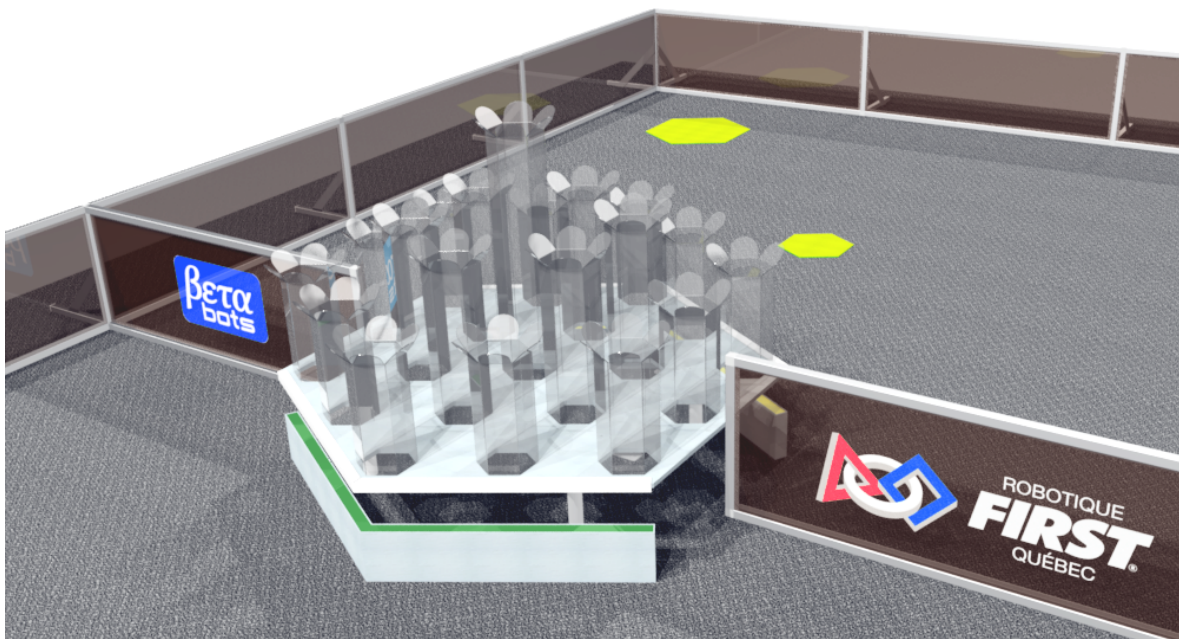


Figure 3-1 - The Meadow

4 - The Game

- Each match lasts 3 minutes. This begins with a 15 second autonomous period, followed by 2 minutes and 45 seconds of teleoperated play.
- Throughout the match, robots attempt to Pollinate Flowers, with the ultimate goal of scoring as many Points as possible.
- Robots begin each match entirely covering their Hive.
- Each team may begin with two pieces of Propolis, which can be placed anywhere on the robot.
- If a team scores Propolis during the autonomous period, that team receives 1 bonus piece of Propolis, given to their human player at the end of autonomous.
- If, at the end of autonomous, a robot is in contact with or on top of their Landing Pad, 1 bonus piece of Propolis is given to that team's human player.
- Each team's human player has access to 32 pieces of Pollen.
- At the end of a match, when all game pieces have come to rest, the score is determined. 1 Point is scored for 3 Pollinated Flowers in a row. A Pollinated Flower may count toward multiple Points.

5 - Game Rules

- G1.** If a team's Propolis is the first game piece scored in a Flower, the Flower is Pollinated by that team for the rest of the match.

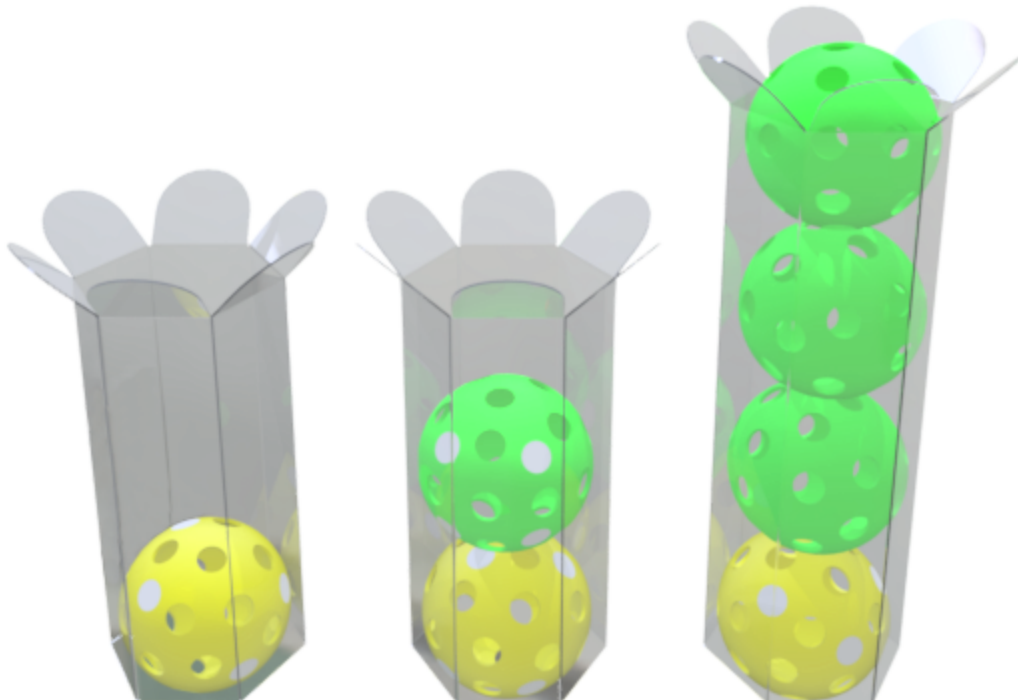


Figure 5-1 - Flowers Pollinated by Yellow

- G2.** If Pollen is the first game piece scored in a Flower, that Flower is Pollinated by the team whose game piece is last scored in the Flower.

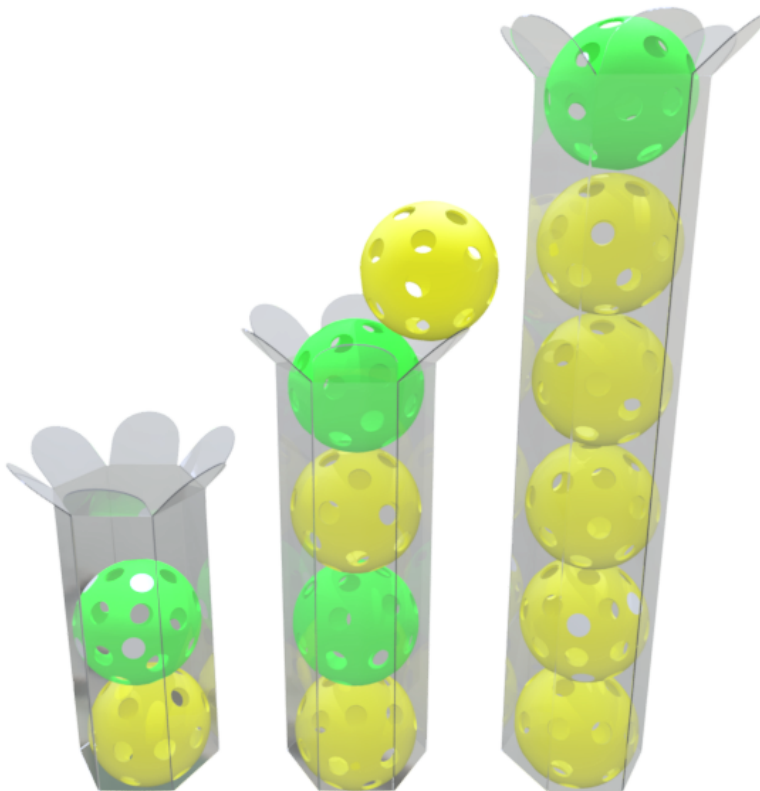


Figure 5-2 - Flowers Pollinated by Green

- G3.** During autonomous, drive teams may not contact robot controls, Pollen, or the Pollen Basket.
- G4.** Robots may have a maximum of 4 game pieces on board.
- G5.** Robots may only receive game pieces while on their Hive. Human players load game pieces onto their robots using the Pollen Basket. Robots may not pick up game pieces from the ground.
- G6.** Game pieces put into play (in the robot or on the field) may not be reused.
- G7.** Game pieces put out of play will not be returned to the field or to human players. Game pieces damaged in play will not be replaced during the match. Damaged game pieces may still be scored.

6 - Robot Rules

- R1.** Robots must play each match within a volume not exceeding 30"x30"x30". Robots may not extend beyond this volume, or their frame perimeter, at any point during a match.
- R2.** There is no weight limit.
- R3.** Robots must include bumpers covering the entire front and rear, manufactured in the style of the 2017 bumper rules. Only one set of bumpers of any colour is required,

markings or team numbers are optional. Bumpers are not counted in the maximum volume.

- R4.** Electrical, pneumatic, control system and overall safety rules follow 2017 *FIRST* Robotics Competition robot rules.
- R5.** Robots must be inspected before the first match. Any necessary changes must be made before a robot is allowed to play. All changes made to the robot during the course of the competition must be re-inspected.

7 - Penalties

Action	Penalty			
	1 Point Penalty	Yellow Card	Red Card	Disable
Robot has more than 4 game pieces	X (per extra piece)			
Robot receives game piece outside of their Hive	X (per piece)	X		
Human player loads game piece without using Pollen Basket	X (per piece)	X		
Team contacts controls, Pollen, or Pollen Basket during autonomous		X		
Robot exceeds maximum volume		X		
Unsafe behaviour		X		
Human player uses game piece previously put in play			X	
Coach contacts robot controls (except emergency stop)			X	
2 yellow cards			X	
Unsportsmanlike conduct			X	X
Robot dislodges field element				X

Table 7-1 - Penalties

- P1.** Yellow cards remain with teams throughout the tournament, but are cleared at the beginning of the playoffs.
- P2.** If a team receives a red card, the team receives 0 Points, 0 Pollinated Flowers and 0 game pieces scored for that match.

8 - The Tournament

- T1.** The tournament is divided into two parts, the qualification and the playoff rounds.
- T2.** During the qualification round, teams play randomly assigned matches. All teams play an equal number of qualification matches.
- T3.** Each team must use 4 drive teams (red, blue, purple and orange), each consisting of 1 or 2 student drivers and 1 student human player. Drive team colours will be listed in the match schedule. An individual may not be on more than one drive team or change teams. **A team will not be allowed to play a match without the correct drive team.**
- T4.** There is no restriction on drive teams during the playoffs.
- T5.** A coach is permitted at the driver station. The coach may be an adult, and is not restricted by the drive team colour rules. Only the coach may give instructions to the drive team. The coach may not touch the robot controls.
- T6.** Drive teams and coaches must remain at their driver station during the entire match.
- T7.** At the end of the qualification matches, the final ranking will determine which teams move into the playoffs. Ranking is determined by the teams' cumulative Points. Tie breaks are determined by cumulative Pollinated Flowers, followed by cumulative number of game pieces scored.

Team Ranking	
1st sort	Cumulative Points
2nd sort	Cumulative Pollinated Flowers
3rd sort	Cumulative game pieces scored

Table 8-1 - Ranking

- T8.** The top 6 ranked teams advance to the playoffs. The top 2 ranked teams automatically qualify for the semi finals, while the teams ranked 3-6 play for the other 2 semi final spots.

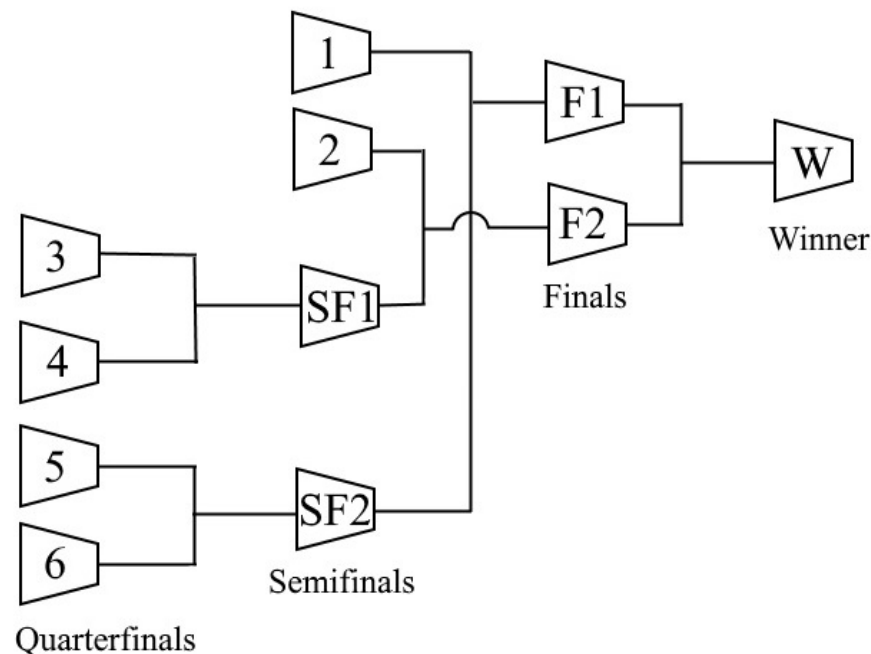


Figure 8-1 - Playoff Round

- T9.** During the Playoff Round, winners are determined by criteria outlined in Table 8-1.
- T10.** In the quarter-finals and semi-finals, teams play head to head in a single deciding match.
- T11.** In the finals, teams play a best of 3 series. The first team to win 2 matches wins the tournament.

9 - Awards

- A1.** At the event, **all teams must sign up for a judging session**. The judging session consists of a 5 minute presentation by 2 to 4 team members followed by a question period.
- A2.** Judges may also be present in the pits to observe and interact with teams. Only student team members may answer questions from judges.
- A3.** The following awards will be presented:
- Tournament winner
 - Quality*
 - Creativity*
 - Innovation in control*
 - Judges' award*

** Based on the same criteria used at FIRST Robotics Competition events.*