



Pepper Sprout



Pull-out and build from our free plan of Mike White's simple profile fun-flyer for .15 -.25 cu.in. engines

Most models of this ilk are really minimum aircraft but here I have tried to design in some character by giving the fuselage some shape in side view. This added area helps in some manoeuvres which involve knife edge flying whilst not increasing the weight significantly. I hope you like it.

Engine and radio

If you haven't yet tried a fun fly type of model then you should - right now! They are fairly quick to build, use small engines and may be flown in fairly small areas. Flying like this, close in, will most definitely improve your flying skills.

In order to get the most out of one of these models a computer radio is required which will allow you to programme in flaperon and flap-elevator combinations. Flaperons may be set up so that at low throttle settings a small amount of up flap is mixed in. Try about 10-15 degrees but start at ten as the effect can be quite pronounced. This will kill all lift and will bring you down fast for a quick touch and go. For competitions, or fun flying, in which there is a duration element, you can set about 15 degrees of down flap and you will find that you can stay up there until tea time given a little thermal activity. Flaps and elevator may also be mixed so that as the elevators go up, the flaps go down to about fifteen degrees and eight to ten foot diameter loops will be a doddle.

If you own a computer radio you will know what combinations there are but these figures will give you something to work with to suit your flying ability. If you do not operate one of these boxes of magical mystery, do

not despair as a charcoal or steam driven transmitter like my Futaba Gold will still give you plenty of fun.

To date I have built four models to this design, one powered by a Fox 15 diesel, one by a Fox 15 glow and two by MDS 25s. My preference is for the diesel version but the propeller chosen for this small engine size is quite critical in order to wring out the best performance. A good starting point for the .15 glow would be a 10 x 3 or 10 x 4 and then, if necessary, trim the tips to a 9" or 9.1/2" diameter. On my .25 versions, I use an 11 x 3 and 11 x 4 APC propeller. Do not use higher pitches than these as the model will fly too fast - experiment with different diameters. Remember, pitch governs speed and diameter governs pulling power - generally speaking - and this is what you want. Ideally the model should fly as slowly as possible while still performing very high rates of roll and pitch change. Loops of 10-15 feet diameter should be aimed for, or 5 - 8 feet if you use a computer radio. It should be possible to loop straight from take off - precise flying being required with this one - for a touch and go. I am far from being a hot shot flyer of these models ("*Any model, for that matter!*", I hear from the gallery) but I sometimes startle myself at what I can make this one do!

After having read this last paragraph do not think that high speed flying is inadvisable with "The Sprout". Some fun fly models disintegrate at high speeds due to their very light construction. "Pepper Sprout" is still fairly lightly loaded but may be flown fast and will not disintegrate (if properly built) due, possibly, to the "specially designed" airfoil! It may be

Here's Mike with the one-piece Pepper Sprout.

Pepper Sprout? I tell you, this one's hotter than a Goan Vindaloo! Its first flight was from a hand launch when it unexpectedly put its nose up and started over on its back. With neck craning backwards and my thumbs frozen on the sticks, I lost my balance and sat down hard on my khyber pass just as the model flew three feet above my head after completing the loop and flew off into the blue! It performed half a rolling circuit, several gyrations which defy description, some more rolls, two loops and a stall turn (of sorts), all while I was sitting in the middle of a newly laid cowpat. As my brain caught hold of the situation the model smacked into the hedge 50 yards away. That was my first attempt at flying one of these beasts which was also my first shot at designing one. I am pleased to say that the design has now been tamed and having some more flying experience with it, I can do some unusual, not to say spectacular manoeuvres.

flown, as any general purpose sport model, fast, or as required in fun fly comps, slowly.

Many of the contortions you will put the Sprout through may cause some fuel starvation at times so a pump will help here. If you do not run to a pump, not to worry, just make sure that the engine is running on the rich side. I use a Robart Super Pumper which does a great job.

All of the servos are of necessity mini size but a standard square, not flat, 500 mAh battery just fits but with little packing. I use one from Overlander which is their 400 mAh size and this does allow sufficient packing. Standard receivers also just fit but if you have a mini size so much the better. At first sight the radio layout may appear to be a bit spaced out (as you will be after your first flight) and you might think that the components could, with the advantage of keeping the weight distribution closer to the fuselage centre line, be installed closer to it, but don't try it! I puzzled, fitted and cut the airframe about for three days before I settled on this arrangement. You might try putting the elevator and rudder servos in the rear fuselage, just in front of the tailplane, but I will leave you on your own for that one.

None of the construction should give problems as this is not a beginners model and it is assumed that the builder will have some whittling, gluing and flying hours behind him. I will, however, outline one or two points which may not seem obvious.

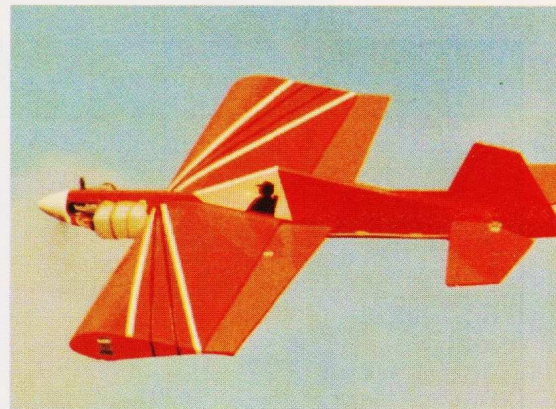
Fuselage

Join the engine bearers, at the correct width for your engine, with the balsa spacer. Pin down over the plan and glue on the two spruce longerons. These longerons may not fit over the lines drawn for them on the plan. This will be due to the fact that your engine may not be the same dimensions as mine. Now join the longerons with the polystyrene centre piece. Make this from ceiling tiles, packing throwouts or cut from foam sheet. Two small pieces of balsa are now fitted onto the spruce as extensions of the engine bearers, extending as far back as the wing mainspars. When this item has been completed sand off both sides to remove any excess glue and other odd lumps. Cover both sides with 1/32" ply.

Whether you are using spruce, ramin or pine for the two longerons, clean them off with cellulose thinners before gluing to remove any resin or grease. Put this part of the fuselage to one side and carry on with the wing.

Wing

Pin one mainspar over the plan and glue on the ribs. No packing is necessary due to the straight run of the outline aft of the mainspar posi-



tion, so the ribs may be laid flat over the plan. Note the gap between the root ribs R1. This must be a fairly easy sliding fit over the fuselage so that all the glue is not squeezed out when the fuselage is eventually offered up. When placing these ribs, do so with the the fuseage part previously made sandwiched between them, but not glued. Follow this with the other mainspar.

Glue the false trailing edge and its sheeting, leading edge and its sheeting and cap strips, but omit the centre section sheet aft of the mainspar until the wing and fuselage are glued together later in the sequence. Remove the wing from the plan, turn over, pin down and complete the other side.

Now is the time to join the wing and fuselage together. Lay on a good smear of PVA or aliphatic glue to the inboard faces of both root ribs and to the fuselage sides. Push the fuselage tail first into the gap between the leading edges. Ensure that the wing is set at zero degrees incidence by aligning the leading and trailing edges with marks previously pencilled on the fuselage sides.

Tailplane

Not much can be said of this unit. Due to the small radius of the mini servo output arms and the need for maximum control surface movements on ailerons, elevator and rudder, I have cut the bevels on the opposite side than is normal. See the plan.



Odds and ends

Complete the remainder of the fuselage from strip balsa and then glue these in place, followed by the fin and rudder. Install the servos and complete the wing centre section sheeting. Hinge the control surfaces using Solarfilm as a continuous hinge, and cover. I used Solarfilm on all four models.

Balancing

All parts should now be installed with the exception of the engine. Temporarily tape this in place and check the balance which should be on the mainspar. If it is not, adjust the engine position until the balance is correct. Mark the engine position and drill the retaining bolt holes. Trim the front fuselage to shape, paint, fuel proof and fit the engine and any other items I have forgotten to mention!

Fun flying

With the model balanced on the mainspar the performance will be groovy with very positive and solid control responses. If it gets out of hand, centre the sticks and all movement will stop immediately. Now sort it out.

On landing keep the speed fairly high. Don't try to hold the nose up for a long floating glide as the wing drag is very high. It will just flop out on you. Round out just a couple of feet short of your touch down point and a foot or so high.

Pepper Sprout is capable of any manoeuvre you can think of - plus a few more besides!

Use dual rates to get familiar with the snappy flying characteristics of this simple model. Once you've got the feel, switch over to full throws and have a ball!

DATAFILE

Plan Specifications

Name.....	Pepper Sprout
Designed By.....	Mike White
Aircraft Type.....	Sport/Fun-fly
Wingspan.....	36"
Wing Chord.....	12"
Wing Area.....	432 sq.ins.
Aerofoil.....	Symmetrical
Dihedral At Each Tip.....	None
Fuselage Length.....	29.1/2"
Tailplane Span.....	17"
Tailplane Area.....	80 sq.ins.
Tailplane Section.....	Flat plate
Fin Height.....	5"
Engine Range.....	.15 -.25 cu. ins.
Fuel Tank.....	4 ozs.
Rec. Number of Channels..	Four (five servos)
Control Functions.....	Rudder, elevator, aileron, throttle
C.G. (from L.E.).....	3"
Elevator Throws.....	1.3/4" rates on, 2" rates off
Aileron Throws.....	1.1/4" rates on, 1.1/2" rates off
Rudder Throws.....	Max. possible
Sidethrust.....	None
Downthrust.....	None

Materials Used in Construction

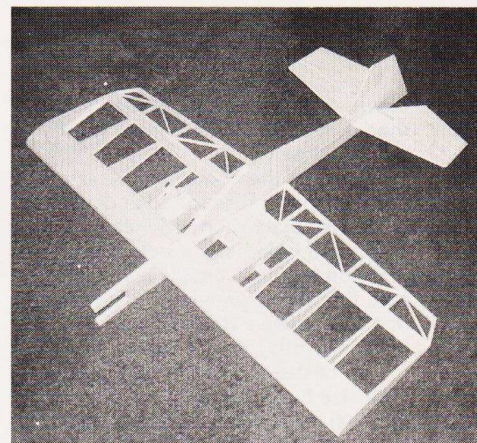
Fuselage.....	Ply, spruce, balsa
Wing.....	Built-up balsa
Tail Surfaces.....	Sheet balsa
Weight, Ready to Fly.....	40 ozs. (with MDS 25)
Wing Loading.....	13 ozs./sq.ft.

A favourite hot dog manoeuvre of mine is to climb to a good height, level off and half close the throttle. With a Mode II transmitter simultaneously put the left stick into the top right hand corner and the right stick into the top left hand corner and hold, i.e. full throttle, right rudder, left aileron and down elevator. She will half roll, put the nose up and go into a very fast inverted spin. To stop, power down the engine, centre all controls and rotation will immediately cease. Pull out inverted, power up and do an inverted circuit just to show them how good you are...

Somewhere about here, I nearly crash! I tell you, when you're hot, you're hot - and when you're not, everybody is bound to be looking at you!

If you like Pepper Sprout and could spare me a photo it would be appreciated. If you don't or just want a chat about it, please telephone. Here's my address:

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Upper and lower views during construction.

